

Assessing tariff and exchange rate pass-through in apparel export prices in the European Union

LDC graduation implications for Bangladesh

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Working Paper

Assessing Tariff and Exchange Rate Pass-through in Apparel Export Prices in the European Union: LDC Graduation Implications for Bangladesh

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I. Introduction

Who ultimately bears the burden of tariffs and exchange rate changes, exporters, importers, or consumers, remains a central question in international economics. When tariffs rise, exporters may reduce their margins, importers may absorb part of the tariff to maintain competitiveness, or consumers may face higher final prices. Similarly, if the currency depreciates, exporters may adjust their margins to lower foreign-currency prices, passing on some of the gain from exchange rate depreciation to importers and consumers in the importing countries. The extent of tariff and exchange rate pass-through depends on market structure, the market power of exporters and importers, the elasticity of supply and demand, the level of competition in both domestic and international markets, and global value chain participation (Amiti et al., 2014; De Loecker et al., 2016; Gopinath et al., 2020).

Tariff and exchange rate pass-through can be either complete or incomplete, depending on how much of the change in tariff rates or exchange rates is reflected in final consumer prices. Under a complete pass-through, the full change is transmitted to consumers through higher (or lower) prices. Under incomplete pass-through, only part of the change is incorporated into consumer prices, while the remainder is absorbed by exporters and importers through adjustments in their profit margins. Previous studies on tariff and exchange rate pass-through have shown that exporters often adjust prices to remain competitive (Feenstra, 1989; Goldberg & Knetter, 1996). Incomplete pass-through has since become a stylized fact of international trade.

The study of tariff and exchange rate pass-through has significant policy implications for Bangladesh, particularly as the country prepares to graduate from the group of Least Developed Countries (LDCs).¹ This graduation will lead to the withdrawal of LDC-specific trade preferences, which Bangladesh has long relied on to expand its exports, especially in the readymade garment sector. Currently, around three-quarters of Bangladesh's exports benefit from LDC-specific preferences granted by partner countries. This dependency is most pronounced in its trade with the European Union (EU), where Bangladesh enjoys duty-free access under the Everything But Arms (EBA) initiative. However, graduation from LDC status in 2026 will trigger a transition period of three years, after which EBA preferences will be replaced by the Standard Generalised Scheme of Preferences (GSP) or GSP+, contingent upon Bangladesh meeting certain criteria.² Even if Bangladesh qualifies for the EU GSP+, its apparel exports will still face Most Favoured Nation (MFN) tariffs due to the

¹ Bangladesh is scheduled to graduate from the group of least developed countries in November 2026.

² Also referred to as the Special Incentive Arrangement for Sustainable Development and Good Governance, GSP+ offers much better market access preferences, providing duty-free access to 66 per cent of EU tariff lines including textile and clothing items being subject to the fulfilment of Article 29 of EU GSP provisions. To be eligible for GSP+ preference, Bangladesh must meet two criteria: vulnerability criteria and sustainable development criteria. The vulnerability criterion requires the eligible country to have a non-diversified economy, where the country's seven largest sections of GSP-covered imports account for more than 75 per cent of its total GSP-covered imports to the European Union over the past three consecutive years. On the sustainable development criterion, a beneficiary country is required to ratify and effectively implement 32 international agreements and conventions related to human rights, labour rights, environmental protection, climate change, and good governance. Bangladesh has already fulfilled the vulnerability criterion, as the seven largest sections of GSP-covered imports account for more than 75 per cent of its total GSP-covered imports to the EU. To qualify for GSP+, it will be necessary for Bangladesh to ratify and effectively implement all 32 conventions.

safeguards in place under Article 29 of the proposed EU GSP (Razzaque et al., 2024).³ As a result, clothing exports to the EU will be subjected to a 12 per cent tariff, compared to the zero-tariff rate currently available under the EBA scheme.

This shift in tariff structure poses significant challenges for Bangladesh's export competitiveness in the EU market. The extent of the tariff burden will depend on the level of tariff rate pass-through. If the pass-through is complete, the prices of Bangladesh's apparel products will increase by the full amount of the tariff, potentially reducing demand for these exports. On the other hand, if the pass-through is incomplete, exporters may absorb part of the tariff, leading to reduced profit margins. The risk is further amplified by the fact that over 90 per cent of Bangladesh's EU exports are concentrated in low-value garments, where price competition is fierce, and profit margins are already thin (Razzaque et al., 2023).

Countries worldwide often use exchange rate devaluation as a tool to enhance export competitiveness. However, the extent to which exporters benefit from exchange rate devaluation largely depends on exchange rate pass-through (ERPT).⁴ Bangladesh, both under its earlier managed float exchange rate system and the more recent floating exchange rate regime, has devalued its currency to improve export competitiveness. The country may continue to use this tool in the future to enhance its position in international markets. As such, understanding the dynamics of exchange rate pass-through is crucial for effective policy design aimed at boosting Bangladesh's export competitiveness.

Together, tariff and exchange rate pass-through are two important determinants of Bangladesh's post-graduation export competitiveness. If tariffs are incompletely passed through and exporters bear most of the cost, while exchange rate pass-through (ERPT) remains weak due to continuous currency appreciation against comparator countries, Bangladesh's competitiveness in the EU apparel market could be significantly eroded. In this context, the objective of this paper is to examine the dynamics of tariff and exchange rate pass-through in Bangladesh's apparel exports to the EU market. It estimates the degree of pass-through and offers important policy insights for post-graduation export competitiveness.

³ The reference to the "proposed" EU GSP scheme is made as the current regime, which was supposed to expire in 2023, has been extended until the end of 2027. What benefits Bangladesh will receive after its graduation and the three-year extension granted by the EU for a graduating country to retain the same LDC benefit will be determined by the upcoming EU GSP regime, which is being negotiated and finalized by the EU Parliament and Council. According to EU provisions on "Safeguards in the Textile, Agriculture, and Fisheries Sectors" (Article 29 of the proposed EU GSP), clothing products from a GSP+ beneficiary will not receive preferential access if the share of the relevant products is above 6 per cent of total EU imports of the same products and exceeds the product graduation threshold during a calendar year. Bangladesh's apparel exports, classified under GSP section S-11b, already exceed the 6 per cent market share threshold in the EU. In such cases, EU rules stipulate that a beneficiary country's share of GSP-covered imports of the same products cannot exceed 37 per cent if tariff preferences are to be maintained. Available evidence suggests that Bangladesh's share is significantly higher, accounting for nearly half of all GSP-covered clothing imports into the EU (Razzaque and Rahman, 2022). Consequently, if the proposed GSP rules remain unchanged, Bangladesh could find itself in an anomalous position: while formally qualifying for GSP+, its apparel exports under S-11b would be excluded from preferential treatment and would instead be subject to MFN tariffs.

⁴ If ERPT is complete, the benefits of devaluation are fully passed on to consumers in the importing countries through lower prices, which in turn improve competitiveness. On the other hand, if ERPT is incomplete, the benefits of devaluation are accrued by the exporters, who can increase their profit margins by keeping prices stable or only partially adjusting them.

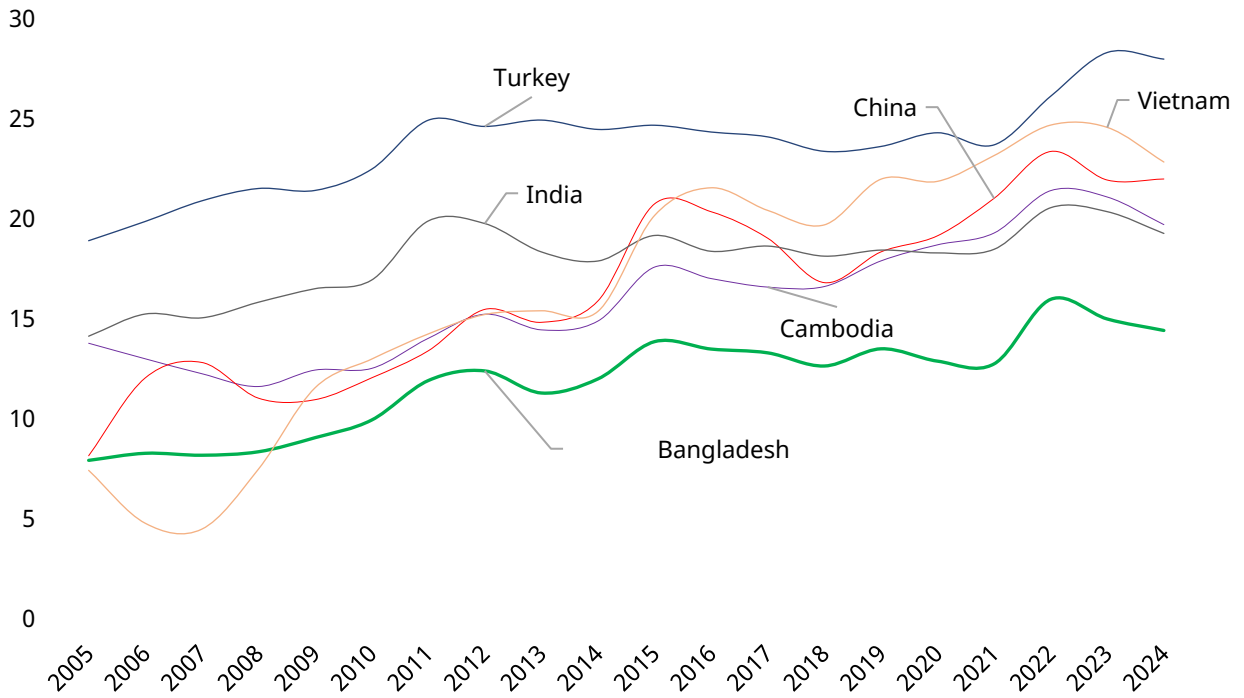
This paper contributes to both the empirical trade literature and the policy discourse on LDC graduation. It addresses the critical question of whether Bangladeshi exporters will absorb the costs of EU tariffs or pass them on to European buyers, and examines the extent to which exchange rate policy can mitigate these impacts. These insights are crucial for shaping Bangladesh's trade landscape, currency management, and industrial strategies as the country enters a more competitive environment post-graduation. The paper makes twin contributions to the literature and policy debate. First, it provides the first empirical analysis of tariff pass-through for Bangladesh, an area that has not been previously studied due to the country's long-standing access to zero-tariff preferences in major markets. Using the synthetic control method, we create counterfactual prices and tariffs that will apply once Bangladesh graduates from the LDC group. This innovative approach is a novel contribution to pass-through literature, as it deals with a case where tariff rates have had no variation because of LDC-specific preferences. Second, the paper examines exchange rate pass-through (ERPT) as a complementary adjustment mechanism. While the literature has highlighted incomplete and heterogeneous ERPT across countries and sectors (Goldberg & Knetter, 1996; Gopinath et al., 2020), evidence on ERPT for Bangladesh remains limited and fragmented (Hoque & Razzaque, 2004). By linking ERPT with the potential tariff incidence, this study offers a comprehensive framework for understanding how currency depreciation could mitigate the erosion of trade preferences.

II. Analysis of Apparel Export Price Competitiveness, and LDC Graduation Implications in the EU

The Extent of Price Competitiveness in the EU

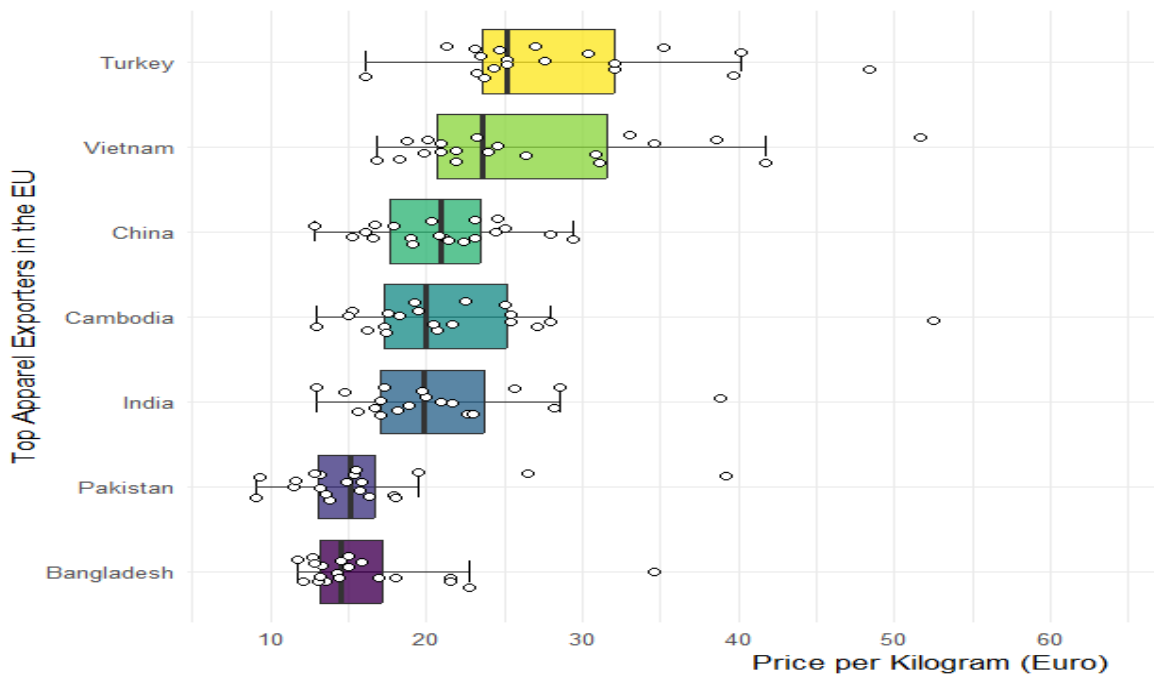
Price is a critical indicator of export competitiveness in destination markets, reflecting both the attractiveness of a country's products and its ability to compete on price with other exporters. A comparison of unit value prices across major apparel exporters reveals that Bangladesh consistently receives significantly lower prices for its clothing exports in the EU market. The average weighted price for Bangladesh's top 10 apparel export items is more than 50 per cent lower than that of China and Vietnam (see Figure 1). Even Cambodia, another EBA-beneficiary country like Bangladesh, achieves a higher weighted average price than Bangladesh. A similar pattern emerges when comparing the unit value prices of Bangladesh's top 20 apparel export items, all of which show lower prices in the EU market. This lower average price suggests that Bangladesh's exporters are highly competitive in terms of volume but face challenges with profitability and markups compared to other major apparel exporters. After Bangladesh's graduation from LDC status, if apparel export prices rise due to post-graduation tariffs, Bangladesh may still remain competitive in the EU market. However, the existing price gap indicates that Bangladesh's exporters already operate with thin profit margins. Consequently, if exporters are required to absorb a portion of incomplete tariff pass-through, many could face further reductions in profitability, which may undermine their ability to remain competitive in the EU market.

Figure 1: Average unit value price of the top 10 apparel export items in the EU: Bangladesh vs major comparators (Euro/kg)



Source: Authors' representations using the data from EU Comext.

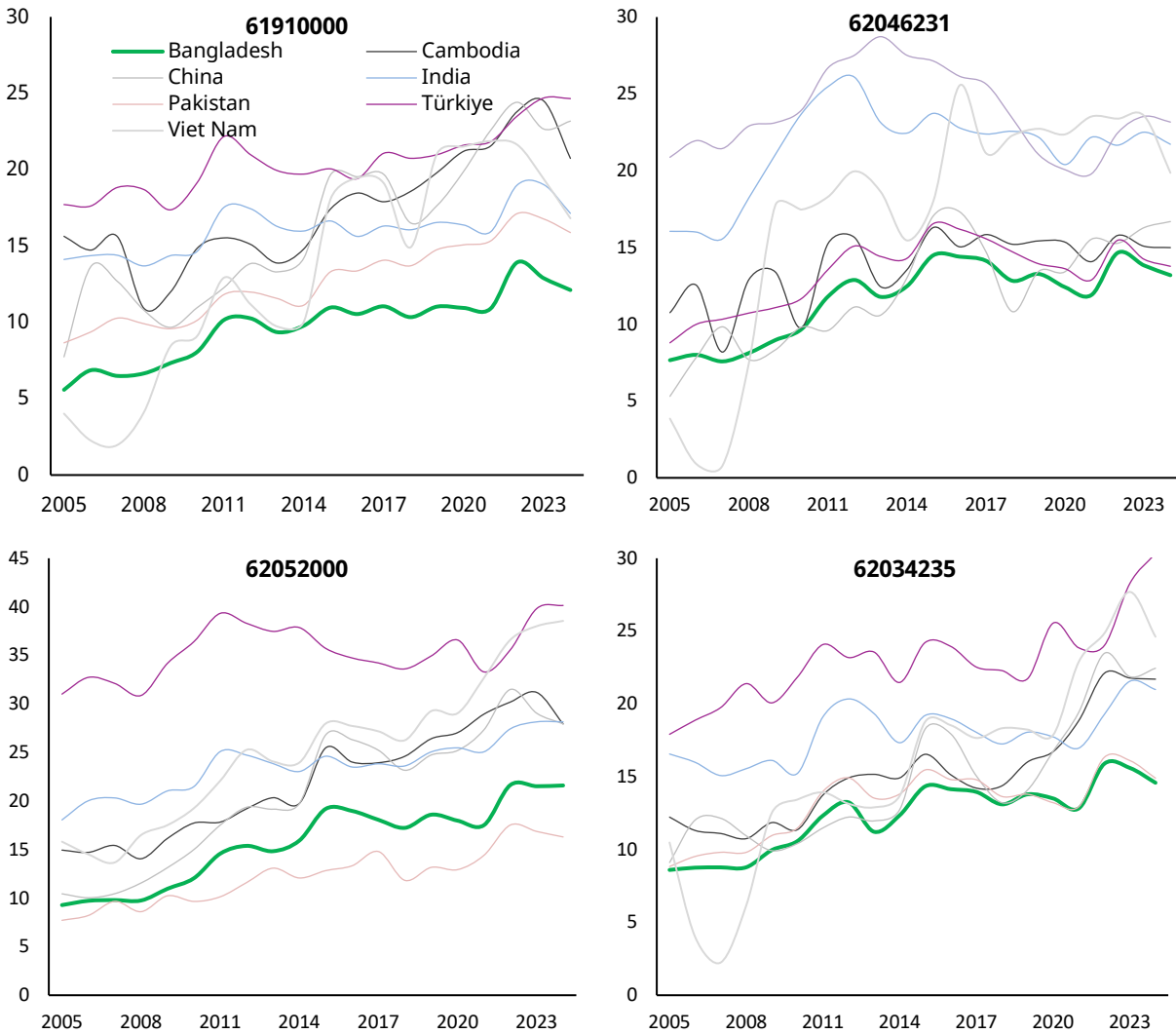
Figure 2: Bangladesh's top 20 apparel products' price distribution against its comparators in the EU market (Euro/kg)

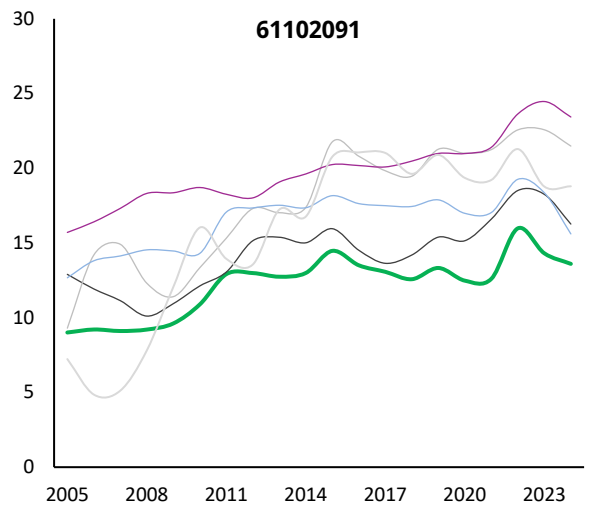
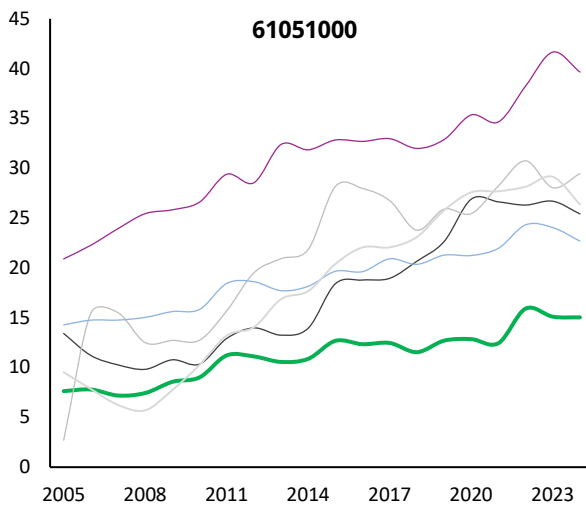
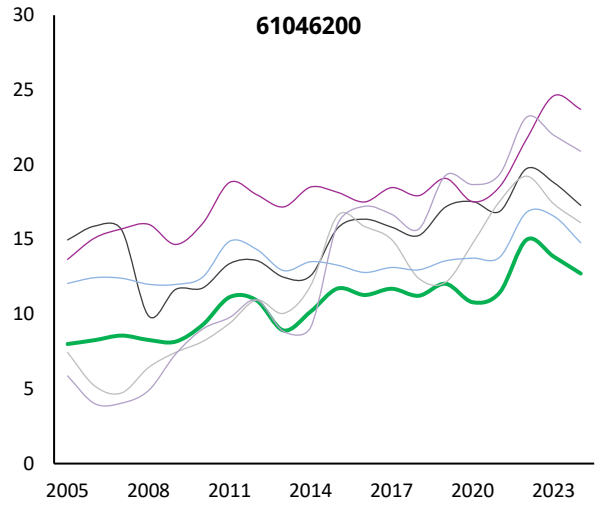
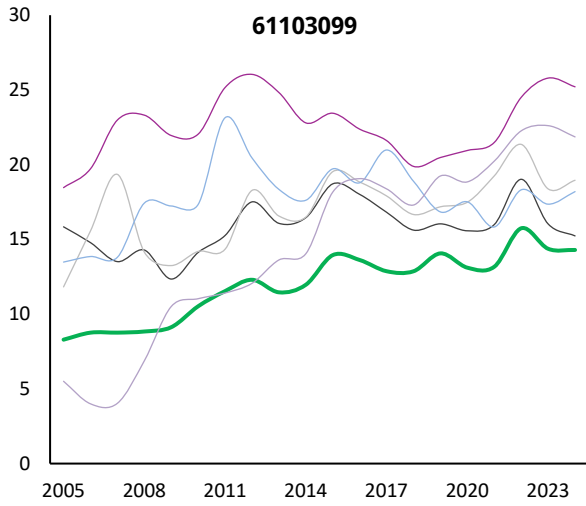
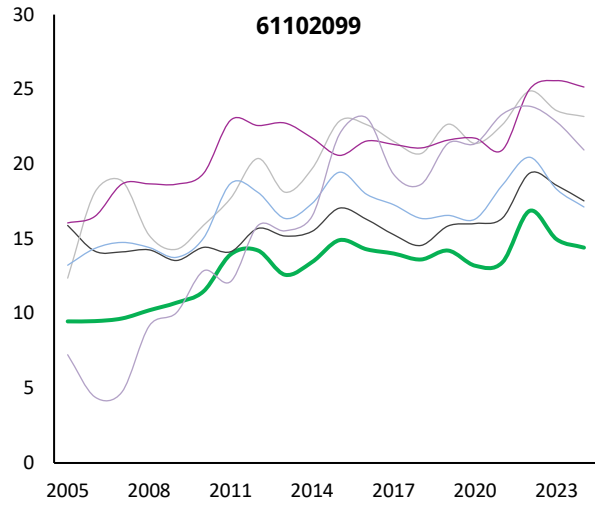
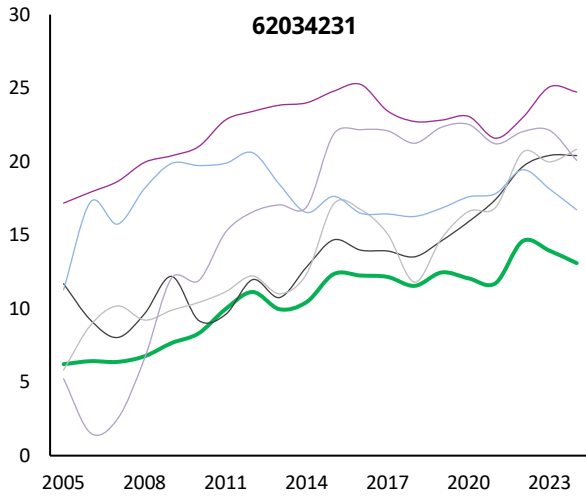


Source: Authors' analysis using the data from the EU Comext.

The average unit value price alone may not fully capture the true picture of price competitiveness. To gain a more detailed understanding of Bangladesh's apparel export prices in the EU market, we present the top ten apparel export products at the disaggregated HS 8-digit level. Even at this more granular level, Bangladesh consistently receives lower prices for almost all of its top ten apparel items compared to its major competitors (Figure 3).

Figure 3: Price comparison of Bangladesh's top 10 apparel export items against its comparators in the EU market (Euro/kg)

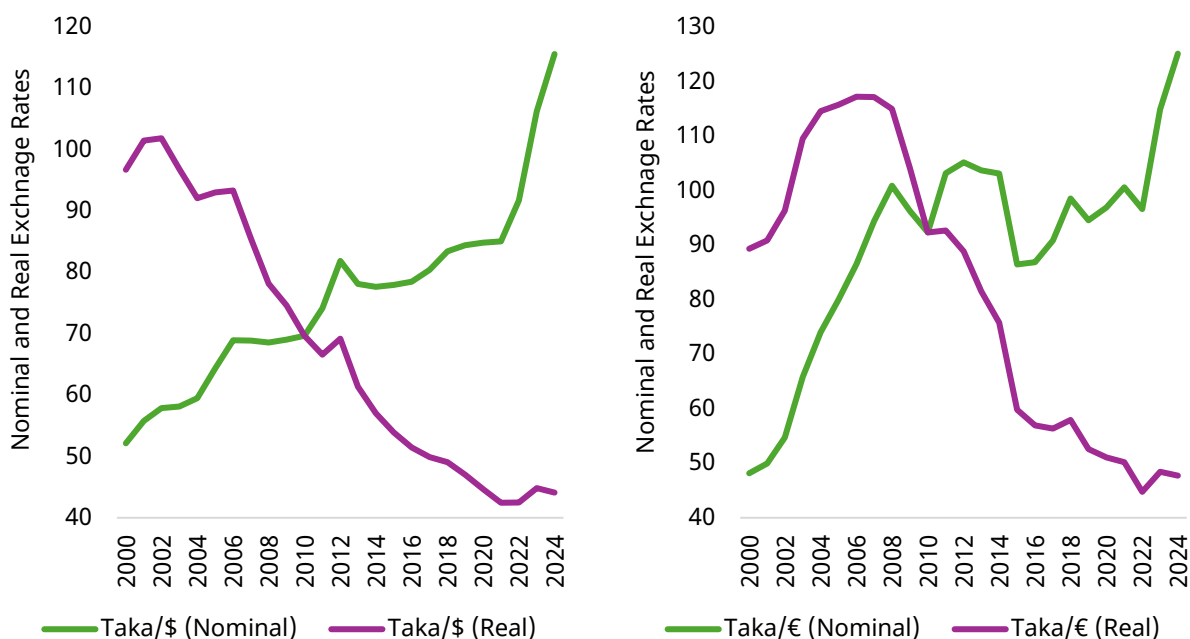




Source: Authors' representation using the data from EU Comext.
 Note: The bold green line represents Bangladesh.

Developing countries often use exchange rate adjustments as a tool to enhance export competitiveness. While Bangladesh has significantly devalued its currency in nominal terms, its real exchange rate (RER) against both the US dollar and the euro has continued to appreciate over time. From 2010 to 2021, Bangladesh's RER appreciated by 39 per cent against the USD and 46 per cent against the euro (Figure 4). In response to balance of payments pressures beginning in 2022, the central bank allowed the nominal exchange rate of the taka to depreciate by approximately 25 per cent against the dollar. As a result, the RER against both the USD and the euro improved slightly and has since stabilised in recent years.

Figure 4: Bangladesh's nominal and real exchange rates against the USD and the Euro

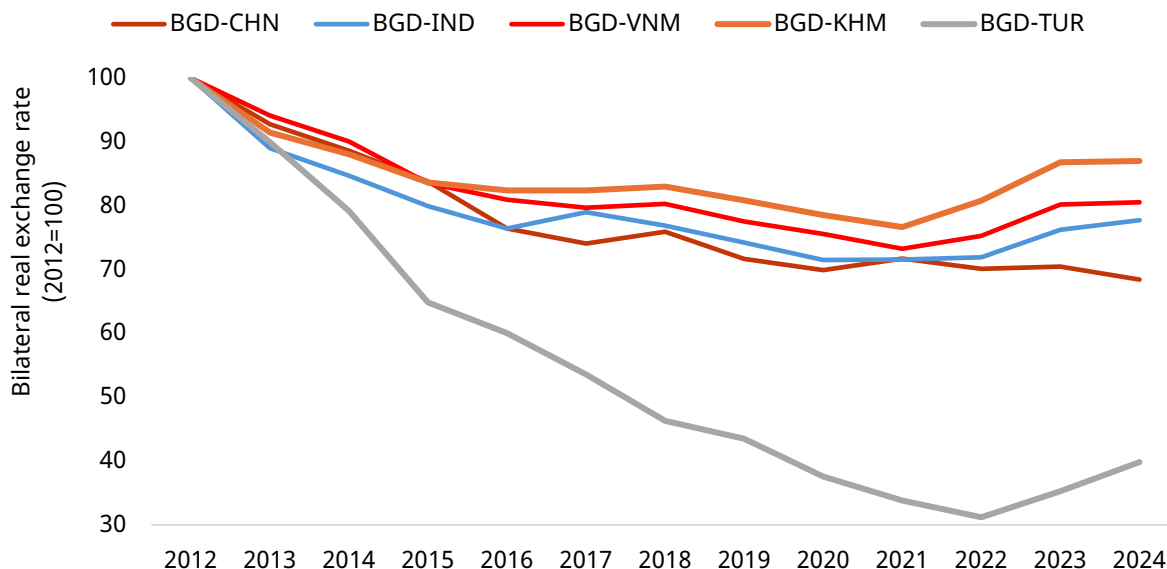


Note: The graph on the left shows the NER & RER against the USD, while the one on the right represents the NER & RER against the EURO.

Source: Authors' analysis using the data from the International Financial Statistics (IFS) compilation of the International Monetary Fund (IMF).

Bangladesh's real exchange rate (RER) against its major apparel-exporting competitors has appreciated over time, undermining its export competitiveness. Between 2012 and 2022, the taka's bilateral real exchange rate relative to the Chinese yuan (renminbi) appreciated by 30 per cent, resulting in a significant disadvantage for Bangladesh's exporters compared to their Chinese counterparts (Figure 5). During the same period, Bangladesh experienced real exchange rate appreciations of 28 per cent against the Indian rupee, 25 per cent against the Vietnamese dong, 20 per cent against the Cambodian riel, and nearly 70 per cent against the Turkish lira. However, following policy adjustments in 2022, the taka improved slightly against its major comparators. Despite this, it remains overvalued compared to its 2012 level.

Figure 5: Bangladesh’s bilateral real exchange rate against its top apparel comparators



Source: Authors’ analysis using the data from the International Financial Statistics (IFS) compilation of the International Monetary Fund (IMF).

Current and Post-Graduation Tariff Regimes in the EU

Currently, as an LDC, Bangladesh enjoys duty-free access to the EU for all exports, except for arms and ammunition under the Everything But Arms (EBA) scheme. Under this scheme, Bangladesh’s apparel products enjoy duty-free benefits in contrast to the approximately 11.8 per cent Most Favoured Nation (MFN) duty. China, in contrast, lacks preferential treatment in the EU and is obligated to pay the standard MFN duty. Until 2020, Vietnam, another competitor, did not have duty-free treatment in the EU; rather, it had tariff access under the Standard GSP. However, Vietnam has embarked on a Free Trade Agreement (FTA) with the EU. After enacting the EU-Vietnam FTA (EVFTA) in 2020, Vietnam witnessed a substantial tariff reduction for apparel exports, paying a 1.1 per cent tariff in 2024 and enjoying a 10.7 per cent margin of preferences.⁵ Furthermore, Vietnam is set to eliminate tariffs on apparel product exports to the EU entirely by 2027. Meanwhile, India currently faces an average tariff of 9.5 per cent for these items under the Standard GSP, while Pakistan and Sri Lanka secure duty-free access for their apparel under the GSP+ scheme.⁶

The EU’s current GSP regime was set to expire in December 2023 and was supposed to be replaced with a new regime for 2024-2034, but its adoption has been deferred, which is expected to be enacted by 2027. After LDC graduation and a three-year transition period, Bangladesh may be entitled to Standard GSP or GSP+, depending on its compliance with certain criteria (Razzaque & Rahman, 2022). If Bangladesh gets GSP+ after graduation, apparel exports to the EU will retain the current duty-free

⁵ The margin of preference is the difference between the MFN rate and the tariff rate under a specific GSP tier.

⁶ The EU-India Free Trade Agreement is expected to be finalised soon. If the countries successfully sign the FTA, India may get duty-free market access for apparel exports to the EU.

market access and continue enjoying an 11.8 per cent margin of preference. On the other hand, if Bangladesh gets Standard GSP, apparel exports to the EU will have to face a 9.5 per cent tariff. However, if the proposed GSP regime for 2024-34 is adopted in its current format, clothing products from Bangladesh will not receive any tariff preferences due to safeguard measures (Razzaque & Rahman, 2022), resulting in an 11.8 per cent tariff hike against zero duty facilities under EBA and GSP+. This will cause a significant loss of competitiveness. Bangladesh's export competitiveness is poised to suffer additional setbacks as Vietnam's preferential tariffs are set to be eliminated to zero by 2027 as a result of the Free Trade Agreement (FTA); meanwhile, Bangladesh is set to face an MFN rate of 12 per cent by 2029 (Table 1). The loss of export competitiveness could have significant repercussions on Bangladesh's apparel export performance in the European Union (EU) market.

Table 1: Tariff profiles of apparel items for major comparators of Bangladesh in the EU

Country	Current trading scheme, tariff rate, and margin of preferences			Trading scheme, tariff rate and margin of preferences after 2029		
	Tariff scheme	Tariff rate (per cent)	Margin of preferences (per cent)	Tariff scheme	Tariff rate (per cent)	Margin of preferences (per cent)
Bangladesh	Everything But Arms (EBA)	0	11.8	GSP+	0	11.8
				Standard GSP	9.5	2.3
China	Most Favored Nation (MFN)	11.8	0	No change		
Vietnam	Free Trade Agreement (FTA)	1.1	10.7	FTA	0	11.8
India	Standard GSP	9.5	2.3	No change		
Pakistan	GSP+	0	11.8	No change		
Cambodia	Everything But Arms (EBA)*	0	11.8	Subject to graduation in 2027, Cambodia's preferential scheme may change in 2030		

Note: * EBA preferences for Cambodia have been suspended temporarily for some selected products since 2019.

Source: Authors' analysis using WITS data.

III. Literature Review

The responsiveness of export prices to trade policy instruments, namely tariffs and exchange rate fluctuations, has long been central to the analysis of international price transmission and the incidence of trade costs. The degree of tariff pass-through (TRPT) and exchange rate pass-through (ERPT) determines how trade liberalisation, preferential market access, and macroeconomic shocks affect exporter competitiveness, consumer welfare, and the distribution of rents across borders (Feenstra, 1989; Goldberg & Knetter, 1997; Gopinath et al., 2020).

An incomplete pass-through means that an increase in tariff or exchange rate causes the firm to lower its profit to minimise the shock's effect on consumer prices. This approach is optimal if the

price elasticity of demand is increasing, making the exporter willing to lower its markup when exchange rates or tariffs raise consumer prices (Knetter, 1989). In this scenario, profit decreases as tariffs and exchange rates rise, so the overall elasticity of export prices relative to both variables is expected to be less than one (Montfaucon, 2022). Theoretically and practically, the literature has explored the various channels that can lead to this incomplete pass-through, such as short-run nominal rigidities with prices sticky in the local currency (Gopinath & Rigobon, 2008); pricing-to-market (Atkeson & Burstein, 2008; Goldberg & Knetter, 1996; Krugman, 1986; Vigfusson et al., 2009; Yoshida, 2010); and import content of exports (Aksoy & Riyanto, 2000; Amiti et al., 2014; Bouvet et al., 2017; Goldberg & Campa, 2010).

Various studies have found incomplete ERPT and tried to explain the mechanism behind this phenomenon, such as the role of market power (Goldberg & Knetter, 1996), asymmetry and non-linearity of ERPT (Bussiere, 2013), and the influence of currency invoicing (Boz et al., 2022; Devereux et al., 2017; Gagnon & Sarsenbayev, 2023; Gopinath et al., 2020). Literature also identified that ERPT is not only incomplete but also has been falling over the year, especially in advanced economies. Supporting this argument, Marazzi & Sheets (2007) identified a sharp fall in U.S. import pass-through from the 1970s to the early 2000s, attributing this to greater globalisation and stable inflation expectations. However, Menon (2015) emphasized that ERPT is generally higher in developing economies than in advanced ones, but that outcomes are strongly influenced by inflation dynamics and monetary policy credibility. Ca' Zorzi et al. (2007) challenge the conventional assumption that ERPT is consistently higher in emerging economies compared to developed ones. They found that in emerging markets with only one-digit inflation (most notably Asian countries), pass-through to import and consumer prices is low and not very different from levels in developed economies.

A major shift in the ERPT literature came with the development of the dominant currency paradigm (DCP). Gopinath et al. (2010) showed that firms' pricing strategies depend heavily on the invoicing currency, which reduces sensitivity to bilateral exchange rate changes. Expanding this framework, Gopinath et al. (2020) highlighted the role of the U.S. dollar as the dominant invoicing currency, which shapes the magnitude and persistence of ERPT across global trade. Empirical studies by Boz et al. (2022) and (Casas et al., 2017a, 2017b) confirmed these insights, showing that in Turkey and Colombia, the dollar exchange rate dominates pass-through effects, even when bilateral exchange rates fluctuate. More recently, Gagnon and Sarsenbayev (2023) examined data from 33 countries and argued that while the dollar remains central, its dominance may be waning as invoicing practices diversify. Beyond invoicing currency, firm behaviour and market structures also influence ERPT. Freitag and Lein (2023), for example, demonstrated that firms adjust not only prices but also product quality in response to exchange rate movements, suggesting that ERPT operates through both price and non-price mechanisms.

The concept of TRPT has generated a vast literature in the field of international economics, yet the significance of these issues is still prominent, especially after the return of protectionism, most notably during the US-China trade war (Amiti et al. 2019; Fajgelbaum et al. 2020). Before the US-China trade war, in the late 20th century, the wave of trade liberalisation led to most of the influential

work on TPT (De Loecker et al., 2016; Feenstra, 1989; Jabara & Schwartz, 1987; Kreinin, 1961; Pompelli & Pick, 1990; Rezitis & Brown, 1999). In those studies, they found TRPT was rarely complete and that the distribution of tariff incidents depends on the magnitudes of import demand and export supply elasticities. In the counterparts, literature on ERPT also found incomplete pass-through (Goldberg and Knetter 1996, Bussiere 2013, Boz et al. 2022; Devereux et al. 2017; Gagnon and Sarsenbayev 2023; Gopinath et al. 2020).

Although TRPT is incomplete in a large economy, especially with significant market power to influence the terms of trade (Fajgelbaum & Khandelwal, 2022), the rise of protectionism through the US-China trade war changed the landscape of incomplete tariff pass-through. Most of the literature found a nearly complete TRPT to the US import price from China (Amiti et al., 2019; Cavallo et al., 2019; Fajgelbaum et al., 2020; Jiao et al., 2024), suggesting that most of the tariff burden is shared by US importers. In other words, the ex-tariff prices (prices before the tariff is added) of Chinese goods remained largely unaffected, and the total cost for U.S. importers increased almost one-for-one with the tariffs.

This complete TRPT in the context of the US-China trade war is an exceptional case in pass-through literature; thus, very few studies in recent times have tried to explain the reason behind this complete tariff pass-through. Although Fan et al. (2025) and Sui et al. (2024) found an incomplete TRPT at the firm level, and at the aggregate level, it still shows a complete TRPT to the US import prices. In other words, the pattern appears to come from import reallocation toward larger firms that tend to pass through most of the tariff, away from smaller firms that adjust only part of it (Sui et al., 2024).⁷ In product-level analysis, Fan et al. (2025) found that US tariffs reduce the ex-tariff prices for higher-price products but not for lower-priced ones, which are more commonly purchased by lower-income consumers; thus, many low-priced firms exit the U.S. market, which mechanically raises the average product-level price by removing lower-priced observations.

On the Chinese imports, the impact of TRPT is mixed rather than complete, as found in the literature on the USA's import prices (Chen et al., 2022; Chor & Li, 2024; Feng, Han, and Li, 2023; Ma et al., 2021). Using detailed Chinese Custom data, Ma et al. (2021) found that during the 2018-19 trade war, large reductions in the value and quantity of imports from the US, and an almost complete TRPT on China's import prices. However, Ma et al. (2021) found TRPT is complete for consumer and capital products, and more than complete for intermediate inputs, reflecting the heterogeneous impact of China's retaliatory tariffs. On the contrary, Feng et al. (2023) found that the Chinese importer bore only 68 per cent of China's retaliatory tariffs by controlling for varying import structures and different TRPT across products. Without considering the import structure, the tariff pass-through to the Chinese import price is nearly complete, whereas with weights, it equals 68 per cent. For the USA, the estimation results are similar when they use weights (93 per cent) or not (98 per cent). In general,

⁷ Larger firms are better able to absorb higher marginal costs in production, whereas smaller firms struggle to absorb sudden increases in costs. As a result, larger firms tend to exhibit higher tariff pass-through. When US tariffs were imposed on Chinese goods, many smaller US importers exited the market, leading to a reallocation of imports toward larger firms. This shift contributed to nearly complete tariff pass-through at the aggregate level.

this difference in average TRPT between the US and China is attributed to product heterogeneity and to the ratio of import demand elasticity over export supply elasticity (Feng et al., 2023).⁸

Although TRPT to the US import prices was almost complete during the US-China trade war, consumers were mostly untouched, with retailers absorbing most of the cost (Cavallo et al., 2019; Ma et al., 2021). However, during the same time, appreciation of the dollar gave foreign exporters some room to absorb the tariff shock by reducing their marginal costs and keeping their goods competitive in the USA market as well.⁹ Khalil & Strobel (2024, 2025) found that USD appreciation largely offset the effects of the U.S. tariff hikes on U.S. (post-tariff) import prices, especially for intermediate goods. They found that the ERPT to U.S. import prices from China was notably high, about 70 per cent on average and nearly complete for intermediate goods, far exceeding the levels seen in imports from other countries.

Even though most of the literatures estimate ERPT and TRPT separately, the way export/import price responds to a change in exchange rate and tariff is nearly equal. This phenomenon was known as the symmetry hypothesis and was first introduced by Feenstra (1989) for the U.S. auto industry, where the symmetry hypothesis of exchange rate and TRPT was empirically tested and found to hold. However, in a different study that incorporates invoicing currency, Montfaucon (2022) found this hypothesis to hold in small developing countries such as Malawi's imports from European Union member countries.

These symmetry studies, however, remain surprisingly limited and have mainly been for advanced economies. Most of the literature found incomplete pass-through, along with diversion from the symmetry hypothesis. Pompelli & Pick (1990) applied Feenstra's framework to the US tobacco imports from Brazil, concluding that ERPT has an insignificant impact, while significant partial tariffs pass through, suggesting a diversion of symmetry hypothesis. Similarly, Rezitis and Brown (1999) found the diversion of symmetry hypothesis in the context of US tobacco imports from Greece. Among the few developing country studies, Mallick and Marques (2008) found that, on average, the impact of ERPT is more dominant compared to tariff rate pass-through in explaining changes in India's import prices. Similarly, based on product-level (HS6) bilateral trade flows for 110 countries, Bénassy-Quéré et al. (2021) found diversions from the symmetry assumption. They found that the impact of TRPT is almost 2.9 times greater than that of a change in the exchange rate pass-through on export prices. Bouvet et al. (2017) also found diversions to symmetry in the context of global value chains (GVCs).

⁸ A higher ratio of import demand elasticity over export supply elasticity leads to lower tariff pass-through under perfect competition.

⁹ Khalil and Strobel (2024) have observed that the period of trade conflict came with a clear rise in the value of the US dollar relative to the Chinese yuan and also relative to many other currencies. This movement tended to track the change in the average US tariff rate on Chinese manufacturing imports, almost as if both were shifting in the same direction over time. As exporters incorporate tariff and exchange rate changes into their final export price (Winters & Chang 2000), an increase in the tariff rate can be offset by an equal proportionate appreciation in the foreign currency; thus, marginal cost would be largely unaffected.

The diversion from symmetry hypothesis is mainly rooted in the use of imported content supply in the exports (Amiti et al., 2014). This dependence on imported inputs negatively affects the degree of exchange rate pass-through (ERPT), while having no significant effect on TRPT (Amiti et al., 2014; Bouvet et al., 2017). For instance, Bouvet et al. (2017) found, using China's firm-product-level data, that symmetry in the exchange and TRPT holds only if the home country supplies the entire value chain of the exported product. However, for a higher share of imported content in exported products, the ERPT tends to be lower, with no effect on TRPT. Similarly, Amiti et al. (2014) found that a small firm in Belgium, with nearly no import intensity in its exports, has almost complete ERPT to export price. However, the lower ERPT to export price, due to a higher import content share, is not reflected in the ERPT to import price. In a different study with EU countries, which are extensively dependent on imports, have a higher degree of ERPT to import price (Vo & Vu, 2024). Additionally, they found that the degree of pass-through is higher during periods of economic instability and rising geopolitical conflicts.

In the context of Bangladesh, although there are some works on ERPT to export and import prices, due to a lack of tariff variation, no estimation on TRPT has been found.¹⁰ However, based on some relevant literature on this field, Razzaque & Islam (2024) predict that the coefficient of preference pass-through should be between 0.5 and 0.8.¹¹ This means that if importing countries like the EU impose MFN tariffs on Bangladeshi apparel exports, the share of tariff incidence for Bangladeshi exporters would be 50 per cent to 80 per cent. Even though this hypothetical coefficient seems logical, empirical estimation is still in great demand in the context of Bangladesh's LDC graduation. Previously, Hoque & Razzaque (2004) found significant and incomplete ERPT to export price in the context of Bangladesh. However, ERPT varies across sectors; for example, they found that nearly complete ERPT for most of the primary exporting products, but ERPT varies from zero to complete for RMG exporting products. Moreover, they found insignificant ERPT for RMG exporting to the USA and EU markets, reflecting the fact that Bangladeshi exporters are unwilling to pass on exchange rate fluctuation. However, using firm-level transaction data from Bangladesh, Hossen (2023) found a complete ERPT to export prices, and ERPT tends to increase with larger and more productive firms. Although these studies empirically estimate the ERPT to export price for Bangladesh, the different time frames and structures of data led to different results. Moreover, none of the studies take both TRPT and ERPT together in their estimation approach, which can give biased estimation, as firm takes both tariff and exchange rate in their marginal cost to formulate an export pricing strategy (Chang

¹⁰ Being an LDC country, Bangladesh received LDC-specific trade preferences, which are unilateral. Almost three-quarters of Bangladesh's exports benefit from LDC-specific preferences—a level of reliance unmatched by any other LDC (Razzaque et al., 2025). The dependence is even more pronounced in key export markets such as Australia, the EU, and the UK, where 90 per cent of Bangladesh's exports receive duty-free access, alongside 87 per cent to Japan and 84 per cent to India.

¹¹ Xavier Cirera has made important contributions to the study of tariff pass-through, particularly in the context of unilateral tariff preferences granted by the EU. Cirera & Alfieri (2012) found incomplete tariff pass-through in Mozambique's exports to the EU, with estimates ranging from 0.4 to 0.6. Building on this work, Cirera (2014) demonstrated that the degree of pass-through varies depending on product characteristics. Specifically, when the tariff margin exceeded 4 percent, the estimated pass-through ranged from 0.48 to 0.59. Furthermore, for differentiated products with tariff margins above 4 per cent, the extent of pass-through increased substantially, ranging from 0.68 to 0.8. This evidence highlights a non-linear relationship between tariff margins, product differentiation, and pass-through effects. Supporting this conclusion, Hayakawa & Ito (2015), using a global dataset, also confirmed the presence of such non-linearities in tariff pass-through.

& Winters, 2002). Consequently, there are no prior studies that test the symmetry hypothesis of the tariff and exchange rate pass-through in the context of Bangladesh. In addition, different uses of imported content supply on RMG exports may lead to different ERPT to export price, which is not reflected in previous studies.¹² Furthermore, by utilising the EU’s less stringent RoO origin criteria along with duty-free tariff facilities, Bangladesh’s exports, especially of apparel to the EU market, increased significantly (Sytsma, 2022). Therefore, ERPT and TRPT for this market have not been studied combinedly, which is indeed important for predicting the post-LDC tariff shock for Bangladesh.

IV. Theoretical and Empirical Framework

Early models of pass-through, such as Krugman (1986) and Dornbusch (1987), assumed perfect competition and constant marginal costs, predicting full ERPT and TRPT. Under these assumptions, a nominal depreciation of the exporter’s currency would reduce foreign-currency prices proportionally, and consumers would entirely bear tariffs. However, empirical evidence has consistently contradicted these predictions. Goldberg & Knetter (1996) documented incomplete pass-through, with exporters adjusting markups rather than prices, a phenomenon known as pricing-to-market.

On the other hand, Feenstra (1989) formalised the symmetric impact of tariffs and exchange rates on export prices under constant marginal costs and no imported inputs. Yet, subsequent studies revealed that this symmetry breaks down in the presence of imported intermediates and strategic firm behaviour (Amiti et al., 2014; Bouvet et al., 2017). Firms embedded in global value chains exhibit heterogeneous pass-through elasticities, which are shaped by input sourcing, demand elasticity, and the invoicing currency.

Export Pricing Model under Monopolistic Competition

We consider a representative Bangladeshi apparel exporter selling to the EU under monopolistic competition. The firm faces an ad valorem tariff τ , the nominal exchange rate E (taka per euro), and marginal costs consisting of both domestic and imported inputs.

Let the total marginal cost in taka be:

$$C = (1-\phi) C_d + \phi EM$$

Where C_d is the cost of domestic inputs, M is the cost of imported inputs denominated in euros, and $\phi \in [0,1]$ is the imported input share.

¹² Bangladesh’s woven garment has a very low level of domestic value addition and continue to rely heavily on imported fabrics (Frederick & Staritz, 2012; Habib, 2016; Masum, 2016). Frederick & Staritz (2012) found 12-15 per cent of woven textiles were sourced locally, while Habib (2016) and Masum (2016) report 15-40 per cent. On the contrary, knitwear production has achieved nearly 80 per cent domestic value addition (ERD, 2024).

The marginal cost in euros is then:

$$MC^* = \frac{C}{E} = \frac{(1 - \phi)C_d}{E} + \phi M$$

Following Winters & Chang (2000), we assume that the exporter internalises a share $\alpha \in [0,1]$ of the tariff as a per-unit cost:

$$MC^{**} = MC^* + \alpha\tau P^*$$

Under monopolistic competition, the exporter sets price as a markup μ over marginal cost:

$$P^* = \mu(MC^* + \alpha\tau P^*), \quad \mu = \frac{\epsilon}{\epsilon - 1}$$

Rearranging gives:

$$P^*(1 - \mu\alpha\tau) = \mu MC^*$$

$$P^* = \frac{\mu}{1 - \mu\alpha\tau} MC^*$$

Where ϵ is the perceived demand elasticity in the EU market, the delivered (tariff-inclusive) price is:

$$P^d = (1 + (1 - \alpha)\tau)P^*$$

However, for simplicity, we are only interested in the tariff and exchange rate pass-through to the export price instead of the consumer or retailer price; thus, the delivered price is not considered in our model. So, the estimated ERPT (θ_E) and TRPT (θ_τ) elasticity is:

$$\theta_E = \frac{\partial \ln P^*}{\partial \ln E} = \frac{\partial \ln MC^*}{\partial \ln E} = - \frac{\frac{(1 - \phi)C_d}{E}}{\frac{(1 - \phi)C_d}{E} + \phi M} = - \frac{(1 - \phi)C_d}{(1 - \phi)C_d + \phi ME}$$

$$\theta_\tau = \frac{\partial \ln P^*}{\partial \ln(1 + \tau)} = \frac{\alpha\mu(1 + \tau)}{1 - \mu\alpha\tau}$$

In the limiting case with $\phi = 0$, ERPT is high or complete, since exchange rate changes only shift revenues because costs are fixed in domestic currency and unaffected by exchange rate movements. So, depreciation directly translates into higher local-currency prices. With high ϕ , ERPT is attenuated, as depreciation raises both costs and revenues, since imported inputs become more expensive. So, the net effect on pass-through is dampened.

TRPT depends on the elasticity of demand and the absorption rate of exporters. When demand is highly elastic, exporters face strong competitive pressure: raising prices would sharply reduce sales, so they absorb a larger share of the tariff burden, resulting in lower pass-through to export price. Conversely, when demand is inelastic, exporters enjoy greater pricing power: they can shift more of the tariff onto buyers without losing significant demand, leading to higher pass-through.

A closer examination of the theoretical framework suggests that the process of tariff and exchange rate pass-through is unlikely to be uniform. Instead, several sources of asymmetry shape the way Bangladeshi exporters adjust their prices in response to policy and macroeconomic shocks. These asymmetries are central to understanding why pass-through is often incomplete, why it differs across products, and why empirical results frequently deviate from the benchmark theoretical prediction of symmetry proposed by Feenstra (1989).

The first asymmetry arises from the distinction between tariff and exchange rate pass-through. In Feenstra's model, tariffs and exchange rates influence marginal costs in a symmetric manner, and firms are predicted to respond equivalently in adjusting their export prices. However, this symmetry is unlikely to hold in practice when imported inputs account for a significant share of production costs. In Bangladesh's RMG sector, woven garments depend heavily on imported fabrics sourced from countries such as China and India, while knitted garments are produced largely from domestically available yarn (Frederick & Staritz, 2012; Habib, 2016; Masum, 2016). When imported inputs are important, exchange rate shocks have a dual effect: they alter both the revenue side by changing the euro value of exports and the cost side by modifying the local-currency price of imported materials. As a result, ERPT tends to be weaker than TRPT, particularly for woven garments with high import content. Tariffs, by contrast, primarily shift the wedge between producer and consumer prices, without directly altering input costs in the same manner.

A second source of asymmetry stems from differences in firm behaviour under appreciation versus depreciation of the domestic currency. Theoretical and empirical literature has documented that exporters do not necessarily treat these two scenarios symmetrically (Campa & Goldberg, 2005). When the Bangladeshi taka appreciates, exporters face an erosion of competitiveness in foreign markets, as their products become relatively more expensive in euro terms. In such cases, they may choose to cut markups or reduce pre-tariff prices to maintain market share, implying significant pass-through of the appreciation. In contrast, when the taka depreciates, exporters are not compelled to pass the full benefit on to foreign consumers. Instead, they may retain part of the gain by increasing markups, especially if demand is inelastic or if they enjoy strong buyer-supplier relationships. This asymmetry means that ERPT is often stronger in periods of appreciation than in periods of depreciation.

A third asymmetry is rooted in product heterogeneity. Not all garments are produced with the same cost structure or domestic value addition. Knitted garments in Bangladesh typically have a much higher share of domestic value-added, with many inputs sourced from the local industries. Woven garments, in contrast, remain highly dependent on imported fabrics and accessories. This structural difference has clear implications for the pass-through effect. Since exchange rate fluctuations do not directly affect domestic inputs, knitted garments are more likely to exhibit a stronger ERPT, as depreciation translates more directly into lower euro-denominated prices. Woven garments, however, experience offsetting effects because depreciation raises the cost of imported fabrics,

limiting the extent to which euro prices can be reduced. This product-level heterogeneity is a key source of variation in pass-through, providing a natural testing ground for our empirical analysis.

Finally, market power and consumer preferences introduce another dimension of asymmetry. Bangladesh is not a marginal supplier in the EU apparel market but a dominant one. In many product categories, Bangladeshi exporters account for more than half of total EU imports, conferring them substantial bargaining power. With such a strong position, exporters may not need to fully adjust their prices in response to tariffs or exchange rate shocks. Instead, they may rely on brand reputation, buyer loyalty, or the absence of close substitutes to maintain relatively stable prices. This behaviour dampens pass-through, as exporters can partially shield themselves from competitive pressures. Preferences of European buyers also matter: for items where Bangladesh is perceived as a reliable or low-cost supplier, buyers may tolerate small price increases without shifting to alternative sources, reducing the incentive for exporters to pass through shocks fully.

Empirical Strategy

Data and Variable Construction

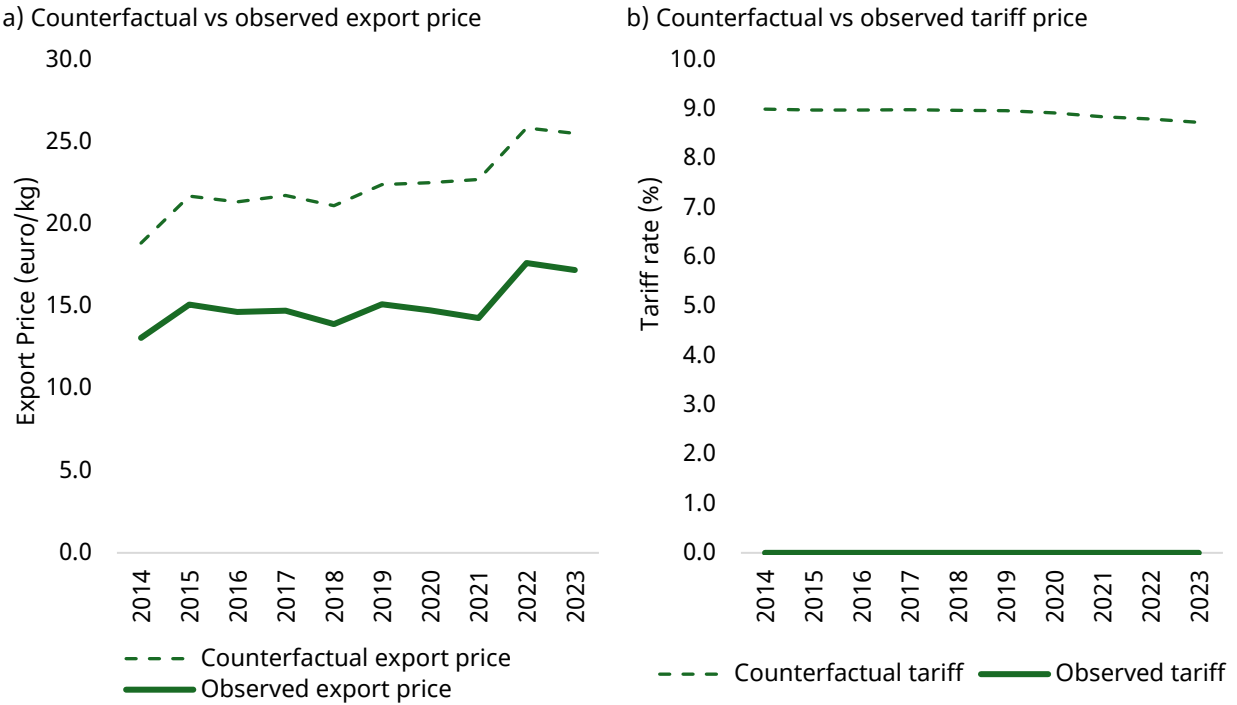
We construct a panel dataset of Bangladesh's apparel exports to the European Union (EU) spanning 2014–2023, drawing on multiple high-quality sources. Export values and quantities at the HS-8 level are obtained from Eurostat's Comext database, allowing computation of unit values (euros per kilogram) as proxies for export prices. While unit values are imperfect measures due to potential quality heterogeneity, their use is standard in trade pass-through literature (Feenstra & Romalis, 2014).

Bangladesh faces a zero tariff rate in the EU market; thus, estimating TRPT is implausible in this case. So, we estimate the counterfactual tariff and price, considering competitor countries' prices in the EU markets, assuming that Bangladesh's price will increase in the EU market because of the removal of GSP preference after LDC graduation. Following Hsiao et al. (2012), we have estimated both the counterfactual export price from its main competitors' export prices, who pay MFN tariffs or some non-zero tariffs.¹³ This is also based on the observation that when some products are excluded from the tariff preferences, their prices increase. For example, the EU partially withdrew Cambodia's EBA/GSP trade preferences under Regulation (EU) No 978/2012, citing "serious and systematic violations" of human-rights and labour-rights obligations. The measure was enacted through Commission Delegated Regulation (EU) 2020/550 and became effective on 12 August 2020, suspending duty-free access for selected garments, footwear, travel goods, and sugar products. (European Commission, 2020). This exclusion of selected products in the EU led to a relatively faster increase in their prices compared to non-excluded products in the EU markets (See Figure A1). The detailed method of estimating the counterfactual export prices for Bangladesh under a tariff regime similar to its competitors is reported in Annexe B. Figure 6 (a) highlights the counterfactual apparel

¹³ For this analysis. We have assumed that Bangladesh's have lost its trade preference in the EU market and charge a price which is comparable to its suppliers' countries. Details methodology on the estimation of counterfactual price and tariff has been given in annex A.

export prices if Bangladesh were not an LDC country, and its observed apparel export price in the EU market under EBA scheme.

Figure 6: Bangladesh's counterfactual price & tariff in the EU market



Source: Authors' representation using the data from EU Comext and WITS

Exchange rate data are sourced from the IMF's International Financial Statistics (IFS). We use both the nominal exchange rate (NER), defined as taka per euro, and the real exchange rate (RER), computed as:

$$RER_t = NER_t \times \frac{CPI_{EU}}{CPI_{BD}}$$

where a rise in RER_t denotes a real appreciation of the Bangladeshi taka. The inclusion of both nominal and real exchange rates helps isolate competitiveness effects from inflation differentials (Obstfeld & Rogoff, 2000).

Baseline Econometric Model

Our benchmark model estimates the elasticity of export prices with respect to tariffs and exchange rates using a dynamic panel framework:

$$\ln P_{ipt}^c = \alpha + \beta_1 \ln(1 + \tau_{ipt}^c) + \beta_2 \ln NER_t + \rho \ln P_{ipt-1}^c + \gamma X_{ipt} + \lambda_i + \delta_p + \eta_t + \epsilon_{ipt} \dots \dots \dots (1)$$

$$\ln P_{ipt}^c = \alpha + \beta_1 \ln(1 + \tau_{ipt}^c) + \beta_2 \ln RER_t + \rho \ln P_{ipt-1}^c + \gamma X_{ipt} + \lambda_i + \delta_p + \eta_t + \epsilon_{ipt} \dots \dots \dots (2)$$

Where P_{ipt}^c is counterfactual export price (euros/kg), τ_{ipt}^c is a counterfactual tariff, NER_t, RER_t are nominal and real exchange rates, P_{ipt-1}^c is lagged export price (captures price rigidity), X_{ipt} is a vector of controls (COVID dummy, shocks), λ_i , δ_p , and η_t are importer, product, and year fixed effects, respectively. This dynamic panel model is estimated using fixed effects with robust standard errors clustered at the product-destination level. Here, $\beta_1 < 0$ implies that exporters cut prices when tariffs rise, indicating an incomplete TRPT, and $\beta_3 < 0$ implies exporters reduce euro-denominated prices when BDT appreciates, indicating an incomplete exchange rate pass-through.

The baseline empirical models are designed to closely mirror the theoretical framework while accounting for complexities in Bangladesh's apparel trade. The use of a log-linear specification enables the calculation of elasticities of pass-through, allowing for direct comparison with prior empirical studies (Amiti et al., 2019; Goldberg & Knetter, 1996). This formulation is particularly appropriate for trade data, where proportional changes in tariffs and exchange rates are more meaningful than absolute levels.

The inclusion of counterfactual tariffs is a novel contribution. Since Bangladesh currently benefits from duty-free access under the EU's EBA scheme, the MFN tariff rates represent the relevant policy shock that will materialise after LDC graduation. Estimating their effect ex ante requires constructing hypothetical tariffs and applying them to observed trade flows.

The specification also incorporates a lagged dependent variable, which captures serial correlation in export pricing and to control the simultaneity between export price and exchange rate. Long-term contracts, buyer-supplier relationships, and catalogue pricing cycles often bind exporters. Price rigidity is well-documented in international economics (Obstfeld & Rogoff, 2000) (Bouvet et al., 2017; Campa & Goldberg, 2005; M. Knetter, 1992), and our estimates confirm that past prices have a significant influence on current prices. This dynamic adjustment is crucial to understanding why pass-through may differ in the short run versus the long run.

Finally, the use of multi-dimensional fixed effects is intended to purge the estimates of unobserved heterogeneity. Destination fixed effects control for importer-specific demand conditions (e.g., differences between Germany and Spain), product fixed effects absorb systematic differences across HS codes (e.g., woven vs. knitted), and year fixed effects capture common global shocks (e.g., COVID-19, EU-wide policy shifts). This layered design isolates the variation that identifies pass-through elasticities.

The empirical analysis confronts several econometric challenges common in trade and pass-through studies. Our modelling choices directly address these issues. In many contexts, tariffs may be endogenous to trade flows, with governments adjusting protection in response to import surges. However, in our case, counterfactual tariffs are based on MFN schedules, which are exogenously determined by EU policy, rather than by Bangladesh's exports. This reduces concerns of reverse causality, following the argument in Nicita et al. (2018).

Exchange rates may be influenced by macroeconomic fundamentals that also affect trade, raising concerns about simultaneity. To mitigate this, we included the lag of the dependent variable and used both nominal and real exchange rates in two separate equations. The real exchange rate accounts for relative inflation, isolating competitiveness effects (Obstfeld & Rogoff, 2000). Moreover, the real exchange rate also adjusts for workers' wage rate, which is considered by exporters when defining an optimum pricing strategy (Chang & Winters, 2002; Winters & Chang, 2000). Year fixed effects further absorb common macroeconomic shocks that could bias exchange rate coefficients.

Unit values (euros/kg) are noisy proxies for export prices, subject to compositional shifts in product mix and quality. To mitigate this, we use highly disaggregated HS-6-digit data and apply product fixed effects. This ensures that comparisons are within narrowly defined product categories, consistent with methodological practices in Feenstra & Romalis (2014).

Factors such as trade costs, buyer concentration, or supply chain disruptions may confound pass-through estimates. Destination and year fixed effects absorb much of this unobserved heterogeneity. In addition, robustness checks explicitly model the COVID-19 shock, a major confounding factor during our sample period.

Although we currently don't have the product-specific information on the share of imported raw materials of Bangladesh's apparel exports, using insight from Frederick & Staritz, (2012) we can explore that if the product is woven, then ERPT for that specific product would be lower due to high dependence on the imported raw materials, and vice versa. Moreover, following Bouvet et al. (2017), we create a dummy for woven to see the impact of woven exports on ERPT and TRPT.

In equations 3 and 4, significant coefficients of β_3 and β_5 will show that TRPT and ERPT are statistically significantly different for different kinds of apparel products based on their imported content. Moreover, we expect that β_5 is negative and statistically significant, which will show the evidence of a smaller ERPT with a higher import content share in exported goods.

$$\ln P_{ipt}^c = \alpha + \beta_1 \ln(1 + \tau_{ipt}^c) + \beta_2 Woven + \beta_3 \ln(1 + \tau_{ipt}^c) * Woven + \beta_4 \ln NER_t + \beta_5 \ln NER_t * Woven + \rho \ln P_{ipt-1}^c + \gamma X_{ipt} + \lambda_i + \delta_p + \eta_t + \epsilon_{ipt} \dots \dots \dots (3)$$

$$\ln P_{ipt}^c = \alpha + \beta_1 \ln(1 + \tau_{ipt}^c) + \beta_2 Woven + \beta_3 \ln(1 + \tau_{ipt}^c) * Woven + \beta_4 \ln RER_t + \beta_5 \ln RER_t * Woven + \rho \ln P_{ipt-1}^c + \gamma X_{ipt} + \lambda_i + \delta_p + \eta_t + \epsilon_{ipt} \dots \dots \dots (4)$$

Table 2 presents the descriptive statistics of the variable of interest used in the analysis. Bangladesh's export prices show wide variation, with an average of 27.4 euros per kg and a very large range across products. The applied tariff is always zero because Bangladesh continues to receive full duty-free access under the EBA scheme. The counterfactual price, which is constructed from competitor countries pricing strategy, is higher on average at 36.7 euros per kg, suggesting that Bangladesh would charge a higher price if it didn't get the EBA preference. Both the nominal and real exchange rates show limited movement over time. Around 55 per cent of the sample consists of woven

garments (HS 62), showing that the dataset is roughly balanced between woven and knitted items, and will be ideal for our analysis on the role of imported share in apparel export price. The COVID-19 variable takes the value of 1 if the period is 2020. The mean value of the COVID-19 variable represents that about 9.6 per cent of the observations correspond to the COVID-19 period.

Table 2: Summary statistics of the variable of interest

Variable	Observations	Mean	Std. Dev.	Min	Max
Price (kg/euro)	43285	27.407	59.663	0	3759
Applied tariff	43285	0	0	0	0
Counterfactual Price	43285	36.726	46.592	0	2302
Log of Counterfactual Price	43072	3.339	.664	-.693	7.742
Log of Counterfactual Tariff	42817	2.228	.144	-.503	2.485
Log of NER	43285	-4.578	.081	-4.744	-4.46
Log of RER	43285	-5.022	.16	-5.302	-4.756
COVID 19	43285	.096	.295	0	1
Woven items (HS 62)	43285	.547	.498	0	1

Source: Authors' estimation using the data from EU Comext and WITS.

V. Findings and Discussions

We estimate the benchmark equations 1 and 2, using a panel fixed effect model, and the results are shown in Table 3. We included destination-fixed effects, product-fixed effects, and year-fixed effects in different specifications. The destination FE controls for importer-specific demand factors, the product FE captures unobserved heterogeneity across product categories, and the year FE absorbs EU-wide or global shocks over time.

The estimated counterfactual coefficients of TRPT and exchange rate pass-through have expected signs and are statistically significant in three specifications. The negative and significant coefficient of TRPT suggests that after LDC graduation, when Bangladesh faces higher MFN tariffs for its apparel export in the EU markets, it will lead to a lower exporter's pre-tariff price measured in euros/kg. The coefficient of TRPT implies that a 10 per cent increase in counterfactual tariff leads to a 3–8 per cent decrease in Bangladesh's pre-tariff export prices. However, the tariff coefficient is incomplete, which also implies that Bangladeshi exporters partly absorb tariffs but cannot offset them completely. In addition, it also means that part of the tariff incidence is shared by the EU importers, ranging from 0.2 to 0.7. This result is in line with Cirera (2014), who found that a country currently getting a preference of a margin greater than 4 per cent in the EU market has a TRPT of 0.5, which will increase up to 0.8 for a differentiated product as well. The estimate of the TRPT coefficient in Table 3 increases in magnitude when different fixed effects are controlled for, indicating a stronger TRPT when estimated robustly. The results in Table 3 also suggest that ERPT is incomplete. In columns (1)–(3), the coefficient on the nominal exchange rate is negative and significant. This result means that Bangladeshi RMG exporters react to currency depreciation of the BDT by passing on average half of the rise in the exchange rate, leading to a significant decrease in the export price.¹⁴

¹⁴ The coefficient of ERPT can be interpreted as $(1-|\beta|)$.

Additionally, to better understand the ERPT, we also examined the real exchange rate, which is adjusted for inflation in column 4 (equation 2). The result shows that the coefficient on the real exchange rate is negative and significant, implying a pass-through of approximately 70 per cent. This result confirms the findings of Menon (2015), who found ERPT to be higher for developing economies, and Hoque & Razzaque (2004), who found that the ERPT to RMG export price is not complete for all items.

Table 3: Benchmark specification

	(1)	(2)	(3)	(4)
1 st lag of log of Counterfactual Price	0.38***	0.24***	0.20***	0.20***
	[0.01]	[0.01]	[0.01]	[0.01]
Log of Counterfactual Tariff	-0.27***	-0.77***	-0.43***	-0.43***
	[0.03]	[0.08]	[0.06]	[0.06]
Log of NER	-0.52***	-0.55***	-0.60***	
	[0.03]	[0.03]	[0.04]	
Log of RER				-0.31***
				[0.02]
Constant	0.64***	2.23***	1.38***	2.57***
	[0.16]	[0.28]	[0.26]	[0.20]
Observations	31,882	31,882	31,882	31,882
R-squared	0.46	0.57	0.58	0.58
Destination FE	Yes	Yes	Yes	Yes
Product FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes

Note: Dependent variable for all four models is the Log of the Counterfactual price, denominated in euros
NER represents the nominal bilateral spot exchange rate, expressed as units of the destination market's currency (Euro) per BDT.

The real exchange rate is calculated as NER multiplied by the ratio of CPI of the importing and exporting countries. The CPI is normalized to the base year 2010. Here, an increase in the RER is associated with an appreciation of BDT against the Euro, which is also adjusted for inflation.

Robust Standard errors in brackets (Std. err. adjusted for 7,131 clusters in Reporter*Product)

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Sources: Authors' estimation using the data from EU Comext, WITS, and IMF.

Bangladesh's exports to the EU market have increased sharply after the implementation of a relaxed RoO in 2011, with single transformation instead of double transformation for apparel exports. This policy has largely benefitted the woven garment of Bangladesh, which has a very low level of value addition and still relies on imported fabrics (ERD 2024). On the contrary, exporters have achieved nearly 80 per cent of the value added in knitwear. For woven exports, it has a high degree of import dependence, which results in an increase (decrease) in import cost in the face of depreciation (appreciation) of the home currency and gives exporters little room to reduce prices by taking advantage of the changes in the exchange rate (Hoque & Razzaque, 2004). Moreover, it has been theoretically and empirically proven that higher import dependence of exported goods has a lower ERPT to export price (Amiti et al., 2014; Bouvet et al., 2017). We have found a similar result in the case of Bangladesh's knitted and woven apparel exports to the EU market.

In Table 4, the estimated results of equations 3 and 4 are reported in columns 1 and 2, respectively. In columns (1) and (2) of Table 4, the coefficients of TRPT are negative and significant, suggesting that Bangladeshi exporters will absorb on average 40 per cent of a marginal tariff change by cutting price once the post-graduation counterfactual tariff is applied in EU markets, which is the same as the benchmark model with all fixed effects. The interaction term of woven and tariff coefficient is insignificant in both models, meaning that TRPT will be equal for both knitted and woven garment products. In other words, post-graduation tariffs will not affect the pricing strategy of knitted exporting firms differently from woven exporting. Moreover, the negative and statistically significant coefficient on the interaction terms of woven with exchange rates provides evidence of a smaller ERPT with a higher import content share in exported goods.¹⁵ This result also indicates that exporters of woven items cannot fully pass through currency depreciation to the export price to the same extent as knitted items. These findings contradict Feenstra's (1989) symmetry hypothesis of tariff and exchange rate pass-through, but confirm Bouvet et al. (2017), who find this symmetry broken down when a country is dependent on other countries for intermediate goods.

Table 4: Effects of higher import content supply in apparel export on the tariff and exchange rate pass-through

	(1)	(2)
1 st lag of log of Counterfactual Price	0.08*** [0.01]	0.08*** [0.01]
Log of Counterfactual Tariff	-0.40*** [0.09]	-0.42*** [0.10]
Woven	0.00 [.]	0.00 [.]
Woven * Log of Counterfactual Tariff	-0.13 [0.14]	-0.08 [0.14]
Log of NER	-0.67*** [0.05]	
Woven * Log of NER	-0.19*** [0.06]	
Log of RER		-0.33*** [0.02]
Woven * Log of RER		-0.13*** [0.03]
Constant	0.56** [0.28]	2.11*** [0.22]
Observations	32,382	32,382
R-squared	0.08	0.10
Year FE	Yes	Yes

Robust Standard errors in brackets

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Sources: Authors' estimation using the data from EU Comext, WITS, and IMF.

Robustness Checks

The robustness checks have been performed using three separate models to ensure the reliability of

¹⁵ The ERPT of woven exported items is $(1 - |-0.67 - 0.19|)$ or 0.14 in comparison to 0.33 for knitted exported items.

the benchmark findings in Table 5. The first model added a COVID-19 dummy variable to account for its potential impact, while the second model excluded data from the COVID-19 year. The third model used a two-year interval instead of an annual consecutive frequency to test the pass-through over a longer observation period.¹⁶

The results of these models confirm the consistency of our main findings for both tariff and exchange rate pass-through. The coefficient of the counterfactual TRPT remains negative and significant across all three models, ranging from -0.36 to -0.65. The magnitude is particularly high in the model with the COVID-19 dummy, suggesting that firms absorbed a larger portion of the tariffs during this pandemic year. This also reflects the fact that TRPT is higher in times of adverse shocks, to remain competitive in the market. The negative and statistically significant coefficient on the COVID-19 dummy suggests that exporters try to mitigate the negative demand impact of an adverse shock by reducing their export price, keeping other things constant. Similarly, the ERPT coefficients in columns (1)-(2) are incomplete and unaffected by the COVID-19 shock, which is significant and highly consistent with the benchmark result. Moreover, the negative and significant coefficient indicates that exporters lowered prices beyond normal responses, consistent with a contraction in demand (Freeman & Baldwin, 2020). Removing the COVID year yields similar pass-through estimates, confirming robustness.

However, a notable difference emerged in the model using a two-year interval, where the real exchange rate coefficient is -0.23, suggesting an ERPT of 77 per cent in response to any rise in the exchange rate in real terms. This implies that exporters do not immediately pass on the full effect of exchange rate appreciation or depreciation. Over a longer period, they are more likely to adjust their prices more, leading to a greater degree of pass-through. Moreover, this finding indicates that exporters gradually adjust to exchange rate shocks, consistent with the literature on delayed pass-through (Gopinath et al., 2010). This temporal dimension underscores the dynamic nature of pricing behaviour.

Although dynamic panel fixed effects are our baseline, we also estimate pooled OLS and random effects models as a sensitivity check. The magnitudes differ slightly, but the signs and significance of coefficients remain consistent, lending confidence to the baseline approach.

¹⁶ Unlike Gopinath et al. (2010), who study medium- and long-run pass-through using monthly data and distributed lag structures over horizons up to 24 months, this paper adopts a lower-frequency two-year interval specification to assess whether exchange rate pass-through relationships persist once short-run fluctuations and year-to-year adjustments are averaged out.

Table 5: Robustness Check

	(1)	(2)	(3)
1 st lag of log of Counterfactual Price	0.23*** [0.01]	0.22*** [0.01]	0.30*** [0.01]
Log of Counterfactual Tariff	-0.65*** [0.07]	-0.36*** [0.06]	-0.39*** [0.10]
Log of RER	-0.41*** [0.02]	-0.31*** [0.02]	-0.23*** [0.02]
COVID_19	-0.04*** [0.01]		
Constant	2.49*** [0.23]	2.32*** [0.20]	2.51*** [0.30]
Observations	32,382	28,546	18,006
R-squared	0.57	0.59	0.59
Destination FE	Yes	Yes	Yes
Product FE	Yes	Yes	Yes
Year FE	No	Yes	Yes

Robust Standard errors in brackets

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Sources: Authors' estimation using the data from EU Comext, WITS, and IMF.

VI. Conclusion and Policy Implications

Bangladesh is set to enter a more competitive trade environment as its long-standing duty-free access to the European Union (EU) comes to an end following graduation from Least Developed Country (LDC) status. Post-graduation, Bangladesh's apparel exports are expected to face tariffs of around 12 per cent, compared to the zero-tariff access currently enjoyed under the EU's Everything But Arms initiative. Since most competing apparel exporters will continue to benefit from preferential, duty-free access, the resulting increase in tariff incidence is likely to have significant implications for Bangladesh's export competitiveness in its largest export market.

This paper empirically examines the extent of tariff and exchange rate pass-through for Bangladesh's apparel exports to the EU. Specifically, it estimates the share of post-graduation tariffs and exchange rate depreciations that are absorbed by exporters through adjustments in pre-tariff export prices, rather than being fully passed on to importers or consumers. To address the absence of historical data under a tariff regime, the paper constructs counterfactual tariff schedules and export prices that replicate the post-graduation trade environment. These counterfactuals are derived from the observed pricing behaviour of comparable apparel-exporting countries in the EU market at the disaggregated product level. This approach enables an assessment of how Bangladeshi exporters are likely to adjust prices when facing tariff levels they have not previously encountered. By doing so, the paper contributes to the ongoing debate on tariff incidence in preference-dependent export sectors, providing new evidence on the extent to which Bangladeshi apparel exporters may need to absorb post-graduation tariffs to remain competitive. In addition, it examines exchange rate pass-through to export prices, shedding light on how currency depreciation

affects exporters' pricing strategies and the extent to which these adjustments translate into lower prices for EU importers and consumers.

The empirical results indicate incomplete tariff pass-through to pre-tariff export prices. The estimated coefficients suggest that Bangladeshi apparel exporters are likely to absorb between 30 and 80 per cent of post-graduation tariffs by lowering their pre-tariff prices. Given that the apparel sector already operates on thin profit margins, this additional cost burden may place significant financial stress on exporters—particularly smaller firms with limited pricing power and lower margins. As a result, some exporters, especially SMEs, may respond by scaling back production or exiting the EU market altogether. The estimates also point to incomplete exchange rate pass-through. On average, only 40–50 per cent of exchange rate depreciation is transmitted to EU importers and consumers in the form of lower export prices. It implies that exporters do not fully exploit the potential competitiveness gains from currency depreciation. The constraint is especially pronounced in woven apparel, where exchange rate pass-through is estimated at only around 10 per cent, leaving little scope for exporters to use currency depreciation to offset rising tariffs. As a result, woven apparel exporters appear particularly vulnerable in the post-LDC graduation period, facing heightened competitiveness pressures with limited pricing flexibility.

Bangladesh's export performance after LDC graduation will depend not only on changes in tariffs and exchange rates, but also on the degree of flexibility firms have in responding to these shocks. The empirical results suggest that such flexibility is limited—particularly in woven apparel—implying that adjustment costs are likely to be borne largely by exporters. To mitigate adverse effects and prepare the ready-made garment (RMG) sector for heightened competition in the EU market, a coordinated policy response is therefore required. This study highlights several policy priorities that could help sustain the competitiveness of Bangladesh's apparel exports in the post-graduation period.

First, Bangladesh should intensify engagement with the EU to secure continued preferential market access under the proposed GSP regulation. The EU's decision to extend its current GSP scheme until the end of 2027 provides a critical window for negotiation. During this period, Bangladesh should work closely with the EU to meet the requirements of the 32 international conventions necessary for GSP+ eligibility. In addition, it should seek the removal or relaxation of Article 29 in the proposed EU GSP regulation, which could otherwise subject apparel exports to MFN tariffs even after GSP+ eligibility. In coordinating with other GSP beneficiary countries, Bangladesh should advocate for a more flexible application (removal or relaxation) of safeguard provisions in the next GSP cycle.

Second, reliance on price-based competitiveness is increasingly fragile and unsustainable for Bangladesh. Persistently low unit values reflect thin margins and limited pricing power, leaving exporters poorly positioned to absorb new trade costs. This underscores the need for a strategic shift toward upgrading product quality and design capabilities, allowing firms to command higher prices rather than competing primarily on cost. Moving into higher-value product segments can provide greater resilience and improved profit margins, particularly in markets where design, fabric quality, compliance standards, and certifications matter more than small price differences. This transition

can be supported by encouraging firms to develop mid-range and higher-end products—such as outerwear, functional apparel, and specialised textiles—where competition is less purely price-based, and by expanding support for training and investment in design, branding, and product development to help Bangladeshi firms differentiate themselves in the EU market.

Third, exchange rate policy alone cannot offset post-graduation trade shocks. Although depreciation provides some relief, exchange rate pass-through is incomplete and constrained by imported input dependence, particularly in woven apparel. Maintaining a competitive and flexible real exchange rate remains important, but it should be complemented by structural reforms rather than viewed as a standalone solution.

Fourth, Bangladesh should strengthen its backward linkages, especially in the woven apparel industry, to improve competitiveness. Woven apparel exporters appear particularly exposed, largely because their heavy reliance on imported fabrics limits the scope for price adjustment when the currency depreciates. As a result, exchange rate pass-through is lower for woven exporters, constraining their ability to use exchange rate movements to improve price competitiveness in the EU market. This limitation is likely to become more binding as tariffs rise following graduation, intensifying competitive pressures. Strengthening domestic supply capacity could therefore provide exporters with greater flexibility to manage these challenges. In this context, policy efforts could focus on encouraging investment in domestic woven fabric, dyeing, and finishing facilities to reduce dependence on imported inputs; attracting foreign partners to bring in advanced technology and production practices to accelerate capacity development; and offering targeted incentives or concessional financing to firms that expand local input production and gradually shift toward greater domestic sourcing.

Fifth, the country needs to create an enabling environment that allows firms to strengthen competitiveness during the post-graduation adjustment period. If Bangladesh begins to face MFN tariffs, the results suggest that exporters will be unable to pass the full tariff burden on to buyers, forcing many to reduce prices and absorb the costs through narrower margins. This raises concerns about firm profitability and long-term sustainability, underscoring the need for policy measures to cushion the adjustment until the sector adapts. Such support could take several forms, including the provision of short-term financial instruments—such as low-interest loans, temporary rebates, or targeted credit facilities—to ease the immediate pressure from tariff-induced price reductions; the removal of infrastructural and logistical bottlenecks through improved transport networks, reliable energy supply, streamlined customs procedures, and more efficient port operations to reduce trade costs and lead times; and the expansion of productivity-enhancing programmes focused on automation, process improvements, and workforce skills development, as lower production costs can help firms offset rising tariff pressures.

Finally, firm-level productivity and cost efficiency need to be strengthened to sustain competitiveness. Since both tariff and exchange rate adjustments are partly absorbed through margins, improving energy efficiency, logistics performance, compliance management, and scale economies becomes critical for maintaining export viability in a less preferential trade environment.

Looking ahead, Bangladesh's transition out of LDC status marks a critical turning point for its apparel sector, particularly in the EU market, where preference erosion, limited pass-through, and intensifying competition will reshape export dynamics. While Bangladesh is unlikely to avoid all adjustment costs, early and coordinated preparation can substantially soften their impact. The findings of this study suggest that adjustment to the post-graduation trade regime will involve both price responses and deeper structural changes, neither of which is straightforward, but both of which are manageable if addressed with consistency and foresight. Successfully navigating this transition will therefore require a combination of strategic trade engagement, targeted policy support, and firm-level adaptation aimed at strengthening supply-side capacity, reducing structural trade costs, and moving up the value chain. If these efforts advance in parallel, Bangladesh's apparel sector can sustain export growth and remain competitive even as the policy environment evolves around it.

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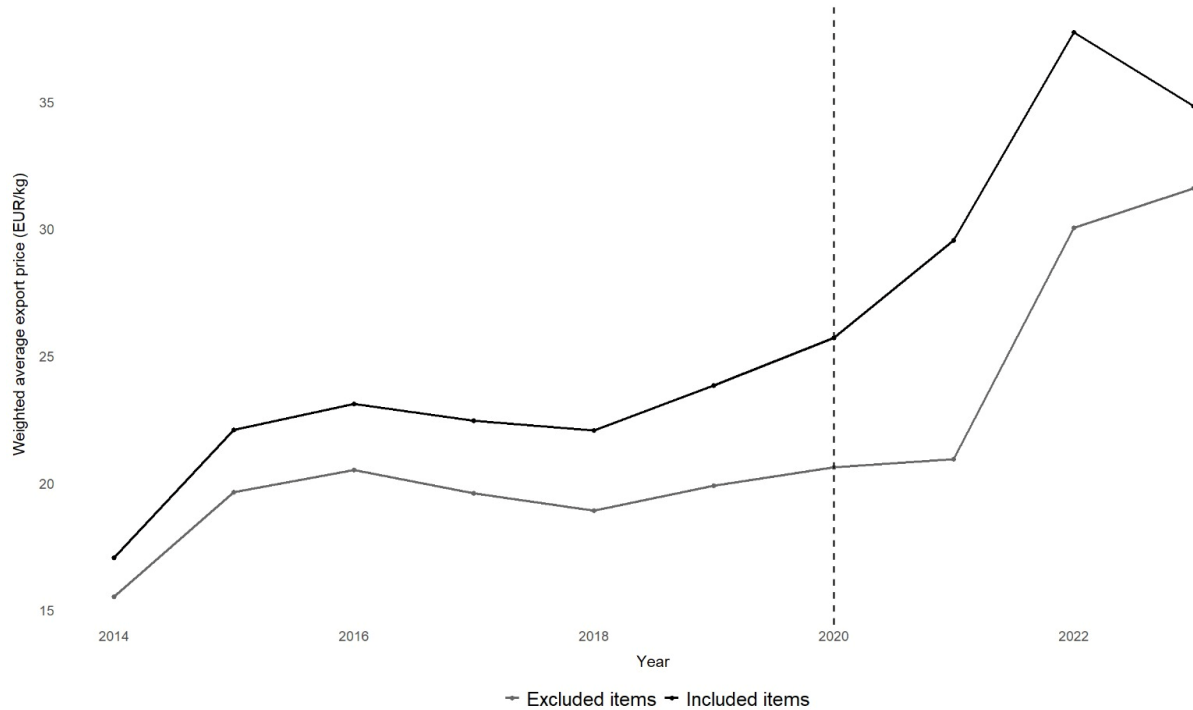
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Annexe A

Figure A1: Cambodia's export prices before and after the EU GSP suspension



Source: Authors' representation using the data from EU Comext and information from EU Regulation No 978/2012

Annexe B: Construction of the Counterfactual Export Price for Bangladesh

This section explains how we construct a counterfactual export price for Bangladesh using prices from major competing suppliers in the EU markets, which are China, India, Cambodia, Pakistan, Turkey, and Vietnam. The goal is to build a synthetic price series that shows what Bangladesh's price would have been if it followed the pricing pattern of its competitors.

Step 1: Estimating the benchmark price model

First, I estimate a panel fixed-effects regression where the dependent variable is the export price of Bangladesh (in euros per kg), and the explanatory variables are the export prices of competing countries:

$$P_{ijt}^{BD} = \beta_{CN} P_{ijt}^{CN} + \beta_{IN} P_{ijt}^{IN} + \beta_{KH} P_{ijt}^{KH} + \beta_{PK} P_{ijt}^{PK} + \beta_{TR} P_{ijt}^{TR} + \beta_{VN} P_{ijt}^{VN} + \alpha_i + \varphi_j + \gamma_t + \varepsilon_{ijt} \dots\dots (1)$$

where

- P_{ijt}^{BD} is the export price per kg of Bangladesh for product–destination–time observation,
- P_{ijt}^c is the export price per kg of the competitor ($c \in CN, IN, KH, PK, TR, VN$),

- α_i are product fixed effects,
- φ_j are destination fixed effects,
- γ_t are year fixed effects,
- ε_{it} is the error term.

Equation 1 is implemented with a panel fixed effect regression model.¹⁷ The coefficients of comparator countries' price measure how strongly Bangladesh's price co-moves with each competitor's price, after controlling for time-invariant factors and common year shocks.

Step 2: Extracting the price coefficients

After estimating the regression, we extract the significant slope coefficients for each competitor country and use them as building blocks to construct time-varying weights for the counterfactual price.

The counterfactual price is based on a weighted average of competitors' prices. However, the set of active competitors (that have positive export prices) may change over time (for example, some countries may have zero or missing exports in some years in some destinations).

To handle this, we construct for each observation a denominator that is the sum of the relevant $(\widehat{\beta}_c)$ across all competitors that are present in that row (i.e. have a strictly positive observed price):

$$D_{ijt} = \sum_{c \in C_{ijt}} \widehat{\beta}_c$$

where (C_{ijt}) is the set of competitor countries with $(P_{ijt}^c > 0)$. If no competitor has a positive price in a given row, the denominator is set to zero, and that observation does not contribute to the counterfactual series.¹⁸

Step 3: Constructing row-specific weights

Next, we convert the $(\widehat{\beta}_c)$ into row-specific weights that sum to one across the active competitors in each observation. For each country (c) and observation, the weight is defined as:

By construction, for all observations with $(D_{it} > 0)$,

$$\sum_{c \in C_{ijt}} w_{ijt}^c = 1$$

These weights have two important properties:

1. They reflect the strength of the price link between Bangladesh and each competitor (through $(\widehat{\beta}_c)$).

¹⁷ We check for Hausman test where we found fixed effect is superior to that of random effect.

¹⁸ If Bangladesh is the only exporter of those items in a specific time and destination, we are only considering that observation which have at least one competitors in that market.

2. They adapt to the available competitor set in each row (only countries with positive prices receive weight).

Step 4: Constructing the counterfactual price and tariff

Finally, we use the row-specific weights to build the counterfactual export price series for Bangladesh. For each observation, the counterfactual price is defined as the weighted average of competitors' prices:

$$P_{ijt}^{CF} = \sum c w_{ijt}^c P_{ijt}^c$$

In the main analysis, we use the observed competitors' export prices per kg, so that:

$$P_{ijt}^{CF} = w_{ijt}^{CN} P_{ijt}^{CN} + w_{ijt}^{IN} P_{ijt}^{IN} + w_{ijt}^{KH} P_{ijt}^{KH} + w_{ijt}^{PK} P_{ijt}^{PK} + w_{ijt}^{TR} P_{ijt}^{TR} + w_{ijt}^{VN} P_{ijt}^{VN}$$

The resulting series (P_{ijt}^{CF}) represents the counterfactual price that Bangladesh would have charged if it followed a synthetic combination of competitor pricing behavior, where the combination is determined by the estimated co-movement of prices in the panel regression.

However, the same weight has been used to construct the counterfactual tariff because we relied on the competitors' observed export prices. It is necessary to create the counterfactual tariff using the same methodology. We used a counterfactual tariff as:

$$t_{ijt}^{CF} = w_{ijt}^{CN} t_{ijt}^{CN} + w_{ijt}^{IN} t_{ijt}^{IN} + w_{ijt}^{KH} t_{ijt}^{KH} + w_{ijt}^{PK} t_{ijt}^{PK} + w_{ijt}^{TR} t_{ijt}^{TR} + w_{ijt}^{VN} t_{ijt}^{VN}$$

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