

Pakistan's Experience with the Pakistan–China FTA: Lessons for CPEC

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Abstract

As Pakistan enters the CPEC era, there is a sense of optimism as well as concern in the country, given the uncertain economic impact of this major collaboration between China and Pakistan. Using firm-level and trade data, we empirically test the impact of the 2006 free trade agreement (FTA) between the two countries on the productivity, size and value added of potentially affected Pakistani firms. These results have important policy implications for CPEC initiatives. We start with a difference-in-difference analysis, comparing trends in those sectors in Pakistan made more vulnerable by tariff reductions on Chinese goods relative to sectors for which the tariff did not change significantly. Next, we examine those sectors in Pakistan that were given greater access to Chinese markets through reductions in the Chinese tariff on Pakistani goods relative to sectors for which market access remained roughly the same. In the sectors made more vulnerable by reductions in Pakistani tariffs on Chinese goods, imports to Pakistan have risen, while productivity, value added and value added per worker have fallen relative to other sectors since the FTA. In the sectors for which Pakistan gained access to Chinese markets, exports and employment have risen, but productivity and value added have fallen relative to other sectors since the FTA.

Keywords: Pakistan, China, FTA, CPEC.

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1. Introduction

While there is little doubt that Pakistan is headed full steam into the China–Pakistan Economic Corridor (CPEC) era, there is concern about the impact of many CPEC initiatives on the country's industrial sector. Most CPEC initiatives are centered on infrastructure development and energy, but there is also an element of increased market access for Chinese goods.

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While this has many obvious benefits for consumers, domestic producers are worried about the impact of opening the Pakistani market further to Chinese producers.

One example of the impact of increased market access for Chinese goods is the aftermath of the 2006 free trade agreement (FTA) between Pakistan and China. Under this FTA, numerous Pakistani tariffs on Chinese goods were reduced, as were many Chinese tariffs on Pakistani goods. Most studies examining the impact of this FTA have looked at anecdotal evidence, such as the influx of Chinese goods in Pakistani markets, or macroeconomic data such as export and import figures, which show a significant surge in Chinese imports to Pakistan.

The problem with this approach is obvious: what if the domestic firms that produce goods competing with Chinese exports were already less productive or in decline? This would imply that goods coming from China have simply hastened the demise of these sectors. Similarly, if the domestic firms producing goods that were granted increased access to Chinese markets are noncompetitive, then Pakistani exports to China should not register a meaningful increase. So the possibility exists that some sectors in Pakistan may generally be in decline due to low productivity and lack of competitiveness—in which case, the idea that the FTA has hurt Pakistan's interests is simply masking a general malaise.

This study's approach is unique in that we examine both firm-level and sector-level data from before and after the FTA was signed to gauge its impact on various indicators such as productivity, value added, trade flows, employment and the number of firms. In particular, we focus on (i) firms in those sectors that faced greater competition from Chinese imports and (ii) firms in those sectors that were theoretically granted more access to the Chinese market, and we look at trends in all sectors over time. This allows us to compare the targeted sectors to unaffected ones, before and after the FTA. If the FTA has had no impact, then all the sectors should follow the same outcome path over time. However, if the targeted sectors have been affected differently, then our approach should capture a divergent trend.

We start by tracing the history of Pakistan–China cooperation and then focus on the specifics of the FTA, looking particularly at the concessions granted by Pakistan to Chinese exports as well as the Chinese concessions to Pakistani exports. Next, we perform a firm-level difference-in-difference analysis to test the impact of the FTA on the productivity and value added of firms. We also analyze trade flows, employment and the number of firms in sectors that were affected by the FTA. Finally, we use these results to

formulate policy-relevant recommendations for maximizing the benefits of potential CPEC-related industrial initiatives.

2. Pakistan–China Cooperation Over Time

This section provides a brief overview of economic cooperation between Pakistan and China, and outlines the FTA signed in 2006.

2.1. Bilateral Cooperation Since 2000

In 2001, China and Pakistan signed several memoranda of understanding (MOU) that covered cooperation and projects in areas such as tourism, mining, telecoms and railroads. Since 2002, the two countries have worked jointly on developing the deep-water Gwadar Port on the Arabian Sea as an exit point for goods coming through Pakistan from western China. In 2005, both governments signed additional MOUs, covering, among other areas, higher education, defense, energy and infrastructure.

The agreement to initiate CPEC was signed in April 2015. Work is already underway on the development of coal-fired and renewable energy (wind, solar and water) power plants. The agreement also covers ongoing work to develop the Gwadar region and preparations for building a network of roads that will connect western China to the Arabian Sea via Gwadar Port. There are also plans to upgrade the country's railways (which have seen little improvement in recent years) and to develop several special economic zones.

2.2. Trade Agreements with China

The first trade agreement between China and Pakistan in the 2000s was a preferential trade agreement signed in 2003. Under this agreement, Pakistan reduced its tariffs to 5 percent on 386 items (chemicals and machinery), while China gave Pakistan tariff-free access to 767 items (Shabir & Kazmi, 2007).

The 2006 Pakistan–China FTA was phased in over a period of five years (2007 to 2012) and covered thousands of product lines. Although China gave Pakistan concessions on more items than the latter gave China (6,418 versus 5,686), its exports to Pakistan cover 59 percent of these categories, whereas Pakistan's exports to China cover less than 5 percent (Pakistan Business Council, 2013, p. 4). Despite China's concessions, as of 2013, Pakistan's exports were still subject to higher tariffs than the ASEAN countries. These product lines include several goods in which Pakistan has

a revealed comparative advantage (RCA), including jewelry, leather, frozen fish, polyethylene terephthalate and some categories of readymade garments (Pakistan Business Council, 2013).

During 2006–12, imports from China doubled and Pakistan's exports to China rose fivefold. While Pakistan's export performance appears at first glance to be impressive, the high rate of growth in reality reflects the very small initial export base Pakistan started out with in 2006. China has become Pakistan's major source of imports in electronics, iron and steel, and manmade staple fibers. Overall, by 2012 China accounted for 25 percent of Pakistan's nonpetroleum imports (Pakistan Business Council, 2013). Not surprisingly, Pakistan's trade deficit with China has deteriorated from US\$2.4 billion to almost US\$4.1 billion over this period.

In response to these trends, the Pakistan Business Council (2013) developed a list of 264 goods at the 6-digit level in which Pakistan had an RCA. It recommended that Pakistan lobby for further tariff concessions in these product lines since China had already granted the ASEAN countries a zero tariff on most of these products.¹ Currently, Pakistan and China are negotiating a new set of tariff reductions under phase 2 of the Pakistan–China FTA. Our analysis will help decision makers gauge the impact of the previous agreement.

2.3. Pakistan's Concessions and its Imports from China

Pakistan's imports from China have increased significantly since the FTA. These include the following product lines: electronic equipment (207 percent), organic chemicals (194 percent), manmade filaments (172 percent), iron and steel (175 percent), plastics (136 percent), fertilizers (16,900 percent), articles of iron and steel (135 percent), vehicles (160 percent), manmade staple fibers (743 percent), rubber (93 percent), paper (156 percent) and footwear (273 percent).² In nearly all these product lines, Pakistan now procures at least a third of its imports from China (Pakistan Business Council, 2013). Table 1 shows how dramatically its importance as a supplier to Pakistan has grown over the period 2003–15.

Under the FTA, Pakistan eliminated tariffs on knitting machines, flat-rolled stainless steel, railway equipment, bus tire rubber, turbines and some chemicals. It reduced tariffs to the 0–5 percent range for flat-rolled iron, antibiotics, artificial filament yarn, artificial fibers, electrical

¹ Exceptions are rice, wheat, maize, sugar, wood and paper products.

² Authors' calculations based on data from the Pakistan Business Council (2013).

equipment (such as switches and fuses), carboxylic acids and rayon. China has become the country's major supplier for most of these goods (Pakistan Business Council, 2013). Tariffs are now zero (or near zero) for fertilizers, pharmaceuticals and special-purpose machinery. Table A1 in the Appendix lists the changes in Pakistani tariffs on Chinese goods, by sector. Even in categories for which tariffs were reduced by half or less than half, China has become Pakistan's primary supplier for many products. This suggests that the cost advantages of Chinese goods are significant and that further tariff reductions in these categories could lead to even larger increases in imports.³

Table 1: Pakistan's imports from China and the rest of the world

Year	Pakistan's imports from								
	The world	China	Saudi Arabia	UAE	US	Japan	Kuwait	Malaysia	India
	US\$	%	%	%	%	%	%	%	%
2003	13,048,609,489	7.34	10.86	11.17	6.04	6.61	6.37	4.61	1.73
2004	17,948,583,563	8.29	11.53	9.99	9.61	6.43	5.56	3.53	2.53
2005	25,096,575,301	9.36	10.56	9.88	6.10	6.51	5.04	2.91	2.30
2006	29,825,753,514	9.77	10.17	11.43	6.32	6.28	6.31	2.57	3.74
2007	32,593,936,069	12.78	12.31	8.49	8.00	5.08	5.68	3.55	3.88
2008	42,326,567,149	11.19	14.07	8.93	4.87	4.07	8.14	4.00	4.00
2009	31,583,717,824	11.97	11.08	10.61	5.70	4.08	5.71	5.09	3.42
2010	37,537,025,236	13.98	10.22	13.98	4.34	4.25	6.95	5.47	4.16
2011	43,578,259,220	14.85	10.71	15.65	4.02	4.27	8.93	6.26	3.69
2012	43,813,262,458	15.26	9.78	16.46	3.45	4.28	9.61	4.87	3.59
2013	43,775,183,185	15.14	8.79	17.71	3.81	4.48	9.02	4.39	4.28
2014	47,544,888,942	20.17	9.29	14.89	3.78	3.69	6.22	2.69	4.43
2015	43,989,644,709	25.05	6.84	13.04	4.36	3.92	3.89	2.07	3.79

Source: UN Comtrade Data Base

2.4. China's Concessions and Pakistan's Exports to China

Pakistan's share of Chinese imports has grown in most sectors, but the only substantial gains have been in raw materials and low value-added sectors – especially cotton, cereals, raw hides and leather, fish, cement, copper, plastics, food waste and fodder, and textile made-ups. In each case, exports increased by at least tens of millions of dollars over the period 2006–

³ Pakistan reduced tariffs by 50 percent for paints and varnishes, silk, mirrors, cosmetics, diapers, resins and some chemicals (binders, sulfonic acid, surface-active agents). It reduced tariffs by 20 percent (from an average of 20–16 percent) on tires for construction vehicles, boilers, water heaters, iron and steel structures (doors and windows), trunks, pens, twine, lamps, bed sheets, grills/netting of iron/steel wire, and electrical motors and generators.

12. The largest gain in exports from Pakistan to China was in cotton, which increased fivefold to US\$1.8 billion by 2012. The only category in which Pakistan has become one of China's main sources (supplying 25 percent of its imports) is gums and resins.

China remains a minor market for Pakistan's main exports, receiving less than 10 percent of its imports from Pakistan in cotton,⁴ cereals, ores and plastics. Overall, Pakistan accounted for only 0.15 percent of China's imports in 2015 (Table 2). On the other hand, higher value-added items such as steel, surgical equipment and apparel registered far smaller gains (between US\$4 million and US\$6 million in each case). In 2012, China accounted for less than 2 percent of Pakistan's exports of medical apparatus and less than 1 percent of its exports of apparel, denim fabrics and other textile made-ups.

Table 2: Chinese imports from Pakistan and ASEAN countries

Year	China's imports from				
	The world US\$	Pakistan %	India %	US %	ASEAN (all) %
2007	9.56115E+11	0.12	1.53	7.27	11.35
2008	1.13256E+12	0.09	1.79	7.20	10.33
2009	1.00556E+12	0.13	1.36	7.73	10.61
2010	1.396E+12	0.12	1.49	7.36	11.08
2011	1.74339E+12	0.12	1.34	7.06	11.07
2012	1.8182E+12	0.17	1.03	7.36	10.77
2013	1.94999E+12	0.16	0.87	7.87	10.23
2014	1.95802E+12	0.14	0.84	8.16	10.63
2015	1.68167E+12	0.15	0.80	8.95	11.26

Source: UN Comtrade Data Base

What might account for the lack of progress in Pakistan's exports to China since the FTA came into effect? In cases such as apparel, goods coming from Pakistan are still subject to substantial tariffs relative to China's other trading partners, and especially ASEAN members. In other goods, particularly denim and surgical goods, Pakistan is subject to zero tariffs (phased in during 2007–10), despite which it has made only modest inroads into Chinese markets.

China eliminated tariffs for medical and veterinary instruments, denim, bed sheets, marble, sports goods, unbleached woven fabrics and

⁴ Pakistan sent 35 percent of its cotton exports to China in 2012.

twill, copper, chromium and pig iron. During 2006–12, denim exports increased from US\$100,000 to US\$4.6 million and surgical goods increased from US\$700,000 to US\$4 million. In percentage terms, these exports have grown substantially, but the figures are still quite small. In 2012, China accounted for less than 1 percent of Pakistan's denim exports and 1.5 percent of its surgical exports.

Among the goods that Pakistan exports to China in the 0–5 percent tariff range (phased in during 2007–12), tariffs hover around 4–5 percent for Pakistani goods, but are nearly 0 percent for the same goods coming from ASEAN countries. Most of Pakistan's exports in this category are yarns, but also include copper-zinc wire, frozen fish, fishmeal and dried vegetables. Insofar as these are mainly intermediate inputs, their value added is lower than that of finished goods. Cement, rubber footwear, household items of plastic, and tubes and pipes were also included in this category of preferences, but exports of these items barely registered.

Pakistan received a 50 percent reduction in tariffs (phased in over five years during 2007–12) for another category of goods, including knitted apparel and polyethylene/polypropylene sacks. However, the tariff on Pakistani goods remains at 8–12 percent, whereas for ASEAN countries it is 0 percent. Given that there were almost no exports of these goods from Pakistan to China before the FTA, the fact that China has become a market is a positive development. On the other hand, barring polyethylene sacks, China receives less than 1 percent of Pakistan's exports of nearly every one of these goods.

The fourth category of goods includes those for which China granted Pakistan a 20 percent reduction in tariffs. The concessions were minor, considering that the post-reduction average tariff was still about 14 percent (ranging from 12 to 17 percent), whereas imports of the same goods from ASEAN countries were being charged no tariffs. This category includes several readymade garments (baby clothes, nightgowns, overcoats, skirts and cotton ensembles), honey, some fruits, and rags and twine/rope. As a result, there was little increase in these exports to China during 2006–12.

The final category of goods includes those for which Pakistan received no concessions. Despite significant protection from Pakistani goods, the tariffs facing ASEAN countries are significantly lower and even zero in many cases for many goods (excluding rice, wheat, maize and its seed, rubber, raw cotton and wool). Pakistan's exports of these goods remained small during 2006–12.

Pakistani goods still face significant tariffs on rice, fertilizer, sugar, apparel and wheat. Table A2 in the Appendix lists the changes in Chinese tariffs on Pakistani goods, by sector.

3. FTA Impact on Pakistani Manufacturing: An Empirical Analysis

Based on the discussion in Section 2, sectors that have been affected by the Pakistan–China FTA include (i) those that may have been hurt by lower Pakistani tariffs on Chinese goods, such as basic chemicals, general-purpose machinery, rubber and fertilizers; and (ii) those that may have been helped by lower Chinese tariffs – and thus improved market access for Pakistani goods into China – such as textiles, apparel, footwear and sports goods. Note that these sectors may overlap or, in cases such as pharmaceuticals, cutlery and hand tools, iron and steel, aluminum products, leather products and special-purpose machinery, be subject to lower Pakistani tariffs as well as lower Chinese tariffs.

In this section, we compare the firm-level characteristics of the two sets of sectors described above with the firm-level characteristics of sectors that were not affected by the FTA. The idea is to use the unaffected sectors as a control group and the affected sectors as a treatment group, and conduct a difference-in-difference analysis. Put another way, we want to disentangle the firm-level effect of the FTA from the impact of factors that affect all firms over time. For this, we use firm-level data for firms in Punjab from the Census of Manufacturing Industries (CMI) for 1995/96, 2000/01, 2005/06 and 2010/11 and the Directory of Industries (DOI) for 2006, 2010 and 2014.

We start with a sectoral analysis of the impact of the FTA and then look at its impact on three main outcomes for firms in Pakistani sectors that should have benefited from lower Chinese tariffs and Pakistani sectors that may have been adversely affected by lower Pakistani tariffs on Chinese goods. In sectors affected by the FTA, these outcomes include:

- Firm-level productivity
- Value added
- Value added per worker
- Pakistani imports from China and Pakistani exports to China
- The number of firms
- Employment.

3.1. Pakistani Sectors Affected by Lower Pakistani Tariffs on Chinese Goods

Our first analysis focuses on the impact of lower Pakistani tariffs on those Pakistani sectors that experienced lower tariffs on Chinese goods. We start by looking at the sector-average data for changes in total factor productivity, total employment, average employment (per firm) and the number of firms for those sectors in which Pakistani tariffs on Chinese goods were reduced by at least 25 percent.⁵ We consider these, sectors that were made more vulnerable by the FTA.

At the sector level, Table 3 shows that productivity has fallen in most of the sectors that faced the largest reductions in protection following the FTA. Exceptions include leather, pharmaceuticals and rubber. The impact on employment and the number of firms was less pronounced.

Table 3: Performance of sectors facing the largest drop in protection (phase 1 of Pakistan–China FTA)

Sector	Decrease in Pakistan's average tariff	Change in sector (weighted) av. productivity 2005/06–10/11	Change in total employment 2006–14	Change in no. of firms 2006–14
	% points			
Aluminum products	5	-2.36	-115	-17
Animal feed	5	-0.71	0	0
Basic chemicals	5	-0.82	5,637	15
Cutlery, hand tools, general hardware	10	-0.05	-160	-144
Fertilizer	5	-4.3	-813	-8
General purpose machinery	7.5	-0.08	-399	-89
Iron and steel	5	-0.53	8,369	27
Leather products	5	0.81	-4,473	-136
Pharmaceuticals	5	1.89	5,545	47
Rubber	5	5.24	5,131	12
Special purpose machinery	5	-2.89	6,057	67
Wood and related	5	-2.89	1,703	35

Note: The tariffs in these sectors fell either by more than 5 percentage points or by 5 percentage points constituting at least a 25 percent decrease in the overall tariff. Firm-level productivity calculated as a residual of regressing value-added on capital and labor.

Source: Authors' calculations based on data from the CMI for 2005/06 and 2010/11 and the DOI for 2006, 2010 and 2014.

⁵ Tariffs fell by more than 5 points, or by exactly 5 points if this represented at least a 25 percent drop in the initial tariff rate.

Next, we look at firm-level outcomes for those sectors that may have been hurt by lower Pakistani tariffs on Chinese exports. As discussed above, we perform a difference-in-difference estimation of the firm-level impact of Chinese tariff reductions. Tables 4 and 5 gauge the impact of lower Pakistani tariffs on Pakistani firms in those sectors we expect to have become more vulnerable. The results show that:

- Pakistani firms in the vulnerable sectors were more productive than other sectors before the FTA. Although productivity across all sectors has increased over time, the productivity advantage these vulnerable sectors had over other sectors has shrunk. In other words, the productivity of vulnerable sectors has fallen relative to other sectors after the Pakistan–China FTA.
- Pakistani firms in the vulnerable sectors were characterized by greater value added than other sectors before the FTA. Although value added has increased over time for all sectors, the higher value added of vulnerable sectors relative to other sectors has shrunk. In other words, the value added of vulnerable sectors has fallen relative to other sectors after the Pakistan–China FTA. The same trends apply to value added per worker.
- Total imports from China have increased significantly over time, but while there was no difference across sectors in Chinese imports before the FTA, Chinese imports in the vulnerable sectors have increased significantly relative to other sectors.
- The number of firms in the vulnerable sectors has fallen relative to the number of firms in other sectors after the FTA, although this fall is not statistically significant.
- Total employment across sectors has increased significantly over time. Employment in the vulnerable sectors has fallen relative to other sectors, but this difference is not statistically significant.

Table 4: How lower Pakistani tariffs on Chinese goods affected Pakistani firms: Firm-level difference-in-difference analysis

	Productivity	Value added	Value added per worker
Treatment*time	-0.240** (-0.082)	-0.427*** (-0.117)	-0.179** (-0.021)
Treatment	0.079** (0.035)	0.605*** (0.055)	0.156*** (0.011)
Time	0.628*** (0.04)	0.225*** (0.053)	0.198** (0.01)
N	6,688	6,675	6,675

Note: Standard errors in parentheses. Statistical significance at * 10%, ** 5% or *** 1% level.
Source: Authors' calculations based on firm-level data from the CMI for 1995/96, 2000/01, 2005/06 and 2010/11. Firm productivity is measured as the residual from an OLS regression of firm-level value added on capital and labor, with errors clustered at the firm level.

Table 5: How lower Pakistani tariffs on Chinese goods affected Pakistani firms: Sectoral analysis

	Log imports from China	Log no. of firms	Log employment
Time*treatment	1.139* (0.636)	-0.182 (-0.258)	-0.218 (-0.213)
Treatment	-0.604 (-0.501)	0.755 (0.541)	0.972 (0.709)
Time	1.557*** (0.486)	0.069 (0.14)	0.364*** (0.156)
N	335	90	90

Note: Standard errors in parentheses. Statistical significance at * 10%, ** 5% or *** 1% level.
Source: Authors' calculations based on data from UN Comtrade (imports) and the DOI for 2006, 2010 and 2014.

These results imply that lower Pakistani tariffs on Chinese goods have negatively affected productivity in those sectors that became more vulnerable to Chinese imports. At the same time, there has been a significant decrease in the value added and value added per worker in those sectors that became more vulnerable.⁶ The number of firms and level of employment in these sectors has fallen, but not to a statistically significant degree.

⁶ We get similar results when we regress productivity, value added and value added per worker on the size of the tariff reduction (see Table A3 in the Appendix).

The analysis implies that the FTA has had a significant impact on the volume of imports from China, especially in sectors that became vulnerable after significant decreases in Pakistani tariffs. At the same time, the productivity and value added of firms in these vulnerable sectors has fallen (as may have the number of firms and employment). The result is that Chinese imports may be pushing Pakistani producers out of the market in certain vulnerable sectors, leaving the remaining firms smaller and less productive.

3.2. Pakistani Sectors Affected by Lower Chinese Tariffs on Pakistani Goods

In analyzing those Pakistani sectors that potentially benefited from lower Chinese tariffs, we start by looking at the sector-average data for changes in total factor productivity, total employment, average employment (per firm) and the number of firms in sectors for which Chinese tariffs on Pakistani goods were reduced by at least 4 percentage points. We consider these the sectors that were most likely to benefit from the FTA.

The most striking result (Table 6) is that productivity has fallen across the textiles sector – the heart of Pakistan’s manufacturing – as well as in sports goods and medical and dental instruments, both of which are important export sectors for Pakistan. While these drops in productivity almost across the board may appear to be implausible, we need to take into account that the period covered by the data used in this analysis (the CMI for 1995/96 and 2010/11) overlaps with Pakistan’s change from a high-growth/high-inflation regime to a low-growth/high-inflation (stagflation) regime. This occurred in 2008, a period that was also marked by large dips in private and public investment, law and order problems and energy shortages.

Table 6: Performance of sectors facing the largest increase in access to China (phase 1 of Pakistan–China FTA)

Sector	Decrease in Pakistan's average tariff	Change in sector (weighted) av. productivity 2005/06–10/11	Change in total employment 2006–14	Change in no. of firms 2006–14
	% points			
Aluminum products	5.5	-2.36	-115	-17
Beverages	10.25	3.04	1,472	14
Cutlery, hand tools, general hardware	10.5	-0.05	-160	-144
Domestic appliances	6	0.48	7,498	184
Footwear	8.5	-0.12	3,004	-9
Iron and steel	4.5	-0.53	8,369	27
Knitted apparel	12.1	-0.3	5,531	24
Leather products	6.5	0.81	-4,473	-136
Medical and dental instruments		-1.55	1,256	-209
Petroleum and related	4	1.52	318	9
Pharmaceuticals	4.5	1.89	5,545	47
Special purpose machinery	4	-2.89	6,057	67
Spinning and weaving	9	-0.17	-14,031	-51
Sports goods	13.5	-2.77	-8,547	-379
Textile made-ups	8.6	-0.42	-17,283	-60
Readymade garments	6.1	-1.59		

Note: Firm-level productivity calculated as a residual of regressing value-added on capital and labor.

Source: Authors' calculations based on data from the CMI for 1995/96, 2000/01, 2005/06 and 2010/11 and the DOI for 2006, 2010 and 2014.

Next, we analyze firm-level outcomes in those sectors that should have benefited from lower Chinese tariffs on Pakistani exports. This entails a difference-in-difference estimation of the firm-level impact of Chinese tariff reductions (see Tables 7 and 8). The results show that:

- Pakistani firms in those sectors that should have benefited were more productive than other sectors before the FTA. Although productivity across all sectors has increased over time, the productivity advantage these sectors had over other sectors has shrunk. In other words, productivity in those sectors that should have benefited has decreased relative to other sectors after the FTA.
- The higher value added characterizing these sectors before the FTA has also shrunk. In other words, the value added of sectors that stood to benefit from the FTA has fallen relative to other sectors after the FTA.

- The value added per worker has increased across all sectors over time. While the average value added per worker in sectors that should have benefitted from the FTA was initially lower, it has not changed relative to other sectors since the FTA.
- Pakistan's total exports to China in these sectors increased significantly after the FTA. The number of firms in these sectors has also increased relative to the number of firms in other sectors after the FTA, although the change is not statistically significant.
- Employment in the sectors that stood to gain from the FTA has increased significantly relative to other sectors post-FTA.

Table 7: How lower Chinese tariffs on Pakistani goods affected Pakistani firms: Firm-level difference-in-difference analysis

	Productivity	Value added	Value added per worker
Time*treatment	-0.776*** (-0.071)	-0.239** (-0.101)	-0.007 (-0.018)
Treatment	0.750*** (0.033)	0.145** (0.052)	-0.084** (-0.01)
Time	1.008*** (0.055)	0.222** (0.086)	0.154*** (0.012)
N	6,688	6,675	6,675

Source: Authors' calculations based on firm-level data from the CMI for 1995/96, 2000/01, 2005/06 and 2010/11. Firm productivity is measured as the residual from an OLS regression of firm-level value added on capital and labor, with errors clustered at the firm level.

Table 8: How lower Chinese tariffs on Pakistani goods affected Pakistani firms: Sectoral analysis

	Log exports to China	Log no. of firms	Log employment
Time*treatment	2.341** (1.06)	0.281 (0.20)	0.484*** (0.21)
Treatment	0.964 (0.90)	-0.055 (0.63)	-0.813 (0.56)
Time	0.186 (0.73)	-0.198 (0.16)	-0.063 (0.16)
N	344	90	90

Source: Authors' calculations based on data from UN Comtrade (exports) and the DOI for 2006, 2010 and 2014.

These results imply that lower Chinese tariffs on Pakistani goods – in the shape of increased access to Chinese markets – have negatively affected productivity in those sectors that could have benefited from the FTA. At the same time, there has been a significant decrease in the value added of these sectors compared to other sectors.⁷ Both the level of employment and the total volume of Pakistani exports to China associated with these sectors have risen as a result of lower Chinese tariffs on Pakistani exports.

Interpreting these results in the context of the Pakistan–China FTA yields some interesting insights. First, while Pakistan does not have the same level of market access to China as the ASEAN countries (Chinese tariffs on Pakistani goods tend to be higher than the corresponding tariffs on ASEAN goods), the level of exports in sectors benefiting from lower Chinese tariffs has risen – although its share in Chinese imports has not grown, which means that, as Chinese imports have risen, Pakistani exports have not kept pace. The higher level of exports in these sectors has led to an increase in their employment levels. Second, firm-level productivity and value added in these sectors has fallen relative to other sectors. The analysis implies that, while Pakistan's focus on low value-added exports to China may have led to higher exports, this change was driven by an increase in the number of smaller, less productive firms as opposed to larger, more productive firms. Third, several sectors that gained access to China through the FTA were the same sectors for which Pakistan reduced tariffs on Chinese goods. The fact that these sectors now faced greater competition may have hindered their ability to take advantage of new opportunities in China.

4. Lessons for CPEC

Up to this point, we have focused on the impact of the 2006 FTA on sectors in Pakistan. Here, we discuss why this is important in the context of CPEC.

CPEC is not simply a series of projects. Rather, it is an entire strategy for long-term economic cooperation between Pakistan and China. This means that the existing economic relationship between Pakistan and China can and should be reevaluated and, where necessary, upgraded. In the context of our results on the impact of Chinese tariff concessions to Pakistani exports, it is critical that Pakistan gain the same level of tariff

⁷ We get similar results when we regress productivity, value added and value added per worker on the size of the tariff reduction (see Table A4 in the Appendix).

concessions from China as given to its ASEAN trading partners. Only with equal access will Pakistani manufacturers have the chance to move out of a low-productivity cycle (less productive firms producing and exporting low value-added goods to China) and into a higher-productivity cycle (more productive firms producing and exporting higher value-added goods to China).

Additionally, given that the industrial cooperation component is central to CPEC, Chinese industrial initiatives must yield the maximum economic benefits for local stakeholders in Pakistan. There are two ways of achieving this. First, CPEC-related industrial activities must have well-defined local stakeholders to help maximize the local benefits to firms. This could entail joint ventures between the Pakistanis and the Chinese that (i) carry a minimum requirement for local partner involvement in each project and (ii) guarantee that each local partner is allocated a minimum financial share of each project. Second, policymakers need to make pragmatic decisions right now as to the sectors Pakistan should focus on. This will depend on which sectors (i) would benefit most from greater productivity, (ii) could lead to the greatest increase in value added and (iii) have the greatest potential to increase exports. Some of the sectors in which Pakistan has an RCA are:

- High value-added textiles.
- Agro-processing (including dairy).
- Automobiles, motorcycles and auto parts (including tractors).
- Electrical and mechanical goods (including fans, motors, air-conditioners and refrigerators) and pharmaceuticals.
- Leather goods, sports goods and tools (including surgical goods and cutlery).
- Other sectors that are critical from a growth perspective include solar panels, construction materials and machinery.

To increase productivity, employment, value added and exports, policymakers must decide consciously that industrial projects under CPEC should allow Pakistani firms to move up the technology ladder. This could be achieved by:

- Creating firm-level incentives for investment in advanced machinery based on the technological sophistication of output.

- Imposing a minimum local content requirement – a minimum percentage of locally sourced inputs – on all goods created in CPEC industrial zones.
- Ensuring that Pakistan's technology is upgraded through technology transfers from China by making it mandatory for a minimum level of technology transfer to take place over the life of each CPEC initiative.
- Reducing tariffs on importing high-quality intermediate inputs from China that can be used in Pakistan's major industries, to encourage the production of high-quality exports for sale in the Europe and the United States.

The only way to ensure higher firm-level productivity and wages and to move toward higher value-added output is to develop a CPEC-related labor policy that enables the manufacturing sector to switch from low-skilled to high-skilled labor. This should include:

- Stipulating a minimum level of domestic labor for all joint industrial initiatives.
- Setting requirements that improve working conditions and thereby workers' productivity.
- Ensuring that all industrial zones and joint projects automatically include training facilities, of which a set minimum proportion are devoted to training women.
- Making it mandatory for all industrial zones and joint projects to provide their workers with both health and life insurance.

5. Conclusion

In recent decades, the long relationship between Pakistan and China has been accompanied by significant economic interaction, which includes the 2006 FTA as well as CPEC. There is growing realization that this relationship could have a significant economic impact for both countries, although the impact of CPEC has yet to be determined. For this reason, it is useful to look at the consequences of the Pakistan–China FTA to ensure that CPEC-related initiatives yield the maximum benefits.

While the FTA has had a significant impact on the volume of trade between both countries, for Pakistan this trade has also led to movement from higher-productivity to lower-productivity firms. This is far from optimal in the context of an effective growth strategy. Accordingly, we have proposed

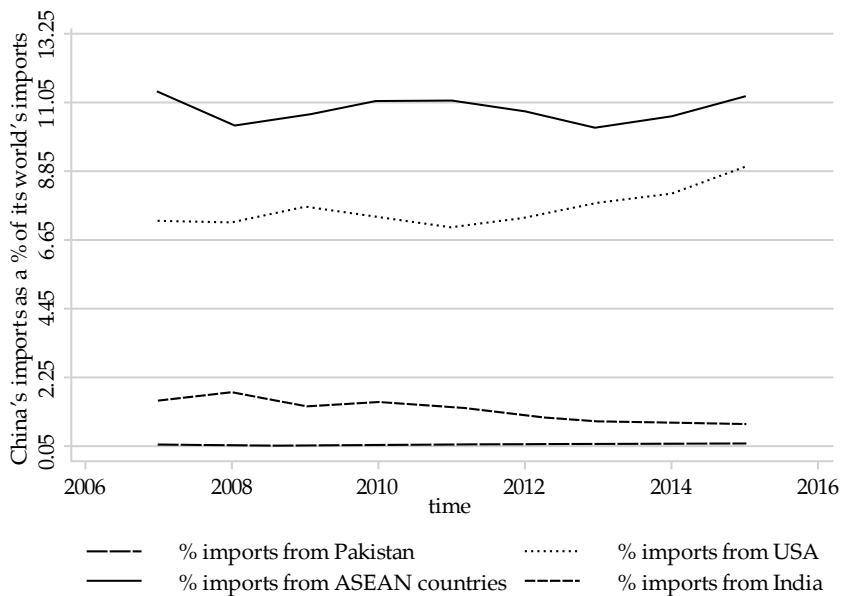
some ways of making sure that CPEC-related initiatives do not squeeze productive firms out of Pakistan's manufacturing sector. There is little doubt that pragmatic policymakers on both the Pakistani and Chinese sides will realize that long-run growth and stability in Pakistan depend critically on developing a high-productivity, high value-added manufacturing sector capable of yielding greater exports and growth over time.

References

- Pakistan Business Council. (2013). *Preliminary study on Pakistan and China trade partnership post-FTA*. Unpublished manuscript. Available from http://pbc.org.pk/preliminarystudy_on_pakistan_and_china_trade_partnership_post_fta/
- Shabir, S., & Kazmi, R. (2007). Economic effects of the recently signed Pak–China free trade agreement. *Lahore Journal of Economics*, 12, 173–202.

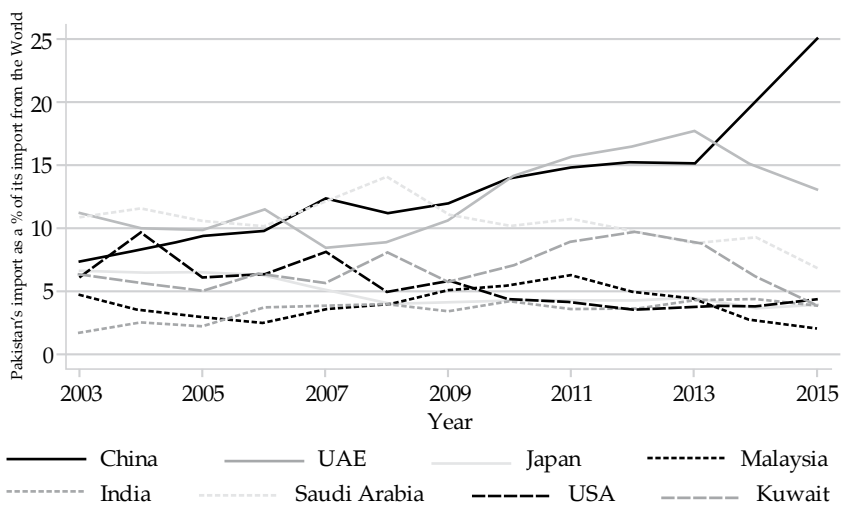
Appendix

Figure A1: Chinese imports from Pakistan and the rest of the world



Source: UN Comtrade Data Base

Figure A2: Pakistani imports from China and other key trading partners



Source: UN Comtrade Data Base

Table A1: Pakistani tariffs on Chinese goods

Sector	Pre-FTA	2011	Pre-FTA	2011	Decrease in average tariff
	% range	% range	% average	% average	
Aluminum products	5-20	0-15	12.5	7.5	5
Animal feed (except dog/cat food)	10	5	10	5	5
Basic chemicals	5-10	0-5	7.5	2.5	5
Beverages (nonalcoholic)	25	20	25	20	5
Cutlery, hand tools, general hardware	20	10	20	10	10
Dairy products	25	25	25	25	0
Domestic appliances	20	16	20	16	4
Fertilizer	5	0	5	0	5
Food products	20-25	16-20	22.5	18	4.5
Footwear	20	20-25	25	22.5	2.5
General purpose machinery	5-15	0-5	10	2.5	7.5
Glass and related	20-25	16-20	22.5	18	4.5
Iron and steel	5-10	0-5	7.5	2.5	5
Knitted apparel	25	20	25	20	5
Leather products	5-10	0-5	7.5	2.5	5
Nonmetallic mineral products	25	20	25	20	5
Paper and related	20-25	16-20	22.5	18	4.5
Petroleum and related					0
Pharmaceuticals	5	0	5	0	5
Plastics	20	20	20	20	0
Readymade apparel	25	20	25	20	5
Refined oil					0
Rice	10	10	10	10	0
Rubber	20	15	20	15	5
Soaps and detergents	25	20	25	20	5
Special purpose machinery	5	0	5	0	5
Spinning and weaving (textiles)	25	20	25	20	5
Sports goods	10	6	10	6	4
Sugar (refined)	10	8	10	8	2
Textile made-ups	25	20	25	20	5
Transport equipment	20-50	20-50	35	35	0
Wood and related	20	15	20	15	5

Source: Authors' calculations based on documents downloaded from
<https://www.tdap.gov.pk/>

Table A2: Chinese tariffs on Pakistani goods

Sector	Pre-FTA	2011	Pre-FTA	2011	Decrease in average tariff
	% range	% range	% average	% average	% points
Aluminum products	5-12	0-6	8.5	3	5.5
Animal feed (except dog/cat food)	2-5	0	3.5	0	3.5
Basic chemicals	1-14	0-11.2	7.5	5.6	1.9
Beverages (nonalcoholic)	20-35	5-29.5	27.5	17.25	10.25
Cutlery, hand tools, general hardware	8-18	0-5	13	2.5	10.5
Dairy products	10-15	6.7-13	12.5	9.85	2.65
Domestic appliances	5-15	0-12	10	4	6
Fertilizer	3-50	0-50	28	25	3
Food products	5-30	0-30	16.5	15	1.5
Footwear	10-24	5-12	17	8.5	8.5
General purpose machinery	3-14	0-11.2	8.5	5.6	2.9
Glass and related	6-17.5	5-14.4	11.75	9.7	2.05
Iron and steel	3-20	0-14	11.5	7	4.5
Knitted apparel	14-25	0-14.8	19.5	7.4	12.1
Leather products	5-20	0-12	12.5	6	6.5
Nonmetallic mineral products	8-24.5	5-20	16.25	12.5	3.75
Paper and related	5-7.5	5-7.5	6.25	6.25	0
Petroleum and related	3-10	0-5	6.5	2.5	4
Pharmaceuticals	3-6	0	4.5	0	4.5
Plastics	6.5-10	0-9.2	8.25	4.6	3.65
Readymade apparel	14-18	7-12.8	16	9.9	6.1
Refined oil	10-25	10-25	17.5	17.5	0
Rice	65	65	65	65	0
Rubber	5-20	3-17	12.5	10	2.5
Soaps and detergents	6.5-15	5-12	10.75	8.5	2.25
Special purpose machinery	3-10	0-5	6.5	2.5	4
Spinning and weaving (textiles)	5-18	0-5	11.5	2.5	9
Sports goods	12-15	0	13.5	0	13.5
Sugar (refined)	50	50	50	50	0
Textile made-ups	14-16	0-12.8	15	6.4	8.6
Transport equipment	1-45	0-45	23	22.5	0.5
Wood and related	0-10	0-5	5	2.5	2.5

Note: Motorcycles remained at 45 percent, and triple-ingredient fertilizer and granulated sugar at 50 percent.

Source: Authors' calculations based on documents downloaded from <https://www.tdap.gov.pk/>

Correlation of tariff reductions with productivity and value added

Table A3: Correlation between Pakistani firm outcomes and lower Pakistani tariffs on Chinese goods

	Productivity	Value added	Value added per worker
Tariff reduction	-0.149*** (0.039)	-0.067*** (.031)	-0.034* (0.020)
N	1,209	1,278	1,278

Source: Authors' calculations based on firm-level data from the Punjab CMI for 2005/06 and 2010/11. Firm productivity is measured as the residual from an OLS regression of firm-level value added on capital and labor, with errors clustered at the firm level.

Table A4: Correlation between Pakistani firm outcomes and lower Chinese tariffs on Pakistani goods

	Productivity	Value added	Value added per worker
Tariff reduction	-0.115*** (0.013)	-0.111*** (0.016)	-0.004 (0.010)
N	1,209	1,278	1,278

Source: Authors' calculations based on firm-level data from the Punjab CMI for 2005/06 and 2010/11. Firm productivity is measured as the residual from an OLS regression of firm-level value added on capital and labor, with errors clustered at the firm level.

Table A5: Industry-level data: Employment, productivity and value added per worker

Industry	Number of Firms				Employment				Weighted Productivity				Value Added per Worker									
	2010	2014	2014	change in the number of firms	2010	2014	2014	change in employment	1995	2000	2005	2010	1995	2000	2005	2010	change in productivity	1995	2000	2005	2010	change in value added per worker
Sugar	46	46	3281	5	26814	39678	12864	1148	1250	1270	1310	1310	221.12	240.56	253.36	263.95	1.62	221.12	240.56	253.36	263.95	42.83
Food Products	1147	1103	16207	-30	14069	14243	174	1082	907	862	949	949	377.66	373.51	488.24	665.28	-1.33	377.66	373.51	488.24	665.28	287.62
Animal Feed	4	0	40	0	40	40	0	6.43	1.06	10.05	9.34	9.34	269.81	262.15	237.74	282.81	2.91	269.81	262.15	237.74	282.81	13
Spinning and Weaving of Textile	748	721	227827	-51	237944	22913	-14031	12.97	13.01	12.56	12.39	12.39	207.91	200.16	211.01	207.89	-0.58	207.91	200.16	211.01	207.89	-0.02
Textile Madeups	405	341	66371	-60	56356	39073	-17283	10.99	8.27	11.36	10.94	10.94	353.38	358.91	346.74	354.148	-0.05	353.38	358.91	346.74	354.148	0.768
Knitted and Crocheted Apparel	94	114	2675	24	2445	7976	5531	14.77	10.82	11.67	11.37	11.37	947.42	971.93	955.90	950.08	-3.40	947.42	971.93	955.90	950.08	2.66
Wearing Apparel	395	395	54787	0	54787	54787	0	10.6	9.42	11.67	10.58	10.58	220.37	221.75	225.90	246.20	-0.52	220.37	221.75	225.90	246.20	25.83
Leather Products and Garments (Except Footwear)	456	320	11636	-136	16109	11636	-4473	6.89	9.27	9.75	10.06	10.06	577.78	572.90	583.06	567.95	3.67	577.78	572.90	583.06	567.95	-9.83
Footwear	113	91	9391	-9	9044	12048	3004	15.69	15.79	9.27	9.15	9.15	196.50	475.32	627.78	194.79	-6.54	196.50	475.32	627.78	194.79	-1.71
Aluminium Products	43	19	736	-17	536	421	-115	9.99	10.74	12.50	10.14	10.14	103.73	101.75	163.30	298.31	0.15	103.73	101.75	163.30	298.31	194.58
Non Metallic Mineral Products	28	9	221	-3	90	138	48	14.03	11.86	11.71	11.07	11.07	192.59	483.05	655.72	155.26	-2.96	192.59	483.05	655.72	155.26	-37.33
Dairy Products	27	8	4706	-18	4250	1458	-2792	6.23	6.45	13.37	15.14	15.14	3551.21	3531.57	3871.14	3531.90	8.91	3551.21	3531.57	3871.14	3531.90	-19.31
Beverages	27	37	6706	14	6331	7803	1472	8.23	9.52	11.24	14.28	14.28	757.76	850.79	896.50	836.49	6.05	757.76	850.79	896.50	836.49	78.73
Fertilizers	10	3	2864	-8	3715	2902	-813	10.4	8.14	14.53	10.23	10.23	553.32	548.72	590.50	617.10	-0.17	553.32	548.72	590.50	617.10	63.78
Glass and Related Products	43	41	3559	-2	3913	5696	1783	5.04	1.23	9.09	13.23	13.23	68.54	63.52	129.07	242.05	8.19	68.54	63.52	129.07	242.05	173.51
Paper and Related Products	126	228	5855	96	3353	15042	11689	6.08	6.21	9.39	12.45	12.45	76.66	73.63	90.62	272.30	6.37	76.66	73.63	90.62	272.30	195.64
Wood and Related Products	16	41	35	35	269	422	1972	15.18	12.16	9.56	6.67	6.67	88.46	85.43	34.70	91.35	-8.51	88.46	85.43	34.70	91.35	2.89
Petroleum and Related Products	15	22	709	9	1240	1558	318	13.46	12.58	11.83	13.35	13.35	2268.36	2271.20	2824.40	3399.50	-0.11	2268.36	2271.20	2824.40	3399.50	1131.14
Basic Chemicals	92	101	4635	15	2958	8595	5637	14.81	15.27	13.87	13.05	13.05	536.23	569.50	902.50	557.20	-1.76	536.23	569.50	902.50	557.20	0.97
Pharmaceuticals	180	199	11265	47	11001	16546	5545	10.23	8.36	9.61	11.50	11.50	76.60	72.89	57.04	277.96	1.27	76.60	72.89	57.04	277.96	201.36
Soaps and Detergents	184	100	4385	-88	4385	4236	-149	9.82	10.29	9.42	8.49	8.49	83.40	71.18	102.72	67.26	-1.33	83.40	71.18	102.72	67.26	-16.14
Rubber	65	75	1278	12	1278	1598	6409	13.81	11.05	7.78	13.02	13.02	87.00	81.86	48.74	87.35	-0.79	87.00	81.86	48.74	87.35	0.35
Plastics	315	200	4272	-80	3204	9367	6163	7.38	6.35	9.94	6.67	6.67	179.09	176.77	210.93	230.10	-0.71	179.09	176.77	210.93	230.10	51.01
Iron and Steel	408	411	27	27	7427	8087	15796	13.67	12.71	9.49	8.96	8.96	283.41	287.73	367.76	544.06	-4.71	283.41	287.73	367.76	544.06	260.65
Cutlery, Hand tools and General Hardware	221	84	2288	-144	2246	2406	160	20.8	16.05	7.88	7.83	7.83	223	200.58	251.95	222.90	-12.97	223	200.58	251.95	222.90	-0.1
General Purpose Machinery	181	103	2099	-89	1945	1546	-999	12.43	11.95	8.97	8.89	8.89	386.42	380.31	389.50	370.97	-3.54	386.42	380.31	389.50	370.97	-15.45
Special Purpose Machinery	333	415	8469	67	8433	14490	6057	17.89	15.44	11.29	8.40	8.40	398.23	542.89	699.73	388.30	-9.49	398.23	542.89	699.73	388.30	-9.93
Domestic Appliances	66	255	598	184	645	8143	7498	10.46	10.16	10.34	10.82	10.82	93.23	78.86	89.20	124.50	0.36	93.23	78.86	89.20	124.50	31.27
Transport Equipment	-	89	-	-379	-	9374	-	13.51	11.06	10.42	9.71	9.71	486.44	478.70	556.42	649.45	-3.8	486.44	478.70	556.42	649.45	163.01
Sports Goods	87	185	21038	-5	21038	12491	-8547	6.78	3.49	9.42	6.65	6.65	251.90	236.01	1077.10	349.54	-0.13	251.90	236.01	1077.10	349.54	-2.36
Refined Oil	461	87	4978	3	4978	4735	-243	7.99	6.81	11.83	13.85	13.85	2876.21	2959.624	2824.40	3399.59	5.86	2876.21	2959.624	2824.40	3399.59	523.38
Rice	1754	1754	28734	0	28734	28734	0	10.93	6.96	7.45	8.36	8.36	1284.28	1362.44	434.60	1297.35	-2.57	1284.28	1362.44	434.60	1297.35	13.07

Source: Authors' calculations based on firm-level data from the CMI for 1995/96, 2000/01, 2005/06 and 2010/11 and DOI for 2006, 2010, 2014.