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Global Value Chain Participation in Pakistan: The Role of Free Trade Agreements

Batool Bushra[1] and Hiroyuki Taguchi[2]*

Abstract

This study used a structural gravity trade model and the Trade in Value-Added database of the Organization for Economic Cooperation and Development to examine how free trade agreements (FTAs) impact global value chain (GVC) participation in Pakistan. This study contributes to the literature by enriching evidence regarding the relationship between FTAs and GVCs, an issue rarely addressed in prior research. The study found that South Asian FTA terms related to the relationship between Pakistan and India, and Pakistan's FTAs with China and Malaysia facilitated backward GVC participation in Pakistan by increasing foreign value-added inputs from India, China, and Malaysia into Pakistan's exports. The implication for policymakers is that potential exists for exploring GVC activities because some GVC linkages, such as those between Pakistan and Bangladesh, remain underdeveloped.

JEL classification: F13, F14, O53.
Keywords: South Asian Free Trade Agreement, Global value chains, Backward GVC participation, Structural gravity trade model, Trade in Value-Added database.

[1] Graduate School of Humanities and Social Sciences, Saitama University.
[2*] Graduate School of Humanities and Social Sciences, Saitama University.
[*]Corresponding author.

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1. Introduction

Asian economies are at the center of global economic development. Although East and Southeast Asian economies have achieved substantial growth, South Asian economies have lagged in terms of economic development. Compared to economies in East and Southeast Asian countries, those in South Asian countries are characterized by premature industrialization and a lack of global value chain (GVC) linkages. Table 1 presents a comparison between the economic profiles of selected South Asian economies (Bangladesh, India, and Pakistan) and those of selected Southeast Asian economies (Malaysia and Thailand). In terms of income classification,[3] the three South Asian economies fit within the lower-middle groups. In terms of industrialization, in 2022, the average manufacturing value added as a percentage of the gross domestic product (GDP) in the three South Asian economies was 17.6%. This proportion is significantly lower than those of emerging Southeast Asian economies, such as Malaysia (23.4%) and Thailand (24.9%), and lower than the average of East Asian and Pacific countries, excluding high-income countries (25.2%). Regarding the extent of GVC linkages, the average GVC participation ratio[4] in manufacturing in 2020 in the selected South Asian economies was 26.1%. This ratio is also significantly lower than those of emerging Southeast Asian economies, such as Malaysia (42.6%) and Thailand (38.1%). Participation in GVCs is key to facilitating economic development and industrialization. The World Bank [1] argues that GVCs promote economic growth through specialization in production processes, which enhances efficiency and productivity, and that durable inter-firm relationships also promote technology diffusion along a chain. The World Bank [1] estimates that a 1% increase in GVC participation will boost per capita income by more than 1%. The theoretical foundation for explaining how GVC participation facilitates industrialization is the "productivity enhancement" that manufacturing firms obtain from GVC participation. Baldwin and Yan [2] argue that exporters with forward GVC participation can enjoy learning-by-exporting effects through technological transfer, whereas importers from backward GVC-participation countries can obtain cost-saving effects. The former productivity effects are considered more permanent, whereas the latter effects are more immediate. Taguchi and Tsukada [3] demonstrate that participation in GVCs helps mitigate the risk of premature deindustrialization in emerging and developing Asian economies. Thus, the involvement of South Asian economies in GVCs is crucial for industrialization and economic development.

The concept of GVC was initially introduced by Hummels et al. [4] as "vertical specialization." Koopman et al. [5,6] generalize the concept of vertical specialization by accounting for all sources of value-added in gross exports across multiple countries and sectors, thereby integrating vertical specialization and value-added trade into the literature. Following their GVC conceptualization, value-added trade data have been developed by international organizations, such as the Organization for Economic Cooperation and Development (OECD) and the World Trade Organization (WTO). These databases have made it possible to analyze the value-added contributions of gross exports, resulting in numerous empirical studies on GVCs. The "fragmentation" model discussed by Jones and Kierzkowski [7] explains GVC mechanics in the context of intra-industry trade. They argue that the decision of a firm to fragment production processes depends on differences in location advantages (for example, differences in factor prices such as wages) and service-link costs. They defined service-link costs as bundles of activities that connect fragmented production blocks, comprising coordination, administration, transportation, and financial services. Customs duties are a notable service-link cost because GVC activities involve cross-border transactions that include the manufacturing of parts and components. Joining free trade agreements (FTAs) can reduce these tariffs, mitigate service-link costs, and promote GVC activities among member countries.

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[3] Income classes are based on the World Bank's income classifications: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519.

[4] The method and data used to measure the GVC participation ratio are explained in subsection 2.1.

The South Asian Association for Regional Cooperation (SAARC) has played a central role in forming a regional FTA in South Asia, initiating the South Asian Free Trade Agreement (SAFTA) in 2006.[5] In addition, bilateral FTAs have been implemented among SAARC members, such as those between India and Sri Lanka (2000), Pakistan and Sri Lanka (2005), India and Bhutan (2006), and India and Nepal (2009). South Asian countries have also concluded FTAs with partners outside South Asia. These include those between India and the Association of Southeast Asian Nations (ASEAN) in 2010, India and Japan in 2011, India and Korea in 2010, India and Singapore in 2005, Pakistan and China in 2007, and Pakistan and Malaysia in 2008.[6]

This study examines how FTAs impact the expansion of GVCs in South Asia, focusing on Pakistan. It uses the OECD's Trade in Value-Added (TiVA 2023) database[7] to create GVC variables and applies a structural gravity trade model for estimation. The reason for focusing on Pakistan in South Asia is because OECD-TiVA 2023 dataset availability is limited to three countries: Bangladesh, India, and Pakistan. In 2020, among these three countries, Pakistan had the lowest GVC participation ratio in manufacturing, as listed in Table 1. This implies that it has the greatest potential to extend GVC participation under FTAs.

This study provides novel evidence on the relationship between FTAs and GVCs in Pakistan, a topic rarely investigated in previous research. GVCs, which are characterized by vertical trade, can be expressed using ordinary gross trade values and value-added trade values. Kimura et al. [8] used the gross trade values of parts and components in a gravity trade model to examine the vertical trade of fragmented manufacturing products in an intra-industry setting. However, gross trade values are not necessarily the most accurate expression of vertical trade because traded parts and components can be used to fulfill domestic final demand and not exclusively for export processing. By contrast, value-added trade data precisely denote vertical trade in GVC linkages. More importantly, value-added trade data are suitable for examining the relationship between FTAs and GVCs because FTA rules of origin often apply value-added measures. Thus, this study used the OECD-TiVA 2023 dataset to provide evidence on the relationship between FTAs and GVCs in Pakistan.

Furthermore, this study used a refined approach—the structural gravity trade model—to analyze GVCs. The traditional gravity trade model explains bilateral trade flows in terms of the economic sizes of two countries and the distance between them. However, Piermartini and Yotov [9] argue that the traditional model yields biased and inconsistent estimates. They proposed a more robust and theoretically sound econometric approach, that is, a structural model.

The remainder of this article is organized as follows. Section 2 presents a literature review of the trade impacts of South Asian FTAs and clarifies the contributions of this study. Section 3 describes the empirical analyses, including the GVC trends and a structural gravity trade model to examine the nexus between FTAs and GVCs in Pakistan. Finally, Section 4 summarizes and concludes the paper.

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[5] The association was established in 1985 by its original members: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Afghanistan joined SAARC in 2007 and SAFTA in 2011.

[6] The FTA information is based on the World Trade Organization (WTO): https://rtais.wto.org/UI/PublicAllRTAList.aspx.

[7] See the website: https://data-explorer.oecd.org/.

2. Literature review and contribution

Few studies have addressed the impacts of South Asian FTAs. This is primarily owing to the relatively nascent stages of FTA and GVC development in the region compared with those in the East and Southeast Asian economies. Previous studies have obtained mixed, varying results, depending on the type of FTA (regional or bilateral) and the traded products involved.

Regarding the trade creation effect of FTAs in all industries, Islam et al. [10] found no evidence to support the effects of SAFTA on member economies. Suhail and Sreejesh [11] and Taguchi and Rubasinghe [12] identified a trade creation effect in the FTA between India and Sri Lanka, but not in SAFTA. Regarding the impact of the South Asian FTA on specific industries, Shaikh et al. [13] verified the positive impact of the SAFTA on textile and rice exports from Pakistan to India. Similarly, Mahmood and Jongwanich [14] argue that Pakistan-related FTAs have a greater effect on agricultural products than on manufacturing. Wijesinghe and Yogarajah [15] specifically examined the impact of SAFTA on GVC participation in South Asia but found it to be negligible in most sectors.

This study contributes to the literature by providing updated and enriched evidence on the relationship between FTAs and GVCs in Pakistan. Compared with previous studies, this study used a novel approach and dataset, leveraging the structural gravity trade model and OECD-TiVA 2023 data.

2.1 Empirical analyses

This section describes the empirical analyses, GVC trends, and a structural gravity trade model to examine the relationship between FTAs and GVCs in South Asia.

2.2 GVC Trend in Pakistan

This subsection identifies the trend in GVCs and the origins of foreign value added in gross exports related to SAFTA formation in 2006, with a focus on Pakistan. Data were retrieved from the OECD-TiVA 2023 dataset. According to Koopman et al. [5], a vertical specialization chain involves two types of GVC participation.

$$\text{GVC Participation} = \text{FVA} / \text{E} + \text{IVA} / \text{E} \quad (1)$$

In Equation (1), FVA, IVA, and E represent "foreign value-added embodied in gross exports," "domestic value-added embodied as intermediate inputs in other countries' gross exports," and "gross exports," respectively. The first term, (FVA/E), represents downstream GVC participation, which corresponds to backward GVC participation. The second term (IVA/E) indicates upstream GVC participation, which corresponds to forward GVC participation, following World Bank [1].

This study focused on backward GVC participation because industrialization and GVC linkages in Pakistan are still nascent, as listed in Table 1. Its manufacturing exports depend on foreign inputs, and it has limited capacity to supply industrial inputs (manufacturing materials, parts, and components) to third countries' exports in its GVC participation. This indicates that manufacturing in Pakistan contributes to downstream rather than upstream in GVCs. Backward GVC participation significantly contributes to industrializing developing economies, including Pakistan, because it involves intermediate inputs containing foreign technology. This boosts the competitiveness of their exports by combining foreign technology with local labor, capital, and technology [16].

The OECD-TiVA 2023 dataset used in this study makes it possible to decompose the value of gross exports into value-added origins of the home and foreign countries. The trends in backward GVC participation (foreign value-added as a percentage of gross exports) in Pakistan for 1995–2020 were analyzed in terms of total industry and manufacturing (Figure 1). Figure 1 shows that the GVC participation ratios in Pakistan range from 5% to 15%, which are lower than those in Malaysia and Thailand, as listed in Table 1. No clear trends are observed, and the total industry ratio increases slightly from 9.0% in 1995 to 10.9% in 2020, with fluctuations during the sample period.

Regarding the impact of FTAs, regional GVC activities in Pakistan are more important than their general trends. Figure 2 presents the foreign value-added (FVA) origins in gross exports in Pakistan (FVA origins are shown as a percentage of the total FVA). India's share of FVA origins is relatively large and reveal an acceleration following SAFTA enforcement in 2006: India's FVA share increased from 3.4% in 2005 to 4.4% in 2007 in total industry and from 3.6% in 2005 to 5.4% in 2007 in manufacturing. In contrast, Bangladesh's share remains minimal (below one percent), with no significant increase after SAFTA enforcement. China's proportion of FVA origins is large and accelerated after its FTA with Pakistan in 2007, whereas Malaysia's share shows no increasing trend even after its FTA with Pakistan in 2008.
This suggests strong GVC linkages between Pakistan's exports and FVA inputs from India and China and the incremental impacts of FTAs on GVCs. However, the impact of FTAs on GVCs should be verified using a sophisticated econometric model because GVCs are influenced by variables other than FTAs.

2.3 Estimation of structural gravity trade model

In this subsection, a structural gravity trade model is estimated to examine the impact of FTAs on Pakistan's GVCs. The estimation model and sample data are outlined, and the estimation outcomes and discussion are presented.

2.4 Specification of the estimation model

This study adopted the comprehensive and theoretically consistent gravity model estimation approach proposed by Piermartini and Yotov [9] and uses panel data with bilateral time-invariant fixed effects and multilateral time-varying price resistance terms. Model estimation was conducted using generalized least squares (GLS). The model is specified in Equation (2).

$$\ln FVA_{ij,t} = \alpha_1 SAFTA + \alpha_2 FTAs + \pi_{i,t} + rex_{j,t} + \mu_{ij} + \varepsilon_{ij,t} \quad (2)$$

Here, subscripts *i*, *j*, and *t* denote the host-exporting economy, Pakistan (receiving FVA in exports), origin economies (offering FVA in exports), and trading years, respectively. FVA is the foreign value added in exports for the total industry (FVA_T) and manufacturing (FVA_M). SAFTA and FTAs are dummy variables that denote the presence of SAFTA and other FTAs between Pakistan and its partners, respectively. These variables are equal to one if an agreement exists at time *t* and zero otherwise. $\pi_{i,t}$ is time-varying fixed effects for the host economy (Pakistan) *i*, and $rex_{j,t}$ is the bilateral real exchange rate of origin economy *j* to control for unobservable multilateral resistance. μ_{ij} is the pair time-invariant fixed effects between economies *i* and *j* to address FTA endogeneity and time-invariant bilateral trade costs. ε_{ij} is an error term, and α_1 and α_2 are estimated coefficients. "ln" denotes the logarithmic form, which is used to avoid scaling issues.
Equation (2) in the structural gravity model aligns with Piermartini and Yotov's [9] six recommendations: (i) use panel data that allow for treatment and estimation of the effects of time-invariant bilateral trade costs; (ii) use interval data to allow for adjustments in trade flows; (iii) include intra-national trade flows that ensure consistency with gravity theory and capture the effects of globalization on international trade; (iv) use directional time-varying fixed effects to control for unobservable multilateral resistance; (v) employ pair fixed effects to address FTA endogeneity and time-invariant bilateral trade costs; (vi) estimate gravity with Poisson pseudo maximum likelihood (PPML) to address any trade-data issues related to heteroskedasticity and zero trade flows.
Equation (2) fulfills the recommendations above, except (ii) and (vi). Regarding recommendation (ii), this study used data pooled over consecutive years rather than interval data because of the short sample period (1995–2020). Instead, lagged-year tests were conducted to allow for adjustments in value-added trade flows in response to FTA enforcement, thereby determining the FTA phase-in effects. Recommendation (iii) requires gravity estimation to include intra-national trade flow. Following this recommendation, this study included domestic value-added (DVA = FVAij, i=j) in exports, as DVA corresponds to the recommended intra-national trade flows. Recommendation (iv) suggests the use of directional time-varying fixed effects. This study diverges from conventional gravity models by designating Pakistan as the exclusive host

economy and simulating FVA inflows from partner economies. Consequently, time-varying fixed effects were implemented only for the host economy (Pakistan) but not for the origin economies, as applying time-varying fixed effects to origin economies would consume a degree of freedom with only one host economy. Instead, this study employed a bilateral real exchange rate (*rex*) of origin economies to control for unobservable multilateral resistance, following Rose [17] and Vandenbussche and Zanardi [18]. Concerning recommendation (vi), GLS is used instead of the recommended PPML because no zero values were found in the value-added data sample; thus, the estimation only needs to address the issue of heteroskedasticity. To examine the existence of heteroscedasticity in the estimations of Equation (2), a panel cross-section heteroscedasticity likelihood ratio test was conducted in the Equation, and resulted in a rejection of the null hypothesis that residuals are homoscedastic at the 99 percent significance level in all the estimations. Thus, the application of GLS was justified in this study.

The primary concerns in the estimation are SAFTA and FTA effects (α_1 and α_2). The significant and positive coefficients, α_1 and α_2, indicate increases in FVA, reflecting increased GVC backward participation in Pakistan under SAFTA and FTA.

3. Sample data

The FVA data were retrieved from the OECD-TiVA 2023 dataset, as described in Section 3.1. The host country is Pakistan, and the original FVA economies were selected from its 30 major host country partners, as listed in Table 2, comprising over 90% of all FVAs. The sample period was 1995–2020 using the full sample from the OECD-TiVA 2023 dataset. Panel data were constructed for a 26-year period, combining host and origin economies ($26 \times 1 \times 31 = 806$).[8]

The sample period covered the enforcement of SAFTA in 2006 (with Bangladesh and India as Pakistan's partners) and FTAs between Pakistan and China in 2007 and between Pakistan and Malaysia in 2008 under the OECD-TiVA 2023 dataset availability constraints.[9] Consumer prices and bilateral nominal exchange rates were obtained from the World Economic Outlook Database (October 2023) and the International Financial Statistics by the International Monetary Fund, respectively, to calculate the bilateral real exchange rate (rex) for the original economies.[10] Bilateral real exchange rates were computed using Equation (3):

$$(CPI_{origin\_economy} / ER_{natioanl\_curency\_per\_US\,dollar}) / (CPI_{Pakistan} / ER_{natioanl\_curency\_per\_US\,dollar}), \quad (3)$$

where *CPI* is the consumer price index, and *ER* is the bilateral nominal exchange rate in terms of the national currency per US dollar.

4. Results and discussion

Table 3 presents the estimation results of the structural gravity trade model, with a focus on the phase-in effects of FTAs on GVCs in both industry and manufacturing. Table 4 decomposes the SAFTA effects into bilateral impacts on the GVCs between Pakistan and Bangladesh and between Pakistan and India.

In the results for the phase-in effects for total industry (a_i-iii) and manufacturing (b_i-iii), the no-lag effects of all FTAs are significantly positive (Table 3). This means that all Pakistan's FTAs facilitated backward GVC participation by increasing the FVA inputs from SAFTA countries, China, and Malaysia in Pakistan's exports with no lag. Hence, this study focused on the no-lag effect of FTAs in subsequent estimations. The FTA effects in manufacturing are more significant than those in the total industry, with the largest effect in Pakistan's FTA with China, followed by SAFTA and its FTA with Malaysia.

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[8] The origin economies include Pakistan (domestic value-added) following Piermartini and Yotov's (2016) recommendation (iii), as stated in Section 3.2.1.

[9] For instance, the OECD-TiVA dataset does not include Bhutan, the Maldives, Nepal, Sri Lanka, and Afghanistan.

[10] See the website: http://www.imf.org/en/data.

Table 4 presents a breakdown of the total SAFTA effects from Table 3 into bilateral impacts within SAFTA, focusing on the FVA with Bangladesh and India. For both total and manufacturing industries, significantly positive coefficients were found only for the FVA inputs from India and not those from Bangladesh. This suggests that SAFTA enforcement facilitates Pakistan's backward GVC participation with India but not with Bangladesh. This finding is consistent with that of Suhail and Sreejesh [11] and Taguchi and Rubasinghe [12] in the sense that India-related FTAs significantly impact trade flows, although SAFTA does not.

Under FTAs, the tariff rates set by the host countries affect the trade flows behind GVC activities. Table 5 presents a comparison of the average preferential tariff rates in Pakistan under SAFTA and the FTAs with China and Malaysia, with the most favored nation (MFN) rates as a benchmark for common items with the eight-digit Harmonized Commodity Description and Coding System code level in total industry and manufacturing. Tariff rate data were retrieved from the World Integrated Trade Solutions of the World Bank. Table 5 shows that the preferential tariff rates under the SAFTA and FTAs with China and Malaysia are lower than the MFN rates for the total industry and manufacturing.

In Pakistan, the preferential tariff rates for GVCs under FTAs effectively facilitate Pakistan's GVC backward participation, except for that with Bangladesh under SAFTA. Possible reasons for Pakistan's sluggish GVC participation with Bangladesh under SAFTA include the FVA's comparative advantages offered by Bangladesh. As shown in Figure 2, Bangladesh's share as an FVA origin in Pakistan's exports is negligible (less than one percent). This indicates that Bangladesh has fewer comparative advantages in providing FVA to Pakistan's exports. The lack of Bangladesh's comparative advantages against Pakistan seems to originate from the similarity of industrial structure between both countries: export share of textile products in 2020 accounts for over 65% in Bangladesh and Pakistan, and only 11% in India, while that of machinery accounts for 1% in Bangladesh and Pakistan, and 22% in India[11]. This industrial similarity between Bangladesh and Pakistan may limit SAFTA effect on the FVA offered by Bangladesh to Pakistan's exports. Under SAFTA enforcement, Pakistan might even experience a substitution effect on the origins of FVA in its exports from other SAFTA members that were not sampled in this study (for example, Sri Lanka). Therefore, SAFTA's preferential tariff rates may not have contributed to Pakistan's GVC backward participation with Bangladesh.

Additionally, trade flows behind GVC activities are affected by both tariff rates and non-tariff measures (NTM). The FTA effects are not necessarily confined to tariff reduction and elimination but may include other aspects such as non-tariff elimination, coordination of rules of origin, and FTA usability improvements (for example, [19,20]. Therefore, a comprehensive evaluation of FTAs that includes both tariff rates and NTM is necessary to understand how FTAs impact GVCs. One limitation of this study is its focus on tariff effects alone; therefore, it does not capture the full impact of FTAs on the GVCs.

5. Conclusion

This study examined how FTAs impact backward GVC participation in Pakistan by applying a structural gravity trade model using the OECD-TiVA 2023 dataset. This study contributes to the literature by providing evidence of the relationship between FTAs and GVCs, a topic rarely covered in previous studies. The study found that SAFTA, in terms of the relationship between Pakistan and India, and Pakistan's FTAs with China and Malaysia facilitated backward GVC participation in Pakistan by increasing FVA inputs into Pakistan's imports from India, China, and Malaysia.

For policymakers, these results highlight the potential for exploring GVC activities. For instance, the current sluggish backward GVC participation of Pakistan with Bangladesh could be stimulated through industrial diversification in Bangladesh, Pakistan building its comparative advantages, and improving their NTM.

[11] The export data are retrieved from OECD TiVA data (see Note 7).

A limitation of this study is the lack of a detailed analysis of GVCs. Future research should conduct case studies on individual sectors to examine the relationship between GVCs and FTA enforcement. This enables the validation of this study's evidence and the development of more concrete recommendations to facilitate GVCs. Another limitation is the limited focus of the study on NTMs within the FTA framework and their effects on GVC activities. A thorough investigation of NTMs is crucial for comprehensively evaluating the role of FTAs in facilitating GVCs.

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TABLES

Table 1: Profiles of Pakistan and Asian Countries

	Population in 2023 (in million)	GDP per capita in 2023 (in US$)	Income class in 2023	Manufacturing % of GDP in 2023	GVC participation in manufacturing % in 2020
Pakistan	231.5	1,458	lower-middle	13.6	12.5
Bangladesh	170.3	2,652	lower-middle	22.3	25.2
India	1,428.6	2,497	lower-middle	12.9	27.0
Average	-	-	-	17.6	26.1
Malaysia	33.1	12,091	upper-middle	23.4	42.6
Thailand	70.2	7,336	upper-middle	24.9	38.1

Sources
Population and GDP Per Capita: World Economic Outlook Database, International Monetary Fund https://www.imf.org/en/publications/weo.
Income Classification: World Bank, https://datahelpdesk.worldbank.org/knowledgebase/articles/906519
Manufacturing, value added (% of GDP): World Bank Open Data. https://data.worldbank.org/
GVC Participation: Trade in Value-Added (TiVA 2023) database, Organisation for Economic Cooperation and Development (OECD) https://data-explorer.oecd.org/.

Table 2: Pakistan's FVA origins in 2020

Foreign Origins	Total Industry		Manufacturing	
	Value	Share	Value	Share
	mil. USD	% of total FVA	mil. USD	% of total FVA
Australia	35.4	1.5	2.2	0.3
Belgium	23.4	1.0	3.1	0.5
Canada	23.4	1.0	2.6	0.4
Finland	19.0	0.8	1.8	0.3
France	34.0	1.4	6.0	0.9
Germany	73.8	3.1	19.2	2.9
Ireland	20.8	0.9	3.6	0.5
Italy	27.2	1.1	7.0	1.1
Japan	61.9	2.6	19.8	3.0
Korea	55.9	2.3	21.6	3.3
Netherlands	20.9	0.9	3.6	0.5
Spain	15.7	0.7	3.5	0.5
Switzerland	15.5	0.6	3.8	0.6
Türkiye	37.9	1.6	10.7	1.6
United Kingdom	66.7	2.8	5.1	0.8
United States	206.3	8.6	30.5	4.6
Bangladesh	6.1	0.3	0.7	0.1
Brazil	37.6	1.6	4.4	0.7
China	832.1	34.7	336.2	50.7
Egypt	21.6	0.9	2.1	0.3
India	51.1	2.1	9.3	1.4
Indonesia	84.9	3.5	22.9	3.5
Malaysia	31.8	1.3	7.8	1.2
Morocco	28.4	1.2	12.4	1.9
Russia	39.0	1.6	5.5	0.8
Saudi Arabia	169.4	7.1	47.8	7.2
Singapore	50.4	2.1	8.0	1.2
South Africa	62.2	2.6	4.4	0.7
Chinese Taipei	39.0	1.6	16.2	2.4
Thailand	42.6	1.8	15.3	2.3
Total	2,234	93.3	637	96.0
World	2,395		664	

Source: OECD TiVA 2023 database

Table 3: Estimation results: Phase-in effects of SAFTA

	Total industries			Manufacturing		
Equation	a_i	a_ii	a_iii	b_i	b_ii	b_iii
SAFTA	0.783***	1.076**	1.077**	0.865***	0.699	0.694
	(3.733)	(1.979)	(1.995)	(4.250)	(1.312)	(1.306)
$SAFTA_{-1}$		-0.317	0.267		0.180	0.319
		(-0.587)	(0.366)		(0.341)	(0.443)
$SAFTA_{-2}$			-0.640			-0.149
			(-1.191)			(-0.281)
Pakistan & China	0.957***	1.086*	1.112*	1.514***	1.321**	1.326**
	(3.955)	(1.720)	(1.759)	(7.247)	(2.406)	(2.415)
Pakistan & $China_{-1}$		-0.144	-0.262		0.210	-0.183
		(-0.229)	(-0.305)		(0.383)	(-0.245)
Pakistan & $China_{-2}$			0.094			0.419
			(1.148)			(0.762)
Pakistan & Malaysia	0.521***	0.817*	0.814*	0.681***	0.877*	0.862*
	(2.771)	(1.648)	(1.653)	(3.679)	(1.799)	(1.772)
Pakistan & $Malaysia_{-1}$		-0.323	0.133		-0.210	0.087
		(-0.649)	(0.198)		(-0.431)	(0.131)
Pakistan & $Malaysia_{-2}$			-0.496			-0.308
			(-1.003)			(-0.631)
rex	2.601***	2.618***	2.633***	2.215***	2.210***	2.209***
	(16.062)	(16.060)	(16.071)	(15.503)	(15.383)	(15.305)
it fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
i,j fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.875	0.875	0.874	0.918	0.918	0.918

Note: ***, **, and * denote statistical significance at the 1, 5, and 10% levels, respectively. t-statistics are shown in parentheses.
Source: Authors' estimation

Table 4: Estimation results: Decomposition effects under SAFTA

Industry	Total industries	Manufacturing
exporter / FV origin in SAFTA		
Pakistan / Bangladesh	0.568	0.301
	(1.538)	(0.977)
Pakistan / India	0.881***	1.245***
	(3.516)	(4.989)
Pakistan & China	0.958***	1.519***
	(3.957)	(7.280)
Pakistan & Malaysia	0.521***	0.679***
	(2.767)	(3.679)
rex	2.595***	2.189***
	(16.008)	(15.353)
it fixed effects	Yes	Yes
i,j fixed effects	Yes	Yes
Adjusted R-squared	0.875	0.919

Note: *** denotes statistical significance at the 1% level. t-statistics are shown in parentheses.
Source: Authors' estimation

Table 5: Comparison of average tariff rates in Pakistan

Total	Average tariff rate for common items	
	Number of items	Tariff rate
Pakistan, total industries, 2020		
MFN	2,760	17.16
SAFTA		4.97
MFN	2,990	13.08
FTA with China		6.13
MFN	2,723	11.89
FTA with Malaysia		3.85
Pakistan, manufacturing, 2020		
MFN	2,323	17.34
SAFTA		4.98
MFN	2,385	13.53
FTA with China		7.16
MFN	2,087	12.49
FTA with Malaysia		4.87

Note: MFN stands for "most favored nation," as defined by the World Trade Organization.
Source: Authors' estimations are based on World Integrated Trade Solutions.
See: https://wits.worldbank.org/.

FIGURES

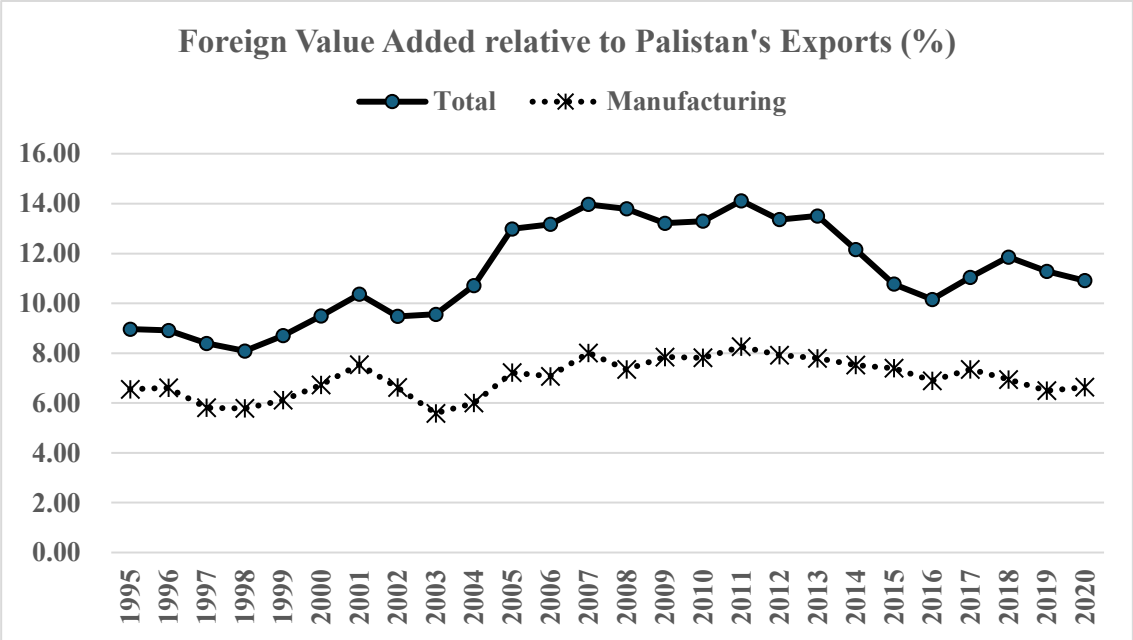
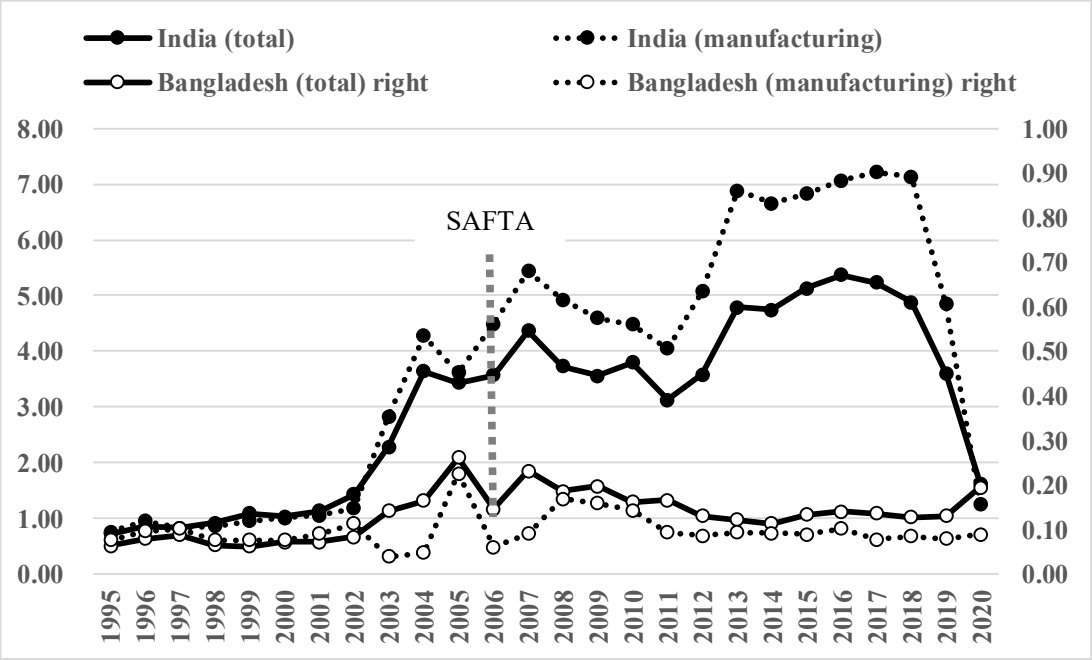
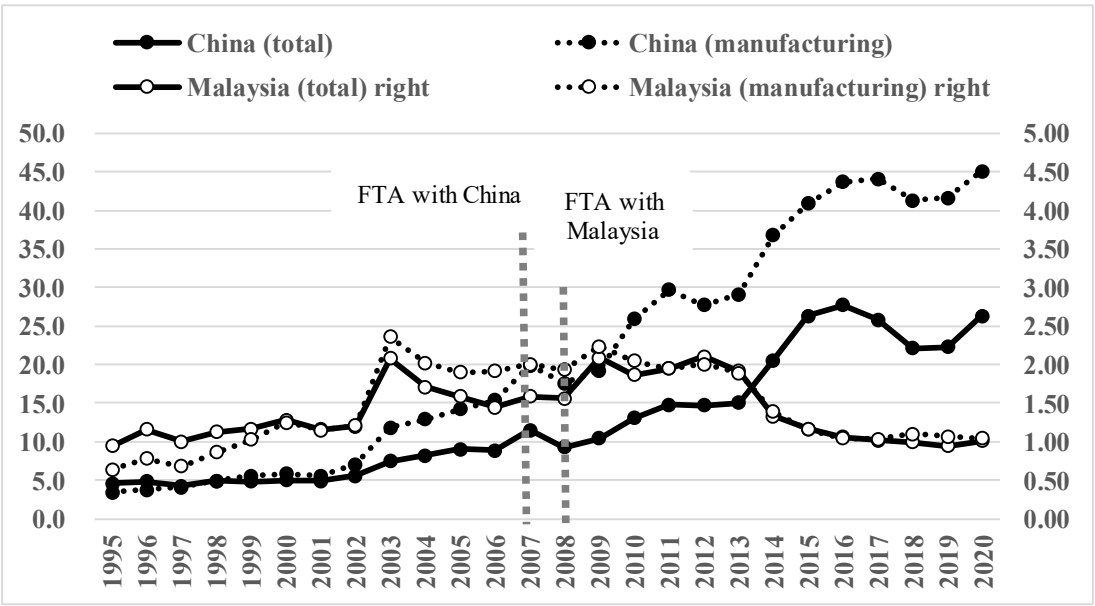


Figure 1: GVC backward participation trend in Pakistan

Source: OECD TiVA 2023 database



[Origin: India and Bangladesh].



[Origins: China and Malaysia]

Figure 2: Origins of foreign value-added in Pakistan's exports
(Origins of foreign value-added as a percentage of total foreign value-added)
Source: OECD TiVA 2023 Database.