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Access to Foreign Markets: An Analysis of the Pak-China FTA

Nida Jamil*, Theresa Chaudhry & Azam Chaudhry*****

Abstract:

This study analyzes the impact of the Pakistan-China Free Trade Agreement (FTA) on Pakistan's textile industry, summarizing the work of Jamil, Chaudhry, & Chaudhry (2021,2023). Using firm-level data from the Census of Manufacturing Industries in Punjab, Pakistan from 2000, 2005, and 2010, we examine changes in productivity, quality, input usage, product mix, prices, and markups for textile firms before and after the FTA implementation. While the FTA led to small productivity and quality gains for exporting firms (6-8% and 1-2%, respectively), these gains were limited primarily to the spinning segment, which received the largest tariff reductions. Exporting firms increased labor and material inputs but did not significantly increase capital investment. They also reduced their product scope and lowered prices more than marginal costs fell, resulting in decreased markups. We estimate demand elasticities for different textile segments, finding that interior and clothing segments are the most elastic, suggesting potential for increased market share if given greater access. Finally, we find evidence of positive productivity and quality spillovers from exporting to nearby non-exporting firms, particularly for upstream producers. Overall, our results indicate that while the FTA increased trade flows, it did not substantially improve productivity or competitiveness for Pakistani textile firms in the short term.

Introduction

Pakistan's economy has been struggling in recent years with high inflation, energy shortages, and consumption-led growth. Notably, for the real economy, Pakistan has missed the industrial targets for the current year, and the global pandemic has

* Early Career Researcher, School of Economics, University of Edinburgh.
** Professor, Faculty of Economics and Co-Director, Innovation and Technology Center, Lahore School of Economics.
*** Professor & Dean, Faculty of Economics, Co-Director, Innovation and Technology Center, Lahore School of Economics and WTO Chair for Pakistan.

further exacerbated these challenges. Conversely, the economy's Current Account recorded a surplus for the first time in 17 years. Remittances from overseas diaspora workers experienced a record-high growth rate of 29% from July to April 2021. Moreover, the Pakistan Stock Exchange market earned the title of the best Asian stock market and the fourth best globally performing market in 2020 (Pakistan Economic Survey, 2020-21). While Pakistan has missed its growth targets in the past, these recent developments suggest a potential path toward economic stabilization (see Figure 1).

In this still tenuous situation, one needs to carefully analyze what is happening with the drivers of economic growth, particularly productivity. A vast body of literature focuses on economic policies and their impact on firm productivity, with one critical relationship that is often studied being that between trade and productivity. Our study seeks to contribute to that body of literature undertaking trade-productivity analysis at the firm level. We specifically focus on the Free Trade Agreement (FTA) between Pakistan and China and its impact on textile manufacturers in the Punjab province, Pakistan. Tables 1a-1b below show that while Pakistan exports 9.7% of its total exports to China, it receives 27.1% of its total imports from China, resulting in China being the top importing partnering country for Pakistan (as of 2020-21). Given the large volumes of trade, the Pakistan-China FTA is of great importance for the future of the Pakistani economy.

Table 1a: Major Export Markets of Pakistan (Rs Billion & Percentage Share)

Country	2017-18		2018-19		2019-20		July-March			
							2019-20		2020-201P	
	Rs	% Share	Rs	% Share	Rs	% Share	Rs	% Share	Rs	% Share
USA	400.4	15.7	532.8	17.0	585.4	17.4	471	17.3	593.6	19.7
CHINA	185.7	7.3	259.6	8.3	349.7	10.4	219	8.0	292.9	9.7
AFGHANISTAN	165.2	6.5	176.4	5.6	134.3	4.0	115.6	4.2	126.9	4.2
UNITED KINGDOM	186.7	7.3	226.8	7.3	239.6	7.1	194.7	7.1	245.3	8.1
GERMANY	146.7	5.7	173.4	5.5	199.0	5.9	162.1	5.9	187.7	6.2
U.A.E	104	4.1	125.8	4.0	178.9	5.3	141.6	5.2	118.8	3.9
BANGLADESH	81	3.2	101.8	3.3	102.6	3.0	91.8	3.4	126.9	4.2
ITALY	84.5	3.3	107.4	3.4	115.0	3.4	92.4	3.4	92.6	3.1
SPAIN	104.5	4.1	126.5	4.0	130.3	3.9	109.2	4.0	108.1	3.6
FRANCE	45.5	1.B	53.9	1.7	57.7	1.7	44.8	1.6	49.8	1.6
All Other	1,050.8	41.1	1,243.8	39.8	1,277.3	37.9	1,083.0	39.7	1,077.7	35.7
Total	2,555.0	100.0	3,128.2	100.0	3,369.8	100.0	2,725.2	100.0	3,020.3	100.0

Table 1b: Major Import Markets of Pakistan (Rs Billion & Percentage Share)

Country	2017-18		2018-19		2019-20		July-March			
							2019-20		2020-21 P	
	Rs	% Share	Rs	% Share	Rs	% Share	Rs	% Share	Rs	% Share
CHINA	1,731.8	25.9	1,734.3	23.3	2328	33.1	1,267.2	23.6	1,725.8	27.1
UAE	893.3	13.3	1020.1	13.7	812.7	11.6	759.7	14.1	602.2	9.4
SAUDI ARABIA	356.4	5.3	401.3	5.4	273.6	3.9	286.2	5.3	301.9	4.7
KUWAIT	159.7	2.4	185.8	2.5	178.7	2.5	133.8	2.5	167	2.6
INDONESIA	278.5	4.2	327.3	4.4	339.6	4.8	245.5	4.6	360.6	5.7
INDIA	207.5	3.1	204.8	2.8	59.9	0.9	154.8	2.9	38.3	0.6
U.S.A	316.4	4.7	368.9	5.0	396.7	5.6	259.5	4.8	351.1	5.5
JAPAN	266.5	4.0	246.1	3.3	174.7	2.5	188.0	3.5	173.8	2.7
GERMANY	146.4	2.2	142.6	1.9	124.2	1.8	105.4	2.0	122.2	1.9
MALAYSIA	132	2.0	145.5	2.0	148.3	2.1	103.0	1.9	134.3	2.1
All Other	**2,206.5**	33.0	**2,666.5**	35.8	**2,193.4**	31.2	**1,867.9**	34.8	**2,400**	37.6
Total	**6,695**	100.0	**7443.3**	100.0	**7,029.8**	100.0	**5,371.1**	100.0	**6,377.2**	100.0

Source: Pakistan Economic Survey 2020-21

Background of the Free Trade Agreement (FTA) between Pakistan and China

China and Pakistan initiated a tariff reduction process on bilateral exports in the early 2000s, culminating in the signing of the Pakistan-China Free Trade Agreement (FTA) in 2006. This led to further tariff reductions over a five-year period. As a result of this decade-long process, total trade between the two countries increased by more than threefold, solidifying China's position as Pakistan's second-largest import partner (Xin et al., 2014). Negotiations for the second phase of the FTA commenced in 2013, with both countries proposing to reduce tariffs on approximately 90 percent of products. Figure 1a illustrates a gradual decline in tariff rates for all five segments of the textile sector. Concurrently, Figure 1b demonstrates a similar decrease in Chinese tariffs on textile imports from ASEAN countries, which posed significant competition to Pakistani textile exports to China. The most substantial reduction in Chinese tariffs on Pakistani textile exports occurred during the 2001-2005 period, followed by more modest changes from 2005 to 2010. While tariffs decreased across all categories, China's concessions to Pakistan were more substantial in the lower-value-added sectors, such as spinning, and less generous in the higher-valued-added clothing and garment sector. Figure 1b reveals a similar trend in China's tariffs on textiles from ASEAN countries, with a steep decline from 2001 to 2005 and a near-zero level by 2010. Despite the FTA, Pakistani exports faced a relative disadvantage in the Chinese market, particularly in the higher value-added sectors, by the end of the study period.

While lower tariffs facilitated trade between Pakistan and China, Pakistan's imports from China grew significantly faster than its exports despite concessions

granted to the textile sector. This resulted in a deteriorating trade balance (see Figure 2). As illustrated in Figure 3, only the spinning segment experienced a notable increase in exports. Chaudhry et al. (2017) conducted a preliminary analysis of the Pakistan-China FTA's impact on firms. Their findings revealed that even in sectors where Pakistan gained greater market access due to China's reduced tariffs, value-added decreased despite increases in Pakistan's exports and employment.

Table 2: China's Segment Wise import partner rank

Segment	China's #1 Import Partner	Share in China's segment import: China's #1 Import Partner	Pakistan's rank as China's Import Partner	Share in China's segment import: Pakistan
Spinning	Vietnam	36.62	3rd	15.87
Finishing	Japan	29.99	9th	1.7
Interior	European Union	16.52	8th	6.17
Clothing	European Union	21.87	13th	1.14
Technical	European Union	23.93	37th	0.01

Source: United Nations Comtrade Trade Data

Table 2 presents China's top import partners and their respective shares in the five textile segments. The table reveals that Pakistan is not China's preferred import destination in any of these segments. While Pakistan ranks among the top five import countries for spinning—the least protected segment for China, with approximately 16% of China's total imports—this share is considerably lower than that of its top exporting partner, Vietnam (36.62%). Pakistan fails to rank among China's top import destinations in the remaining import segments. The technical segment appears to be Pakistan's worst-performing segment, as it ranks as China's 37th import destination choice, accounting for merely 0.01% of China's total technical segment imports.

During the study period, Pakistan faced several challenges in the post-FTA environment, including a deteriorating law and order situation, which began with the assassination of former Prime Minister Benazir Bhutto in December 2007, followed by a series of terrorist attacks on major targets, including the Lahore High Court, and the visiting Sri Lankan national cricket team, in 2009. In 2010, floods devastated parts of Pakistan, including Southern Punjab, a major cotton-growing region. The floods and other significant weather events contributed to a surge in cotton prices in 2010, substantially increasing the principal raw material costs for the textile sector. Furthermore, firms faced widespread electricity outages, with 75 percent citing energy supply as a major constraint to growth, as documented in the World Bank Enterprise Survey (Bacon, 2019). Given the seemingly limited export expansion in the post-FTA period and other serious challenges faced by

firms, our research examines the potential impacts of the Pakistan-China FTA on the Pakistani textile sector.

Data Sources

Census of Manufacturing Industries (CMI) Punjab, Pakistan

The primary source of our firm-level data is the Census of Manufacturing Industries (CMI), a federal census of Pakistani manufacturers administered every five years by the provincial statistical bureaus. This comprehensive survey collects detailed information on a firm's revenues, input quantities and prices, employment and labor costs, capital stock measures, material inputs, and costs (including energy and administrative costs). Using data from three waves of the CMI conducted in 2000, 2005, and 2010, we constructed an unbalanced panel dataset for firms located in the province of Punjab.

We have narrowed our analysis to the textile sector, Pakistan's largest manufacturing and export industry. Following De Loecker's (2011) classification, we divided the textile sector into five segments: (i) Finishing (ii) Spinning, (iii) Interior, (iv) Clothing, and (v) Technical. Within each of these segments, there are product groups (sub-segments); within those product groups, there are individual products, which can have multiple varieties.

The products available in the CMI data were initially coded using the Pakistan Standard Industrial Classification (PSIC) codes based on International Standard Industrial Classifications (ISIC) codes. To align with international databases, we first converted these PSIC codes into relatable ISIC codes. Then we linked them to convertible Harmonized System (HS) codes using the conversion codes provided by the United Nations International Trade Statistics. This conversion process ensured comparability with international data, primarily relying on HS product coding.

A key advantage of our dataset compared to much of the existing literature is its inclusion of both price and physical output data at the product level. This enables us to address the omitted price bias that can occur when relying on sectoral deflators. Moreover, we also observe the product mix for each firm in each of the study years.

As shown in Table 3, firms have evolved significantly from 2000 to 2010. Initially, they tended to produce multiple varieties of a single product within a single segment. By 2005, they had diversified into multiple products while remaining primarily single-segment. However, by 2010, firms had adopted a multi-product, multi-segment strategy.

Concurrently, the average number of different product varieties per firm has decreased. In 2000, firms produced an average of eight different varieties (with a maximum of 22 varieties), while this number had fallen to three by 2010.

Table 3: Characteristics of Sample Firms from the CMI 2000-01, 2005-06, and 2010-11

	Pre FTA		Post FTA
	2000	**2005**	**2010**
Multi-Segment firms	1.7%	5.70%	17.80%
Multi-Product firms	3%	22%	17%
Average number of varieties (differentiated products)	8	4	3
Total Number of firms	433	366	378

Source: Authors' calculations based on CMI Punjab 2000-01, 2005-06, 2010-11.

Table 4 illustrates the evolving distribution of firms across different textile segments from 2000 to 2010. Over this decade, a significant shift is evident. For instance, the proportion of firms operating in the Interior segment increased from a mere 3% in 2000 to over 20% in 2010. Similarly, the share of firms in the Finishing segment rose from less than 10% to more than 25%. These findings challenge the assumption that firms maintain a static product portfolio and segment focus over time. Our sample suggests a more dynamic reality.

Table 4: Segment-wise composition of firms (%)

	Pre-FTA		Post-FTA
	2000	**2005**	**2010**
Spinning	59.53	48.99	36.47
Clothing	25.3	30.39	25.91
Interior	3.00	9.76	21.21
Technical	10.63	7.37	4.00
Finishing	5.40	9.21	26.50

Source: Authors' calculations based on CMI Punjab 2000-01, 2005-06, 2010-11.

World Trade Organization (WTO) Tariff Data

We utilize the World Trade Organization's (WTO) Tariff Analysis Online to extract product-level tariff data from the Integrated Database (IDB). This database provides detailed information on applied tariffs, country imports, and the Consolidated Tariff Schedules (CTS). The CTS includes member countries' commitments on maximum tariffs and annual country- and product-specific tariff rates.

For the tariffs, we create a composite variable of tariffs at the firm level by aggregating the product-level tariffs based on the products produced by firm i at time t,

$$tariff_{it} = \sum a_{jit}\, \tau_{jt}$$

where the tariff rate faced by firm *i* at time *t* ($tariff_{it}$) is an aggregation of the tariff rates imposed on product *j* at time *t* (τ_{jt}) produced by the firm. The tariff rates are added up after weighing the product-level tariff rates according to the revenue share of product *j* in the production mix of the firm *i* at time *t* (a_{jit}).

UN Comtrade Trade Data

We utilize the UN Comtrade database to construct total segment-specific output. This comprehensive international trade statistics database, maintained by the United Nations, contains over 3 billion data records for approximately 170 countries since 1962. It provides detailed trade statistics based on product categories and trading partners. We employ this data to estimate China's market size across the five textile segments.

Discussion and Policy Implications

We begin by presenting elasticity estimates for the five Chinese market segments. Subsequently, we analyze the impact of the Pak-China FTA on firm-level productivity, quality, input usage, and product mix. We then examine how firms adjust their markups and marginal costs in response to the FTA. Finally, we discuss the potential productivity and quality spillover effects from exporters to non-exporters, considering their level of supply chain integration.

Segment Wise Elasticity

We employ De Loecker's (2011) methodology to estimate the demand elasticity of Pakistani goods in the Chinese market. This approach underscores the importance of understanding both supply-side and demand-side factors for firm growth. By identifying the textile industry's elastic segments, policymakers can prioritize products for tariff negotiations, thereby enhancing market access and competitiveness.

Table 5: Elasticity of Demand of the Textile Industry (Segment Wise)

Industry	**-5.55**
Spinning	-2.50
Finishing	-1.25
Clothing	-4.00
Technical	-1.82
Interior	-7.14

Table 5 reveals an overall elasticity of -5.55 for the textile industry, indicating price sensitivity. Interestingly, the least protected segment, spinning, is not the

most elastic. Instead, Interior and Clothing segments exhibit the highest elasticities of -7.14 and -4.00, respectively. This suggests that the Pakistani government should prioritize tariff reduction negotiations for Interior and Finishing segments (and their respective products) to maximize market share gains in China.

Impact of the Pak-China FTA on firm-level productivity and quality

Table 6 presents the impact of the Pak-China FTA on firm-level productivity and quality, estimated using the methodologies of De Loecker et al. (2016) and Khandewal (2010), respectively (Jamil et al., 2022). The FTA led to a 6-8% increase in productivity, with the most significant gains observed in the least protected Spinning segment. However, the impact on quality was more modest, with a 1-2% increase, again primarily benefiting the Spinning segment. While the Pak-China FTA has positively influenced productivity and quality, the magnitude of these effects is relatively limited, aligning with findings from other countries' FTAs.

Table 6: Pakistan-China FTA's Tariff Changes on Firm-level Productivity and Quality in Pakistan's Textile Sector

Panel A: Impact of Firm Productivity				
	Industry	***Spinning***	***Finishing***	***Clothing***
Net Impact of FTA	0.0604	0.0868	Insignificant	Insignificant
Panel B: Impact on Product Quality				
	Industry	***Spinning***	***Finishing***	***Clothing***
Net Impact of FTA	0.0184	0.0232	Insignificant	0.0083

Note: Results adapted from Table 3a in Jamil et al. (2022).

Firm-level adjustments as a result of the Pak-China FTA

Table 7 below shows that the firms exporting to China respond to the Pak-China FTA by increasing the use of labor and materials, as reported by Jamil et al. (2022). However, they did not significantly increase capital accumulation, as evidenced by the insignificant coefficient of 0.1266. This contrasts with other studies that often associate exporting with upgrading. Our findings suggest that, at least for our sample, exporters to China did not engage in substantial investment. Wadho & Chaudhry (2018) further support this observation, noting that innovation activities in the Pakistani textile sector were primarily concentrated among exporters to Europe and the U.S. during a later period.

Table 7: Impact of Tariff reduction on inputs on Firms Exporting to China

	Capital	**Labor**	**Materials**
Exporter to China	0.1266	0.1095*	0.2509**
	(0.0960)	(0.0633)	(0.1128)

Note: Results adapted from Panel B of Table 5 in Jamil et al. (2022).

Table 8 (Jamil et al., 2022) reveals that firms exporting to China not only adjusted their input usage but also streamlined their product mix. These firms reduced their product offerings by approximately half, limiting their segment participation. This suggests that the Pak-China FTA significantly impacted firms' product strategies, leading to a narrower product scope.

Table 8: Impact of Tariff changes on number of products and segments on Firms Exporting to China

	Number of Products	Number of Segments
Exporter to China	-0.5602**	-0.0139
	(0.2662)	(0.0171)

Note: Results adapted from Panel B of Table 6 in Jamil et al. (2022).

Markup, Marginal Cost and Prices of Firms

In this subsection, we examine the impact of the free trade agreement on the pricing, marginal costs, and markups of exporting and non-exporting firms. We can gain insights into their strategic responses by analyzing how firms adjusted markups and utilized tariff reductions to capture a larger market share. Garcia-Marin & Voigtländer (2019) found that Chilean firms, in response to tariff reductions by export partners, primarily reduced prices and marginal costs while maintaining relatively stable markups, effectively passing on savings to consumers in export markets.

To investigate these dynamics, we analyze the evolution of marginal costs and markups in response to the FTA. Employing the system GMM and GNR techniques, we estimate output elasticities within the De Loecker & Warzynski (2012) framework to calculate firm-level markups and marginal costs (Jamil et al., 2023).

Table 9: Impact of Tariff reductions on Product Markup, Prices and Marginal Cost by Export Status

	Markup	Prices	Marginal Cost
Exporters to China	-0.0882***	-0.1658***	-0.0776***
	(0.0060)	(0.0103)	(0.0126)

Note: Results adapted from Panel B of Table 4 in Jamil et al. (2023).

Table 9 demonstrates that firms exporting to China exhibit lower marginal costs, consistent with productivity improvements. These firms also reduce prices to a greater extent than their marginal cost reduction, suggesting intense

competition in the Chinese market. Consequently, the overall markup for exporters to China declines post-FTA.

Spillover Effects from Exporters to Non-Exporters

We investigate the impact of the Pak-China FTA on non-exporting firms in Pakistan. By leveraging our data on firm locations, we examine whether the presence of higher-productivity exporters within a 5 km radius influences the productivity of non-exporting firms. We categorize exporters as upstream, downstream, or horizontal based on their product relationship with non-exporting firms (Figure 4). For instance, if a non-exporter specializes in finishing, spinning exporters within the 5 km radius are classified as *upstream*, while interior, clothing, or technical textile exporters are considered *downstream*. Exporters in the same segment (finishing) are categorized as *horizontal*.

Table 10 (Jamil et al., 2022) presents the results of the spillover analysis for productivity and quality. Panel A indicates that non-exporters experience increased productivity when located within 5 kilometers of more productive upstream exporters, with the effect being more pronounced for closer proximity. This finding contrasts with Linarello (2018), which suggests that non-exporters benefit from the presence of downstream exporters.

Panel B of Table 10 reveals that non-exporters' product quality improves when they are located within 5 kilometers of higher-quality upstream exporters. This suggests that quality gains among upstream exporters, who may supply inputs to non-exporters, positively impact the quality of non-exporters' output. This finding aligns with Bajgar & Javorcik's (2020) observation that the presence of upstream multinational firms is associated with higher-quality exports. However, the presence of higher-quality horizontal exporters (neither upstream nor downstream) within a 5-kilometer radius is negatively associated with non-exporters' quality, potentially due to increased competition for labor or materials.

Table 10: Productivity and Quality Spillovers of Exporters to Non-Exporters in Pakistan's Textile Sector

Panel A: Productivity of Non-Exporters Post FTA	
	Within 5 KM
Post-FTA Productivity of Exporters classified as:	
Upstream Firms	0.3239***
	(0.0527)
Downstream Firms	-0.0029
	(0.0197)
Horizontal Level Firms	-0.0432
	(0.0442)

Panel B: Quality of Non-Exporters Post FTA	
	Within 5 KM
Post-FTA Quality of Exporters classified as:	
Upstream Firms	0.0727***
	(0.0105)
Downstream Firms	-0.0331
	(0.0207)
Horizontal Level Firms	-0.0259**
	(0.0128)

Note: These results appeared in Table 7, Jamil et al. (2022).

Conclusion

This study investigates the impact of the Pak-China Free Trade Agreement (FTA) on the Pakistani textile industry. We find that while the FTA primarily focused on the least protected Spinning segment, the Interior and Finishing segments, with their higher elasticity and potential for quality differentiation, offer greater revenue generation opportunities. Despite the FTA, Pakistani textile manufacturers received limited benefits, particularly in terms of productivity and quality gains, due to factors such as constrained capital accumulation and competition from ASEAN exporters. These findings underscore the need for policymakers to adopt a more nuanced approach to future trade agreements, focusing on segments with higher growth potential and addressing the specific challenges Pakistani firms face.

We also find evidence of firms exporting to China reducing their product offerings by half, reducing their product scope. Moreover, our analysis shows that while marginal costs did fall for firms exporting to China, prices fell more due to Pakistani firms' competition within the Chinese market. As a result, the overall markups of the exporting firms fell. Finally, while the impact on Pakistani exporters was small, we find evidence of productivity and quality spillovers from exporting to non-exporting firms located nearby. Overall, we conclude that developing countries that enter into these agreements may experience increases in trade flows due to lower tariffs but may not necessarily see significant improvements in productivity and competitiveness in the short term.

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