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Trade, Foreign Capital, and Productive Capacity Nexus: The Moderating Role of Institutions

Muhammad Amin Hasan[1], Sheikh Nabeel Badar[2], Aman Abbas Ghouri[3], Muhammad Saad[4]

[1] Lecturer, College of Management Sciences (CoMS), Karachi Institute of Economics & Technology (KIET), Pakistan. Email: muhammadaminhasan@gmail.com
[2] Senior Supervisor, Country Finance, APL Logistics Pakistan (Pvt) Limited, Karachi, Pakistan. Email: sheikh_nabeel_badar@apllogistics.com
[3] Senior Finance Officer, World Wide Fund for Nature (WWF), Karachi, Pakistan. Email: amanghouri1@gmail.com
[4] Assistant Professor and Head of Department at Management Sciences, FAST School of Management National University of Computer and Emerging Sciences, Karachi, Pakistan. Email: saad.siddiquie@nu.edu.pk

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ABSTRACT

International trade and foreign capital inflows are considered significant determinants of economic growth. However, despite being the largest recipients of these inflows, South Asian economies fail to achieve sustainable economic development due to rapid changes in macroeconomic dynamics and political instability. The purpose of the study is to examine the impact of trade openness (TRD), foreign direct investment (FDI), and international remittances (REM) on the productive capacity (PC) of South Asian economies, with a focus on the moderating effects of the institutional quality (INQ) on the aforementioned relations. The study uses the sample of four South Asian countries namely: Bangladesh, India, Pakistan, and Sri Lanka for the period from 2000 to 2022. The empirical results show that TRD, REM, and INQ exhibit positive and statistically significant effects on PC. The results highlight the significance of international trade, foreign capital inflows, and INQ in determining the PC of South Asian economies. Notably, the findings indicate that FDI has no impact on the PC of the sample economies. Surprisingly, INQ negatively moderates the relationship between REM and PC. Furthermore, INQ positively moderates the impact of TRD on PC. However, INQ does not moderate the effect of FDI on PC in the sample countries. The conclusion section discusses the policy and practical implications of the study, as well as its limitations.

Corresponding Author's Email: muhammadaminhasan@gmail.com
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1. Introduction

During the past 20 years, economies have experienced drastic transformation due to several factors, such as digitalization, trade liberalization policies, changing global political dynamics, and the economic landscape (Ahlstrom et al., 2020; Amadi, 2020; Zysman & Newman, 2006). In particular, trade openness (TRD) and foreign capital inflows (FCI) have significantly affected the social, political, and economic well-being of both developed and developing economies (Kose, Prasad, & Terrones, 2009; Li & Tanna, 2019; Saha, 2023; Sawalha, Elian, & Suliman, 2016).

Furthermore, institutional factors, including political stability and effective regulatory framework, have significantly influenced production and productive capacity (PC) in many developing economies over the last two decades (Henri & Mveng, 2023; Kose et al., 2009). However, the magnitude and directions of the change is not homogenous for all countries due to institutional, political and economic factors.

The present study investigates the effects of TRD and FCI on the PC of South Asian economies, focusing on the moderating effect of institutional quality (INQ). Thus, this study considers both economic and political factors affecting PC of the economy. Furthermore, the intensity of TRD and FCI has significantly increased over the last 20 years, improving both PC and the standard of living, particularly in South Asian countries (Das & Sethi, 2020; Hasan, Abdullah, Hashmi, & Sajid, 2022; Sajid, Hashmi, Abdullah, & Hasan, 2021).

Within the literature of international economics, several theories have discussed the importance and role of TRD in the economic well-being of a nation. Moreover, empirical literature suggests that economies can enhance their PC through TRD Andersson, Lööf, and Johansson (2008); Miller and Upadhyay (2000) by specializing in the production of a mix of goods and services in which they have a comparative advantage, thereby receiving benefits in terms of high employment and income (Costinot, 2009; Hung, Salomon, & Sowerby, 2004).

On the other hand, South Asian countries have also experienced a severe savings-investment gap, which hampers their PC due to underutilization of labor and other resources (Joshi, Pradhan, & Bist, 2019; Sahoo & Dash, 2013). Consequently, FCI has become a significant source of financing, providing capital that augments domestic labor and other natural resources for economic development (Das & Sethi, 2020; Kojima, 1975; Tahir, Estrada, & Afridi, 2019).

Thus, TRD and FCI have been examined extensively in recent literature, especially in the context of developing countries, due to their contribution and impacts on overall development of the economy (Chaudhury, Nanda, & Tyagi, 2020; Gnangnon, 2018; Li & Tanna, 2019; Sajid et al., 2021).

Moreover, theoretical literature suggests that TRD and FCI enhance PC of the country (Greenwald & Stiglitz, 2006; Krugman, 1979). However, empirical studies have reported mixed findings, indicating that their effects may vary across countries due to heterogenous political and institutional factors (Rashid, Looi, & Wong, 2017). Specifically, nations receiving the same levels of TRD and FCI with different institutional dynamics tend to exhibit varying levels of PC (Gnangnon, 2021; Goldsmith, 1987; Kim, 2011).

For example, in South Asia, countries with distinct political histories and institutional framework demonstrate differences in their economic landscape, public policies and approaches (Hasan et al., 2022; Rijesh, 2019; Zakaria & Bibi, 2019).

In the economics literature, the impact of TRD and FCI on economic growth has gained significant attention from scholars. While, various empirical studies have explored the effect of TRD and FCI on economic growth, total productivity, and income inequality Gnangnon (2018); Hasan et al. (2022); Kose et al. (2009); Li and Tanna (2019); Nguyen Viet (2015); Sajid et al. (2021), to the best of our knowledge, no study has comprehensively examined the joint impact of TRD and FCI on PC, considering the moderating effects of INQ on their association.

The positive relationship between TRD and PC is reported in several recent empirical studies Frankel and Romer (2017); Nguyen (2020), while others suggest that TRD may reduce income Meschi and Vivarelli (2009) and generate income disparities in host nations Bensidoun, Jean, and Sztulman (2011); Silva and Leichenko (2004). Similarly, various recent studies documented a positive relationship between FCI and PC of an economy (Chowdhury, Dhar, &

Gazi, 2023; Das & Sethi, 2020). However, some studies argue that FCI may lead to macroeconomic imbalances and reduce PC in the recipient country Chowdhury et al. (2023); Makhlouf (2019); TOPALOĞLU, ŞAHİN, and İlhan (2019). Furthermore, other studies highlight those countries with a strong regulatory environment and effective institutions utilize FCI more efficiently, increasing their PC through TRD (Hamdaoui, Ayouni, & Maktouf, 2022; Hasan et al., 2022).

Although, several empirical studies have examined the relationship between TRD, FCI, and PC for both developed and developing economies, but they have reported mixed and inconclusive findings (Chaudhury et al., 2020; Frankel & Romer, 2017; Makhlouf, 2019; Meschi & Vivarelli, 2009).

Furthermore, the majority of these studies have used a conventional measure of gross domestic product (GDP) per capita or related income measures for PC, and a few studies used a recently developed PCI (Gnangnon, 2021; Saha, 2023). Moreover, the moderating effects of INQ on the relationship between TRD-PC and FCI-PC are not well-documented. Thus, our study has three main objectives to address the above-mentioned research gaps. First, to examine the impact of TRD on PC of sample countries. Second, to estimate the effect of FCI on PC of sample countries using a recently developed index of PC. Third, to estimate the moderating effect of INQ on the relationship between TRD-PC and FCI-PC relationships, respectively.

Furthermore, our study contributes to the body of literature in several ways. First, to the best of our knowledge, this is the first study examining the moderating impact of INQ on the relationship between TRD and PC, as well as FCI and PC, specifically for South Asian economies. Second, it is the first study to utilize a unique measure of the productive capacities index, recently developed by the United Nations Conference on Trade and Development Le Clech (2023), to investigate these relationships for South Asian economies. Third, this paper offers recent empirical evidence on the relationships between TRD, FCI, INQ and PC for South Asian economies. Lastly, our study provides valuable insights for governments, policymakers, and corporations in designing effective policies. It emphasizes the importance of considering the role of INQ to maximize benefits from TRD and FCI on PC for sustainable development.

2. Literature Review

2.1. Theoretical Literature

The theoretical foundation of this study is grounded in two key theories, Heckscher-Ohlin (HO) theory and the institutional theory (INT) proposed by Scott (1987). The HO model predicts that countries specialize in and export those products that require their abundant resources, be it labor or capital. Consequently, the theory postulates that trade significantly impacts the productivity of abundant resource, resulting in a higher PC. Moreover, the theory explains the role of FCI in determining the PC of economies. According to the HO theory, economies that receive more FCI, including FDI and REM, tend to alter their production structure. They begin manufacturing capital-intensive goods and adopting advanced technology through technology diffusion. Consequently, these FCI contribute to enhancing PC of the recipient nations.

Furthermore, the INT, a socio-political theory, argues that institutions significantly influence and shape the organizations and their conduct (Scott, 1987). Scott defines institutions as social structures consisting of normative, regulative, and cognitive elements that help societies maintain stability and growth. The central focus of the theory is how the institutional and regulatory environment shapes and affects individuals' actions, ultimately establishing their interests and incentives to act accordingly (Clemens & Cook, 1999; Mahoney & Thelen, 2009). The relevance of INT to this study is high, as economies required a regulatory and institutional environment to perform efficiently.

2.2. Hypotheses Development

Recently, various scholars have estimated the relationship between TRD, FCI, INQ and PC for both developed and developing countries (Bodman & Le, 2013; Chandio et al., 2023; Gnangnon, 2018; Hasan et al., 2022; Huchet-Bourdon, Le Mouël, & Vijil, 2018; Li & Tanna, 2019; Sajid et al., 2021). However, the existing empirical literature provides inconclusive results. This section presents empirical evidence on the aforementioned relationships and proposes hypotheses based on these studies.

2.2.1. Trade Openness and Productive Capacity

TRD represents a country's degree of participation in the global trading market (Edwards, 1998). It is measured as the ratio of total trade (the value of exports plus imports) to the Gross Domestic Product (GDP) of a country (Harrison, 1996).

In empirical literature, the relationship between TRD and PC is unclear and studies provide inconclusive findings, particularly in the context of developing economies. One strand of the literature suggests that TRD enables firms in the developing countries to explore new market in developed countries, thereby enhancing their PC and economic growth Edwards (1998); Feyrer (2019); Frankel and Romer (2017); Gnangnon (2018); Harrison (1996); Keho (2017); Ogbuabor, Emeka, and Iheonu (2023); Wacziarg and Welch (2008), and reducing poverty levels (Winters, McCulloch, & McKay, 2004).

On the other hand, several studies claim that TRD adversely affects the economic growth and PC of many developing countries (Brun, Carrère, Guillaumont, & De Melo, 2005; Huchet-Bourdon et al., 2018; Vlastou, 2010). Similarly, Kim, Lin, and Suen (2013) reported a negative impact of TRD on domestic investment, leading to lower productive capacity in economies with high level of corruptions, less developed financial markets, and low human development. Therefore, the following hypothesis is formulated:

H_1: Trade Openness significantly affect Productive Capacity.

2.2.2. Foreign Capital Inflows and Productive Capacity

FCI can take several forms, such as FDI, REM, official development assistance and aid, foreign portfolio investment, and others (Sajid et al., 2021). Our study employs two forms of FCI, specifically FDI and REM, to examine their impact on PC of the sample countries.

The empirical literature on the relationship between FDI and PC presents mixed results. Several studies report a positive and significant impact of FDI on PC (Ogbuabor et al., 2023; Saha, 2023). Similarly, Bodman and Le (2013) found that FDI recipient nations tend to improve their socio-economic indicators and experience higher PC due to increased absorptive capacity. However, the authors argue that geographical distance may hamper these effects and become a significant barrier. Moreover, countries receiving higher FDI tend to develop higher absorptive capacity for technological adoption (Baltabaev, 2014). The impact of FDI on PC is not universally strong and varies for each country, depending on factors such as absorptive capacity, human development, investment risk, regulatory and institutional environment (Li & Tanna, 2019; Ogbuabor et al., 2023; Uddin, Hasan, Sajid, & Shaikh, 2023).

Furthermore, REM is another important source of FCI, bridging the saving-investment gap in developing countries and affecting the PC of the country (Hasan et al., 2022). For instance, Guha (2013) found that REM provides financial resources to the households in developing countries, negatively affecting labor supply, which reduces PC. Similarly, various current studies

found an adverse effects of REM on export performance, labor supply, international tourism development and balance of trade, thereby reducing the PC of the economy (Chowdhury et al., 2023; Hasan et al., 2022; Jena & Sethi, 2020; Sharma, 2019; Sutradhar, 2020). On the other hand, another strand of empirical literature supports the beneficial effects of REM on the PC of the recipient country (Chandio et al., 2023; Eggoh, Bangake, & Semedo, 2019; Yadeta & Hunegnaw, 2022).

Furthermore, Dzeha, Abor, Turkson, and Agbloyor (2017) argue that REM improves PC of the economy by enhancing labor productivity only if the country does not depend on natural resources.

Based on the discussion of empirical literature in the aforementioned paragraphs, the study formulates the following hypotheses:

H_2: Foreign Direct Investment significantly affects Productive Capacity.
H_3: International Remittances significantly affect Productive Capacity.

2.2.3. Institutional Quality and Productive Capacity

The majority of the empirical literature extensively discusses and reports a significant influence of INQ on the relationship between TRD, FCI and PC (Hasan et al., 2022; Li & Tanna, 2019; Nepal, Park, & Lee, 2020; Ogbuabor et al., 2023). For instance, Nepal et al. (2020) argues that INQ significantly moderates the impact of REM on economic growth, specifically for REM-dependent economies.

Furthermore, several studies found that INQ positively moderates the relationship between FDI and PC of an economy, attributing it to higher economic growth, capital accumulation, technological diffusion, and increased labor productivity .(Adegboye, Osabohien, Olokoyo, Matthew, & Adediran, 2020; Bouchoucha & Benammou, 2020; Hayat, 2019; Jude & Levieuge, 2017; Krammer, 2015). Recent empirical studies have reported have a significant positive impact of INQ on TRD-PC nexus (Kpognon, Atangana Ondoa, Bah, & Asare-Nuamah, 2022; Kumeka, Raifu, & Adeniyi, 2023; Ohnsorge & Quaglietti, 2023). These studies suggest that good governance and a robust regulatory framework help channelize foreign exchange reserves earned from TRD into productive uses. Therefore, the following hypotheses are formulated:

H_4: Institutional Quality moderates the relationship between Trade Openness and Productive Capacity.
H_5: Institutional Quality moderates the relationship between Foreign Direct Investment and Productive Capacity.
H_6: Institutional Quality moderates the relationship between International Remittances and Productive Capacity.

3. Methodology

The objective of the study is to examine the impact of trade openness and foreign capital inflows on productive capacity in South Asian countries, considering the moderating effects of institutional quality. The details of the methodology are discussed in the subsequent section.

3.1. Sample, Data and Variables

To achieve the objectives of our study, we have used a panel dataset of four South Asian economies—namely, Bangladesh India, Pakistan, and Sri Laka— from 2000 to 2022. The choice of sample and data was guided by the literature and data availability. Various sources and databases, including the United Nations Conference on Trade and Development (UNCTAD), World

Bank's World Development Indicators (WDI), and World Governance Indicators (WGI), were used to collect data for the variables. Furthermore, the definition and measurement of all variables are discussed in Table 1.

3.2. Econometric Modeling

In this section, we discuss the specific statistical models used to test the hypotheses developed in the previous section. Particularly, models 1-3 were estimated to examine the impact of TRD, FDI and REM on PC in the sample countries (H_1, H_2, H_3). Furthermore, models 4-6 were estimated to examine the moderating effects of INQ on TRD-PC, REM-PC, and FDI-PC relationships (H_4, H_5, H_6), respectively.

$$PC = \beta_0 + \beta_1 TRD + \beta_2 ER + \beta_3 CAP + \beta_4 URB + \beta_5 YDum + \beta_6 CDum + \mu \quad (1)$$
$$PC = \beta_0 + \beta_1 REM + \beta_2 ER + \beta_3 CAP + \beta_4 URB + \beta_5 YDum + \beta_6 CDum + \mu \quad (2)$$
$$PC = \beta_0 + \beta_1 FDI + \beta_2 ER + \beta_3 CAP + \beta_4 URB + \beta_5 YDum + \beta_6 CDum + \mu \quad (3)$$
$$PC = \beta_0 + \beta_1 TRD + \beta_2 INQ + \beta_3 TRD * INQ + \beta_4 ER + \beta_5 CAP + \beta_6 URB + \beta_7 YDum + \beta_8 CDum + \mu \quad (4)$$
$$PC = \beta_0 + \beta_1 REM + \beta_2 INQ + \beta_3 REM * INQ + \beta_4 ER + \beta_5 CAP + \beta_6 URB + \beta_7 YDum + \beta_8 CDum + \mu \quad (5)$$
$$PC = \beta_0 + \beta_1 FDI + \beta_2 INQ + \beta_3 FDI * INQ + \beta_4 ER + \beta_5 CAP + \beta_6 URB + \beta_7 YDum + \beta_8 CDum + \mu \quad (6)$$

Table 1
Description of Variables and Source of Data

Variable	Description	Unit of Measurement	Data Source
PC	Productive capacity is proxied by a multidimensional index developed by UNCTAD, considering various socio-economic and institutional factors. This index reflects the long-term productive capacity of an economy.	Score ranges from 0 to 100	UNCTAD
TRD	TRD represents the trade openness or trade intensity of the country, measured as the total trade-to-GDP ratio.	Percentage of GDP	WDI
FDI	FDI refers to the total net inflows of foreign direct investment in a country.	Percentage of GDP	WDI
REM	REM shows the total value of international remittances received on a per capita basis.	2015 US dollars	WDI
ER	ER is the nominal value of US dollar in terms of domestic currency.	Domestic Currency	WDI
CAP	CAP represents the value of total capital stock in the country, proxied by gross fixed capital formation measured in 2015 US$.	Natural Logarithm	WDI
URB	URB represents the growth of urban population in the country.	Percentage	WDI
INQ	INQ shows the quality of institutions and the regulatory environment, proxied by the index of political stability developed by World Bank.	Score typically ranges from -2.5 to 2.5	WGI

3.2. Statistical Analysis

The study has employed robust statistical techniques to examine the impact of TRD and FCI on PC, considering the moderating effects of INQ on these relationships. Firstly, descriptive and correlational analyses are reported to provide a simple description of the variables used in the study. Secondly, the study estimated the aforementioned relationships using feasible generalized least squares (FGLS) to address issues of cross-dependence, autocorrelation, and heteroscedasticity (Hashmi, Abdullah, Brahmana, Ansari, & Hasan, 2022; William, 2003).

Lastly, robust analysis was performed, and the findings of FGLS were re-validated through Pooled Ordinary Least Square (POLS) and Panel Corrected Standard Error (PCSE) regression.

4. Results and Discussion

4.1. Descriptive and Normality Analysis

In Table 2, the results of descriptive and normality analyses are presented. Although all sample countries share similar average values for most variables, there are notable differences in certain variables for a few countries. For instance, Sri Lanka has the highest mean values for both PC and TRD at 39.994 and 58.417%, respectively. These findings suggest that Sri Lanka has the highest PC and is more involved in international trade compared to other sample countries. Furthermore, the results reveal that India receives the highest REM and FDI, amounting to $44.632 billion and 1.648% of real GDP, respectively. This indicates that India attracts more FDI than other South Asian countries and also receives significant REM, contributing to an improvement in its PC.

Moreover, the results indicate that Pakistan has the lowest average values for PC (30.478) and TRD (29.990%), suggesting a relatively lowest PC for the economy and poor performance in international trade. Additionally, the results show that Sri Lanka has a relatively better INQ at -0.791, followed by India (-1.058), Bangladesh (-1.237), and Pakistan having the lowest mean value of INQ (-2.135). These results suggest that Sri Lanka has a relatively better institutional and regulatory environment among the sample countries, while Pakistan has the lowest institutional quality.

Furthermore, the standard deviation (SD) of ER values indicates that Sri Lanka has experienced severe currency depreciation, followed by Pakistan, India, and Bangladesh. The main reasons for currency depreciation in Sri Lanka and Pakistan include high inflation, public debt, a decline in international tourism receipts, balance of payment crisis, and political instability (Mallick, 2023; Moazzam, 2023). Moreover, Bangladesh experienced the highest rate of urbanization growth (3.643% per year), followed by Pakistan (2.587%), India (2.506%), and Sri Lanka (0.896%). Additionally, the mean value of CAP for Sri Lanka is the highest ($1039.806 per person), followed by India ($428.636 per person), Bangladesh ($301.243 per person), and Pakistan ($195.560 per person).

Table 2
Descriptive Statistics and Normality Analysis

Variables	Bangladesh					India				
	Mean	SD	Min	Max	S-Wilk	Mean	SD	Min	Max	S-Wilk
PC	32.304	5.565	24.344	40.711	1.404[c]	39.712	4.253	32.427	45.282	1.445[c]
TRD	35.630	7.058	26.271	48.111	1.393[c]	42.874	8.693	25.993	55.794	0.594
REM	8.779	2.632	3.651	11.934	1.129	44.632	11.093	23.709	62.059	-0.821
FDI	0.813	0.445	0.096	1.735	-0.262	1.648	0.692	0.606	3.621	0.778
INQ	-1.237	0.293	-1.864	-0.726	-0.357	-1.058	0.242	-1.510	-0.569	-0.762
ER	72.659	10.934	52.142	91.745	0.905	55.768	12.000	41.349	78.604	2.299[b]
URG	3.643	0.411	3.020	4.560	1.25	2.506	0.224	2.025	2.938	-1.376
CAP	301.243	138.375	129.944	584.076	0.308	428.636	162.646	162.441	704.579	1.815[b]
Variables	**Pakistan**					**Sri Lanka**				
	Mean	**SD**	**Min**	**Max**	**S-Wilk**	**Mean**	**SD**	**Min**	**Max**	**S-Wilk**
PC	30.478	2.453	26.030	33.815	1.325[c]	39.994	4.032	33.390	45.338	1.998[b]
TRD	29.990	3.321	24.702	35.682	1.275	58.417	14.902	37.029	88.636	2.218[b]
REM	10.084	3.042	2.476	14.293	3.553[a]	3.917	1.083	1.443	5.558	1.232
FDI	1.096	0.952	0.356	3.668	4.178[a]	1.184	0.359	0.514	1.864	0.033
INQ	-2.135	0.492	-2.810	-1.105	1.418[c]	-0.791	0.604	-1.904	0.090	0.628
ER	95.917	40.790	53.648	204.867	1.507[c]	134.393	52.038	77.005	322.633	1.326[c]
URG	2.587	0.504	1.780	3.691	1.186	0.896	0.289	0.479	1.858	2.57[a]
CAP	195.560	23.272	158.717	244.822	0.688	1039.806	431.619	432.745	1798.810	1.588[c]

Note: [a], [b], [c] indicates significance at 1, 5, and 10 percent level, respectively. REM, and FDI are measured in billion US$; CAP is measured in US dollar per capita. Min and Max refer to minimum and maximum, respectively. Observations (N)= 92.

These results suggest that Sri Lankan economy has a far better economic infrastructure than the rest of the sample countries, while Pakistan has the poorest. Lastly, the table also reports the Shapiro-Wilk statistics (S-Wilk) for testing the normality or distribution of all the variables. The table shows mixed results, indicating that almost half of the variables do not follow normal distribution.

4.2. Correlation Analysis

In this section, correlation analysis is presented in Table 3. Pearson's coefficient of correlation (r) is used to indicate the direction and strength of the relationship between two variables. The results indicate that PC has significant and positive correlation with TRD (0.378), REM (0.438), FDI (0.263), ER (0.360), CAP (0.476), and INQ (0.605), while PC has a significant negative correlation with URB (-0.581). These findings suggest that open economies tend to have relatively higher PC. In addition, economies with high REM and FDI inflows, tend to experience higher economic growth and have higher PC (Hasan et al., 2022).

Furthermore, the positive correlation between PC and ER suggests that an increase in PC without increasing a corresponding increase in aggregate demand may lead to a reduction in the general price level in the economy. Thus, in turn, may result in the depreciation of local currency (Arintoko et al., 2023). Other contributing factors may include rising external debt, global financial crisis, and speculative activities. Furthermore, the positive association between PC and CAP implies that economies that invest more in their physical capital would experience higher PC. On the other hand, the negative correlation of PC with URB suggests that countries with high urbanization growth tend to have lower PC. Moreover, countries with high INQ tend to have high PC.

Moreover, TRD shows a significant and negative correlation with URB while indicating significant positive correlation with REM, FDI, ER and INQ. Moreover, the results show that REM has a significant negative correlation with FDI, CAP, URB, while showing a significant positive correlation with ER and INQ. Additionally, FDI exhibits a significant negative correlation with ER and a significant positive correlation with URB. Furthermore, ER has a statistically negative relationship with CAP and URB. Moreover, CAP and URB show a significant positive correlation. Lastly, the variable of URB exhibits a significant negative correlation with INQ.

Table 3
Correlation Analysis

Variables	PC	TRD	REM	FDI	ER	CAP	URB	INQ
PC	1							
TRD	0.378[a]	1						
REM	0.438[a]	0.561[a]	1					
FDI	0.263[b]	0.316[a]	-0.018	1				
ER	0.360[a]	0.148	0.624[a]	-0.259[b]	1			
CAP	0.476[a]	-0.161	-0.496[a]	0.354[a]	-0.455[a]	1		
URB	-0.581[a]	-0.630[a]	-0.774[a]	-0.156	-0.574[a]	0.188[c]	1	
INQ	0.605[a]	0.278[a]	0.435[a]	-0.037	0.137	0.166	-0.251[b]	1

Note: [a], [b], [c] shows significance at 1, 5, and 10 % level, respectively.

4.3. Regression Results

4.3.1 Impact of TRD and FCI On PC

The estimations of models 1-3 through regression analysis are presented in Table 4. The results show that TRD has a statistically significant positive impact on PC in the sample countries. The findings suggest that open economies increase their PC through various important channels. First, TRD help utilize underutilized resources and increases the economic growth of developing countries (Frankel & Romer, 2017). In addition, TRD provides foreign exchange reserves used in

investment and capacity building (Feyrer, 2019). Our findings are consistent with the existing empirical literature Edwards (1998); Feyrer (2019); Frankel and Romer (2017); Gnangnon (2021); Harrison (1996); (Keho, 2017; Ogbuabor et al., 2023); Ohnsorge and Quaglietti (2023); Wacziarg and Welch (2008); Winters et al. (2004), providing empirical support to our study.

Furthermore, the results show that the coefficient of REM is positively and statistically significantly associated with PC. This finding implies that REM is an important source of foreign exchange, and income for households living in these countries. These funds are not only used for personal consumption but also used in investment and financing purposes, improving both social and economic infrastructure, providing support to firms and the business sector, enhancing PC. Our findings are consistent with the extant empirical studies Chandio et al. (2023); Dzeha et al. (2017); Eggoh et al. (2019); Girma, Kneller, and Pisu (2005); Yadeta and Hunegnaw (2022), supporting our results.

Moreover, the regression results show that the association between FDI and PC is statistically insignificant. The results suggest that economies with sufficient absorptive capacity tend to experience more pronounced positive effects of FDI. Economies with low human development and low absorptive capacity tend to have negligible or negative effects of FDI on PC. This finding is consistent with the existing empirical literature (Girma et al., 2005; Li & Tanna, 2019; Moralles & Moreno, 2020). Thus, the study concludes that REM is a relatively more important contributor to the development of PC in the sample countries.

Table 4
Regression Results of OLS, PCSE, FGLS

	MODEL-1			MODEL-2			MODEL-3		
Variables	**OLS**	**PCSE**	**FGLS**	**OLS**	**PCSE**	**FGLS**	**OLS**	**PCSE**	**FGLS**
TRD	0.115[a]	0.038[c]	0.038[b]						
	(0.022)	(0.020)	(0.016)						
REM				5.884[a]	1.787[a]	1.779[a]			
				(0.132)	(0.312)	(0.748)			
FDI							0.347	0.131	0.114
							(0.395)	(0.165)	(0.146)
ER	7.848[a]	3.717[a]	3.047[a]	5.278[a]	4.215[a]	3.667[a]	6.434[a]	3.985[a]	3.564[a]
	(1.191)	(0.826)	(0.711)	(1.020)	(0.821)	(0.728)	(1.171)	(0.842)	(0.750)
CAP	3.696[a]	3.695[a]	3.793[a]	4.438[a]	3.909[a]	4.001[a]	3.406[a]	3.583[a]	3.765[a]
	(0.157)	(0.361)	(0.349)	(0.146)	(0.380)	(0.359)	(0.162)	(0.343)	(0.336)
URB	-1.407[a]	-1.294[a]	-1.177[a]	-0.236	-0.941[b]	-0.950[a]	-2.599[a]	-1.633[a]	-1.473[a]
	(0.434)	(0.380)	(0.359)	(0.352)	(0.372)	(0.353)	(0.344)	(0.373)	(0.369)
INTERCEPT	-92.172[a]	-71.354[a]	-72.102[a]	-102.226[a]	-79.468[a]	-79.966[a]	-71.490[a]	-67.463[a]	-71.459[a]
	(9.634)	(11.403)	(9.969)	(6.298)	(12.044)	(10.339)	(8.642)	(11.156)	(9.863)
Observations	92	92	92	92	92	92	92	92	92
R-squared	0.832	0.863	n/a	0.912	0.868	n/a	0.796	0.859	n/a
F/Wald-Chi^2 Statistic	506.22[a]	146.51[a]	163.10[a]	701.80[a]	129.13[a]	158.35[a]	414.98[a]	157.74[a]	166.12[a]

[a], [b], [c] shows significance at 1, 5, and 10 % level, respectively.

Furthermore, the results highlight that ER has a positive effect on PC in the South Asian economies. The nonnegative relationship between ER and PC represents the potential beneficial effects of local currency depreciation on exports volume, leading to higher production and employment in the export-oriented and labor-intensive industries in the sample countries (Hall, Daneke, & Lenox, 2010). Moreover, the results indicate a significant positive impact of CAP on PC, implying that a higher CAP increases PC in the economies (Amjed & Shah, 2021; Solow, 1962).

Lastly, the results reveal that URB has an adverse effect the PC in the sample economies, implying that these countries experience lower PC due to high urbanization for several reasons. One reason is the re-allocation of productive resource from the agriculture and manufacturing

sectors to the service sector to provide services and employment to urban residents. Furthermore, rapid urbanization may create labor market inefficiencies by shifting productive labor away from the manufacturing and agriculture sectors toward the service sector. Additionally, several other issues might hamper PC due to rapid urbanization in a developing economy, such as lack of economic infrastructure, changes in land use, and environmental changes reducing agricultural productivity, leading to shortage of essential food and industry inputs. Our findings are consistent with the existing empirical literature (Beckers, Poelmans, Van Rompaey, & Dendoncker, 2020; Liu et al., 2021; Mendez, Atienza, & Modrego, 2023; Zhong, Hu, Wang, Xue, & He, 2020).

4.3.2. Moderating Effects of INQ on TRD, FCI, PC relationships.

The empirical results of the moderating effects of INQ on the relationship between TRD and PC, and FCI and PC are reported in Table 5. The results show that INQ has a significant and positive impact on PC in the sample economies.

Table 5
Regression Results of OLS, PCSE, FGLS

VARIABLES	Model 4			Model 5			Model 6		
	OLS	PCSE	FGLS	OLS	PCSE	FGLS	OLS	PCSE	FGLS
TRD	-0.008	0.065[b]	0.071[b]						
	(0.052)	(0.032)	(0.029)						
REM				3.361[a]	2.744[a]	2.528[a]			
				(0.672)	(0.560)	(0.500)			
FDI							0.178	-0.193	-0.277
							(0.782)	(0.363)	(0.360)
INQ	4.906[a]	2.859[a]	4.638[a]	3.278[a]	1.958[a]	1.883[a]	3.623[a]	1.822[a]	1.774[a]
	(1.310)	(0.901)	(0.843)	(0.440)	(0.560)	(0.525)	(0.520)	(0.453)	(0.437)
TRD*INQ	1.056[a]	1.010[a]	1.013[a]						
	(0.334)	(0.198)	(0.185)						
REM*INQ				-2.295[a]	-9.926[a]	-9.389[a]			
				(0.379)	(0.470)	(0.471)			
FDI*INQ							-0.404	-0.317	-0.336
							(0.359)	(0.208)	(0.215)
ER	6.873[a]	4.163[a]	3.862[a]	5.956[a]	5.569[a]	5.581[a]	6.149[a]	4.747[a]	4.520[a]
	(1.029)	(0.807)	(0.684)	(0.801)	(0.675)	(0.608)	(0.883)	(0.818)	(0.707)
CAP	3.250[a]	3.454[a]	3.344[a]	4.193[a]	3.835[a]	3.846[a]	2.979[a]	3.320[a]	3.354[a]
	(0.170)	(0.311)	(0.280)	(0.165)	(0.237)	(0.222)	(0.187)	(0.283)	(0.270)
URB	-1.620[a]	-1.424[a]	-1.507[a]	-0.269	-0.999[a]	-0.985[a]	-2.045[a]	-1.882[a]	-1.955[a]
	(0.312)	(0.346)	(0.350)	(0.309)	(0.348)	(0.351)	(0.254)	(0.330)	(0.341)
INTERCEPT	-67.626[a]	-66.564[a]	-63.213[a]	-94.492[a]	-82.139[a]	-82.917[a]	-56.664[a]	-61.443[a]	-61.668[a]
	(9.378)	(10.146)	(8.479)	(6.617)	(8.704)	(7.652)	(7.655)	(9.671)	(8.390)
Observations	92	92	92	92	92	92	92	92	92
R-squared	0.914	0.886	n/a	0.946	0.909	n/a	0.905	0.881	n/a
F/Wald-Chi^2 Statistic	275.92[a]	223.79[a]	243.27[a]	482.14[a]	528.79[a]	493.51[a]	292.86[a]	280.90[a]	264.83[a]

Note: [a], [b], [c] shows significance at 1, 5, and 10 % level, respectively. Standard errors in parentheses.

The results suggest that economies with stable political conditions and an effective regulatory environment tend to have high PC due to several reasons. First, high INQ establishes and maintain investors' confidence, leading to high investment and sustainable economic growth, which increases PC of the economy (Bouchoucha & Benammou, 2020; Hayat, 2019). Second, economies with better INQ not only maintain domestic investment levels but also attract foreign investments and experience technological diffusion through FDI, expanding the country's PC and real income (Krammer, 2015). Third, economies with high INQ could focus on the social development of their population, including education, health, and security, which increase the labor productivity of the economy leading to high PC (Adegboye et al., 2020; Jude & Levieuge, 2017). Our finding is consistent with the existing empirical literature on the INQ and PC nexus (Hasan et al., 2022; Jude & Levieuge, 2017; Li & Tanna, 2019; Nepal et al., 2020).

Furthermore, the results show that INQ has a significant positive impact on the relationship between TRD and PC for the sample countries. The results suggest that high INQ enhances the beneficial effects of TRD on PC of the economies due to several reasons. First, high INQ allows domestics firms to operate more efficiently and increases the confidence of investors, leading to higher exports (Rashid et al., 2017). Second, high INQ not only creates a stable regulatory environment but also saves a lot of resources that would otherwise be used for conflict resolution and security purposes (Collier & Hoeffler, 2005). Our findings are consistent with the existing empirical literature, providing support for our study (Kpognon et al., 2022; Kumeka et al., 2023; Omoke & Opuala–Charles, 2021).

On the other hand, the results reveal an interesting and unique finding regarding the impact of INQ on REM-PC nexus. The empirical findings indicate that INQ has a significantly negative moderating effect on the REM-PC nexus in the sample economies. These findings imply that stability and an effective regulatory environment reduce the dependency of the sample nations on REM to build PC. Furthermore, high INQ reduces incentives for household to divert their REM toward investment, and REM would be used for consumption and leisure purposes. Our findings are consistent with the existing literature, providing support to our results (Akçay & Karasoy, 2019; Ngoma, Ismail, & Law, 2021).

Moreover, the findings in Table 5 indicates that INQ does not moderate the effects of FDI on the PC, suggesting that INQ might not play any role in determining the impact of FDI on PC of the economies, and other factors such as human development, technological advancement, and market size are considered more important (Bodman & Le, 2013).

Additionally, another reason could be the 'threshold effect' which refers to the minimum level of INQ required to attract and retain FDI, beyond which INQ does not affect the relationship between FDI and PC (Girma et al., 2005). Moreover, resource-based nations often receive relatively more FDI, and it does not depend on INQ. Our findings are consistent with the existing empirical literature (Li & Tanna, 2019; Ogbuabor et al., 2023).

5. Conclusion

The study estimates the effects of Trade Openness (TRD) and Foreign Capital Inflows (FCI) on the Productive Capacity (PC) of four South Asian economies (Bangladesh, India, Pakistan, and Sri Lanka) for the period of 2000 to 2022. Furthermore, the study also examines the moderating effects of Institutional Quality (INQ) on the impact of TRD and FCI on PC of the sample nations. FCI includes two important components: International Remittances (REM) and Foreign Direct Investment (FDI). Furthermore, INQ is proxied by the Political Stability Index (higher value is better). The findings show that TRD has a significant positive impact on PC of the sample countries, suggesting that more open economies tend to have higher PC. In addition, the results show that REM also increases PC of the sample countries, indicating the important role of these funds for PC and sustainable economic development of these economies. In contrast, the findings show no evidence of the effects of FDI on PC in the sample economies,

suggesting that FDI might influence the economic growth of these countries, it does not explain the variation in the PC.

Moreover, the results also provide evidence of the significant moderating effects of INQ on the relationship between TRD-PC of the economies. The findings reveal that high INQ improves and enhances the beneficial effects of TRD on PC. However, the study reveals an interesting and unique finding regarding the negative moderating role of INQ on the REM and PC relationships. The results show a significant negative moderating effect of INQ on the relationship between REM and PC, suggesting that high INQ reduces the positive impact of REM on PC by reducing nations' dependence on REM for investment and capacity building. Further, the findings suggest that high INQ allows economies to allocate funds to productive investment and reduces the incentives for household to channel their REM into investments, leading to higher consumption. Lastly, the empirical findings reveal that INQ does not moderate the relationship between FDI and PC. This finding suggests that economies need a minimum level of INQ necessary to attract FDI, beyond which FDI is not affected by INQ. In addition, resource-based economies receive higher FDI, it does not depend on INQ.

The study provides useful implications based on its findings. Firstly, South Asian countries must open their economies to free international and regional trade to enhance PC by utilizing resources more efficiently and gaining from trade. Secondly, well-functioning financial markets should be developed to channel REM into the economy through formal channels, leading to higher foreign reserves and PC. Thirdly, governments must create free-trade zones (FTZ) to attract more trade and FDI, creating jobs and expanding PC of the economy. Fourthly, the government must make great efforts to create an effective regulatory environment to sustain the beneficial effects of TRD and FCI on PC of the sample economies. Moreover, the study has some limitations. Firstly, the study has used the data of four South Asian countries, thus the findings are not generalizable to other countries and should be interpreted with caution. Secondly, we have used only two measures of FCI—FDI and REM, future studies may include other components of FCI such as foreign portfolio investment and official development assistance to provide comprehensive insights.

Authors' Contribution

Muhammad Amin Hasan: Writing Original Draft, Literature Reviewing and Editing, Data Analysis and Interpretations.
Sheikh Nabeel Badar: Review and Editing.
Aman Abbas Ghouri: Data Collection and Formatting.
Muhammad Saad: Proofreading and Referencing.

Conflict of Interests/Disclosures

The authors declared no potential conflict of interest w.r.t the research, authorship and/or publication of this article.

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