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POST-ATC IMPACTS ON PRODUCT INTENSIVE AND EXTENSIVE TRADE MARGINS: A QUANTITATIVE ANALYSIS

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Abstract. This paper empirically examines the effectiveness of the dismantling of the Agreement on Textiles and Clothing (ATC) in influencing the product-intensive and product-extensive margins of textiles and clothing exports for the South Asian competitors (Pakistan, India, and Bangladesh) in its two major destination markets, the EU and the USA. In addition, the paper also probes the effect on South Asian exports of textiles and clothing items of the removal of quotas on Chinese exports that were imposed in the EU and the USA markets, and the trade preferences margins computed for the same product lines. The inclusion of the latter two independent variables in discussing ATC is crucial as the regulatory regime in textiles and clothing trade continues to evolve and post-ATC impact is further complicated and/or mitigated by preferential arrangements among regions, countries and emergency measures such as safeguard measures. Using data for the period 2003-2014, the results from Tobit regression suggest that expansion along the extensive margin in response to reduced barriers is in line with the predictions of the model of heterogeneous firms. Reduction

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in these costs can induce trade in products that were not previously traded or that were least traded. Thus exports grow at both the intensive and extensive margins as trade costs are brought down. The study affirms that there are differentiated impacts of policies on sectoral exports, sub-sectoral exports and their margins in the two markets.

Keywords: Export diversification, Intensive margin, Extensive margin, Gravity model, Tobit regression

JEL classification: C24, F13, F14, F15

I. INTRODUCTION

In developed and developing countries alike, textiles and clothing sector has been the most protected sector and has relentlessly been in realm of protectionist measures such as tariffs, quotas, subsidies, safeguard measures, etc. In the late 1950s, USA imposed voluntary export restraints on cotton textiles exports of Japan, Hong Kong, India and Pakistan. In 1962, under the auspices of GATT, a Long-Term Agreement (LTA) regarding restrictions on trade in cotton textiles was signed. Later in 1974, this was replaced by the Multifibre Arrangement (MFA), which lasted for two decades. This agreement curbed developing countries' textiles and clothing exports to Western Europe and North America via quantitative restrictions. This adversely affected the developing countries output, growth and employment. In 1995, the World Trade Organization (WTO) was established and the MFA was integrated into the new Agreement on Textiles and Clothing (ATC). This agreement sought to dismantle the MFA restrictions in four phases in ten years (1995-2005). Since January 2005, the textiles and clothing sector has been subjected to the general rules of the General Agreement on Tariffs and Trade (GATT).

Vast literature concurs that the reduction of tariff and non-tariff barriers in destination countries affect exports positively by reducing variable costs, but at the same time fixed costs of exporting may also rise, say the cost of complying with the rules of origin in a preferential scheme. There is vast empirical literature that has been generated analyzing the ex-ante and ex-post impacts of MFA abolition on the

exports of developing countries. An ex-ante study by Gelb (2005) argued that Pakistan, India, Bangladesh and Vietnam would gain in some markets as the major importers of textiles and clothing would reduce the risk of importing only from one country. He argued that most developing countries' exports would suffer in the post-MFA era due to Chinese influx of goods. An ex-post study by Whalley (2006) employed a multi-country CGE model and concluded that Pakistan's export growth was restrained in the immediate post-ATC period because the positive effects of the removal of MFA restrictions were nullified by factors such as a 13.4% EU anti-dumping duty on bed-wear and the re-introduction of a 12% tariff on textiles exports. Adhikari and Weeratunge (2007) analyzed the 18-19 month period post-ATC and deduced that the abolition of restrictions did not alter the export composition.

These papers have investigated the impacts of post-ATC only on the intensive margin of trade (the volume of already-traded varieties – old product lines). A less extensive literature has investigated the impacts on the extensive margin of trade (export of new products). A preliminary study by Khandelwal et al (2010) have attempted to reveal the impact of misallocation of quota licenses along the extensive margin on aggregate total factor productivity for China. For the most part, literature has focused on impacts of ATC expiration on total export value of textiles and clothing, without extracting the details of the total exports, i.e. whether exports grew at the intensive or extensive margins or which of these margins mattered more pre- and post-ATC.

This study disentangles total trade of textiles and clothing at the two trade margins - extensive and intensive, since results of total trade (at aggregate level) may be misleading as trade margins may manifest in different ways as there may be differentiated impacts of policies on the two margins. This is better understood using frameworks based on recent developments in international economics such as Melitz (2003) and Chaney (2008). These can be utilized as a benchmark as it takes into account firm heterogeneity and market-specific costs to enter a market.

Export growth can take place either through the "extensive margin" which is of two types: geographic extensive i.e. growth in export value of old products or new products to new destinations (OPND and NPND), and product extensive i.e. growth in export value of new products to old

destinations or to new destinations (NPOD and NPND), or the "intensive margin" i.e. growth in export value of old products among old destinations (OPOD). Export diversification is therefore understood as the growth of exports due to new products or new markets - extensive margin. A more prolific analysis of the gains from a more liberalized trade is made if it is established whether the resultant export growth is predominantly at the intensive margin or at the extensive margin. This also aids in understanding the underlying growth dynamics of exports, and provides useful insights into productivity and innovation1.

Amurgo-Pacheco and Pierola (2008) provide a useful definition of diversification as shown in the table below:

TABLE 1

The Definition of Diversification

	OLD PRODUCTS (OP)	NEW PRODUCTS (NP)
OLD DESTINATIONS (OD)	OPOD	NPOD
NEW DESTINATIONS (ND)	OPND	NPND

Geographic Extensive = OPND + NPND
Product Extensive = NPOD + NPND
Product Intensive = OPOD

The analysis in this paper is restricted to two of the four margins: NPOD (product-extensive margin) and OPOD (product-intensive margin).

The intent of this paper is to show whether South Asian aggregate exports of textiles and clothing sector, and more importantly, exports at which of the two margins, were hurt by quotas imposed under the MFA regime. Furthermore, the paper probes whether the trade preferential margins furthered the South Asian exports of textiles and clothing. We attempt to examine the effect of removal of MFA alongside China quotas and the trade preferences margins on the extensive and intensive export margins of textiles and clothing product lines. The inclusion of the latter two in discussing ATC is crucial as the regulatory regime in textiles and clothing trade continues to evolve and post-ATC impact is further

[1] http://www.oecd.org/agriculture/agricultural-trade/43057179.pdf

complicated and/or mitigated by preferential arrangements among regions, countries and emergency measures such as safeguard measures. However, it is difficult to disentangle the impacts of various episodes on export basket composition, but such an exercise that incorporates trade margins into empirical research at best aids in improving insights into the development process.

The remainder of the paper is structured as follows. Section 2 presents an overview of the theoretical framework that is used as a basis of the estimating equations. Section 3 provides a brief discussion of data employed and the empirical analysis using gravity equations to estimate export flows. In Section 4, results of estimations are presented and interpreted. The last section concludes.

II. THEORETICAL FRAMEWORK

Traditional trade theories cannot investigate the diversification patterns since they simply omit all zero-valued trade flows. If zero trade flows are not randomly distributed, the results arising from the use of these models are biased. The workhorse trade models maintain that as economies develop or barriers to trade are reduced, more is exported, but there is disagreement among the models about how the export growth transpires. For instance, trade models with Armington assumption feature an intensive margin only, thereby underestimating the trade and welfare effects of trade openness2 and also making the wrong prediction that larger economies' exports are lower priced than smaller ones3. Gravity equation equipped with micro-foundation in Anderson and van Wincoop (2003) assume homogeneous goods within each country, and the absence of extensive margin indicates that changes in trade costs only lead to greater export volumes of the same products. Empirical trade models that tail Krugman features of monopolistic competition and endogenous productivity levels corroborate that countries' productivity levels across industries differ greatly, and these differences accentuate the export varieties (product-extensive margin) of countries, i.e. goods are differentiated by location of production. This latter finding has been

[2] See https://www.gtap.agecon.purdue.edu/resources/download/3095.pdf
[3] See http://klenow.com/Hummels&Klenow.pdf

reiterated and termed as a 'basic fact' in a study by Eaton and Kortum (2002), in which they allow for stochastic differences in technologies across countries, and their results indicate that a country with a higher state of technology, lower input cost or lower trade impediments export a wider range of goods.

Melitz model constitutes an enrichment over Helpman and Krugman (1985) trade model. It has two key novelties: marginal costs faced by different firms vary, and firms face a fixed cost of entering a market. The Melitz model assumes that firms incur a fixed cost in producing a new variety. The Melitz model departs from Krugman's model by incorporating heterogeneity of firms in terms of productivity. Using the Melitz model with heterogeneous firms, the existence of a zero trade flow can be related to variable and fixed trade costs. The higher the trade cost, the more likely the observance of a zero. Thus, the model is able to explain the phenomenon of zero trade flows and can be utilized to understanding the two margins of trade. An important manifestation that stems from the threshold-productivity inclusion in the model is that improved productivity via lower costs of exports result in increased average exports of each firm (product-intensive margin) as well as the number of firms (product-extensive margin). The model reinforces that firms that are more productive than others turn out to be exporters, and more firms are drawn into exporting when trade costs and other barriers to trade are reduced since average productivity of firms increase. This paper follows the Melitz framework.

The bilateral exports from country of origin to destination country is based on two conditions:

a. The origin country's cut-off condition for exports to the destination country
b. The origin country's mass of total product varieties

Only those domestic firms that successfully cover the fixed costs of market entry by producing at low marginal costs become exporters. The export cut-off condition that defines the threshold marginal cost for exporting firms is given by:

$$F_d^X = \left(\frac{\bar{a}_{od}\tau_{od}}{1-1/\sigma}\right)^{i-\sigma} \frac{B_d}{\sigma} \qquad (1)$$

F_d^X is fixed cost of entry in the destination market. 'a' is firm-specific marginal cost. $\bar{a}_{od}$is the threshold marginal cost of origin country's product in destination market? τ_{od} is the bilateral trade costs? $B_d$is the demand-shifter in destination market, namely $\frac{E_d}{P_d^{1-\sigma}}$ where E_d is total expenditure in destination market on all varieties, $P_d$is the usual CES price index.

The domestic cut-off condition defines he highest marginal cost for all active firms in the country of origin. Firms faced with higher marginal cost than this threshold cost will not produce even for the domestic market. This cut-off condition is as follows:

$$F_o^D = \left(\frac{\bar{a}_{oo}}{1-1/\sigma}\right)^{i-\sigma} \frac{B_o}{\sigma} \qquad (2)$$

F_o^D is the cost of entry in the domestic market. $\bar{a}_{oo}$ is the threshold marginal cost of origin country's product in its own market. Assume no trade costs for domestic sales.

The value of bilateral exports for each firm is:

$$V_{od} = \begin{cases} \tau_{od}^{1-\sigma} \boldsymbol{B_d} \left\{ n_0 \int_0^{\bar{a}_{od}} a^{1-\sigma} dG[a|\bar{a}_{oo}] \right\} \left(1 - \frac{1}{\sigma}\right)^{\sigma-1}, & a \le \bar{a}_{od} \\ 0, & a > \bar{a}_{od} \end{cases} \qquad (3)$$

Where,

V_{od} = Total bilateral exports from nation-o (origin) to nation-d (destination)

τ_{od}= Bilateral trade costs

a =Firm specific marginal cost

$\bar{a}_{od}$ = Pair-specific threshold marginal cost for sales abroad

$\bar{a}_{oo}$ = Threshold marginal cost for domestic sales

n_0 = Endowment of nation-o

B_d = Demand-shifter in nation-d, namely $\frac{E_d}{P_d^{1-\sigma}}$ where E_d is total expenditure in nation-d on all varieties, $P_d$is the usual CES price index

$G[a|\bar{a}_{oo}]$ = The conditional density function, describing the distribution of marginal costs in nation-o; it is conditional on $\bar{a}_{oo}$ since firms that do not produce in nation-o cannot export.

III. ECONOMETRIC METHODOLOGY AND DATA

THE DATASET

To be able to pick up bilateral switches in export behavior at the product level and firm level using the Melitz trade theoretical framework, the ideal dataset should contain the product level, firm level bilateral trade data. Due to non-availability of the product-level, firm-level data, the full extensive margin cannot be captured by utilizing export data at HS-6 digit level. There are a range of goods within HS-6 digit level product lines. Therefore, if more varieties were traded post-ATC within a 6-digit product category, such product extensive margin cannot be identified. Thus, when a bilateral flow switches from zero to a positive value, this may mean that we do not know how many different varieties may have been traded. Thus, the impacts on extensive product margin cannot be fully ascertained.

The Harmonized System (HS) codes are standard up to six digits, the most detailed level that can be compared internationally. The HS codes that are greater than 6-digit cannot be used to make international comparisons as countries do not always use the same codes to define products. Therefore, due to non-availability of such product-level, firm-level data, and since the present study is a comparative analysis of three exporters of textiles and clothing to two destinations, the paper resorts to using the most detailed trade data available, namely the HS 6-digit level, available from the UN COMTRADE database.

Data for the dependent variable, the export value of textiles and clothing product lines, are acquired at the HS 6-digit level from the UN COMTRADE database. Data on independent variables such as nominal GDP and population of the exporter and importer nations are obtained from World Development Indicators (WDI) database. Bilateral distance data is obtained from the CEPII bilateral distance database4. The

[4] www.cepii.fr

preferential trade agreements are those that are notified to the WTO5. Trade preference margin are computed from data obtained from WTO6.

In the UN COMTRADE statistics database, 'zero' trade flows and missing values are both treated as 'not reported'. Missing data may underestimate the trade of a country as trade may have taken place but data may not have been made available. Felbermayr and Kohler (2005) replace missing observations with zero trade flows, while Helpman et al (2008) treat zero trade flows as missing observations. For the present study, if trade for a product is 'not reported' for all years within the time frame of the study for any country, such products are left out of the analysis. If, however, export for a product line is reported for one or more years, and is missing (not reported) for the remaining years, then these missing observations are treated as zero export flow, and zero value is assigned for the missing years. Thus, there are different numbers of observations for each exporting country.

The HS-2002 trade data is available for the time-period 2003 to 2014 for India, 2003 to 2014 for Pakistan and 2002 to 2011 for Bangladesh. The textiles sector analysis is made for India and Pakistan; hence the time frame for the study of this sector is the period 2003 to 2014. The clothing sector includes all three exporting countries, in which the last three years (2012-14) are excluded from the analysis for Bangladesh due to non-availability of data. Thus, the time frame of the present study is the period 2003 to 2014 for textiles and clothing for Pakistan and India, and 2003 to 2011 for clothing product lines for Bangladesh. Bangladesh has been omitted from the textiles sector analysis due to the absence of strong backward linkages in textiles, chiefly in woven fabrics, for which it is heavily reliant on imported fabric.

The destination markets for both textiles and clothing are EU-15 and USA. Since 2003, EU membership has grown from 15 countries to 28 countries. Nine of ten top export destinations for all three South Asian countries were core member states of EU, i.e. EU-15. The present analysis focuses only on EU-15. The average share of Pakistan's exports to EU-28 for the period 2012-14 accounted for 25.3 percent, while it was

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[5] http://ptadb.wto.org/?lang=1

[6] https://tao.wto.org/welcome.aspx?ReturnUrl=%2f

23.8 percent for EU-15. India's share of exports to the EU-28 for 2014 is 16.2 percent while its exports to the top five export destination markets within EU (UK, Germany, Netherlands, Belgium and Italy) account for 11.1 percent, and adding France and Spain drives up the share to 13.7 percent. The number of member states of the EU has been increasing over time, but the current study requires fixed number of member states since it concerns the scrutiny of product diversification: extensive and intensive. If the number of member states is allowed to increase with time, the results may overestimate the importance of margins over time for EU.

Quotas were dismantled under the ATC regime in three phases. Due to data limitation, only the last ATC phase (2003-05) is taken into account due to which the full impacts on trade margins, in particular the extensive trade margin, may not be captured as a consequence of abolition of quotas. Nevertheless, by considering only the last ATC phase, a lot of information related specifically to extensive margin of trade may most probably not be lost since most of the commercially meaningful textiles and clothing items were integrated in 2005. Most products integrated in the first three stages were either not restricted in the first place or were subject to non-binding quotas with low utilization rates. Therefore, minimal integration took place in the first three phases of ATC.

Though the ATC regime was abolished from 1st January 2005, yet this study includes 2005 as the ATC period, for the same reasons stated in a study by Akhtar and Wahab (2011). Trade remedies such as safeguard measures were deployed by US and EU to deal with immediate pressure that could cause huge adverse impacts by eliminating quotas. Also, the booming world trade in 2005 may have contributed to exports growth, and distilling the impacts of ATC removal from the impact of world trade is difficult (ILO, 2007). The study employs a relatively longer dataset of post-ATC years (only 3 pre- and 9 post-ATC years), and this is useful as it provides an insight into the medium-term adjustment process of textiles and clothing exports resulting from quota abolition.

There are 848 textiles and clothing products according to the product definition at the 6-digit lines according to the Harmonized System (HS) classification 2002. Pakistan exports 695 HS-6 digit textiles and clothing

product lines to USA, while India exports 823 textiles and clothing product lines, and Bangladesh ships 284 clothing lines to the same destination. Pakistan and India export observations span 12 years in this study while Bangladesh only 9 years. Thus total export observations to USA are 20,772. In case of EU, Pakistan's exports comprise 753 textiles and clothing lines, India 841 textiles and clothing lines, and Bangladesh 291 clothing lines. Thus for the same span of time for each exporter as in case of USA, the total observations to EU are 21,747. Thus the total number of observations to both destinations amount to 42,519.

THE ESTIMATING EQUATION

Equation 3 suggests a gravity-like estimation. The equation is not a linear one, so that it is linearized by taking logs. The GDP of destination market can be used as a proxy for E_d and the GDP of the origin country as a proxy for n_0. A reduction in trade cost,τ, or market entry cost, F_X, will lead to an increase in bilateral exports. Reduction in these costs can induce trade in products that were not previously traded or that were least traded. Thus, export grows at both the intensive and extensive margins as trade costs are brought down. When firms find it unprofitable to export, the firm will not export at all. Zero-valued trade flows in the dependent variable create a problem for a log-linear gravity equation form. When zeros are converted into logarithms for estimation, they become undefined. To tackle this, the present paper adds a small amount of 1$ to zero-valued trade flows.

Following the discussion above, and the theoretical framework presented, the following gravity equation is estimated:

$$\begin{aligned}\log(X_{odit}) = {} & \beta_0 + \beta_1 \log(GDP\_pc_{ot}) + \beta_2 \log(GDP\_pc_{dt}) \\ & + \beta_3 \log(distance) + \beta_4 \log(pre - ATC_t) \\ & + \beta_5 \log(China\_quota_t) + \beta_6 (tpm_{odit}) + \varepsilon_t\end{aligned}$$

Where, X_{odit} is the dollar value of exports from country of origin to the destination market, of the i[th] product line at the 6-digit level, in year t. GDP_pc_{ot} is the GDP per capita of the origin country in year t; GDP_pc_{dt} is the GDP per capita of the destination country. Distance is a proxy of transportation costs, so that generally it is expected to have a negative impact on trade. $China\_Quota_t$ is a dummy variable used to capture period during which safeguard measures were placed on Chinese exports of textiles and clothing by the USA and the EU. Though both destination

markets introduced import quota on Chinese exports in 2005, however, Chinese exports were also restricted during the ATC period. Therefore, to assess how quotas on Chinese exports of textiles and clothing affected the South-Asian exporters, we assign a value of 1 for the period 2003 to 2008, period of quotas on Chinese exports of textiles and clothing, and 0 otherwise. Dummy variable $\mathrm{Pre\_ATC_t} = 1$ for time period 2003-05, and 0 otherwise. To annex preferences at the product level, we compute *trade preference margin (tpm)* which is the difference between the duty payable under a given system of tariff preferences and the duty that would be assessed in the absence of preferences. It is calculated for each product line at HS 6-digit line.

Formula: tpm = MFN tariff – preference tariff

$\mathrm{tpm_{odit}}$ is a continuous variable and varies across countries, products and over time.

We add to the existing literature such as Melitz (2003) and Chaney (2008) empirically by utilizing gravity framework in a panel data setting, using the Tobit model. A traditional means of dealing with the presence of zero trade flows has been the Tobit model (or censored normal regression model). The Tobit model has been used by Rose (2004), Amurgo-Pacheco and Pierola (2008), and Andersen and Marcoiller (2002) and Baldwin and Di Nino (2006) to deal with zero trade flows. In addition, under heteroscedasticity, the parameters of log-linearized models estimated by OLS lead to biased estimates of the true elasticities (see Liu (2009), Silva & Tenreyro (2006), and Felbermayr & Kohler (2010a)).

Adding an arbitrary small positive value ($1) to the zero-valued observations is tantamount to distorting the results as it is ad hoc, and may lead to inconsistent pooled OLS estimates because these values do not reflect the underlying expected values. This leads to measurement error which can lead to selection bias (Liu 2009). The coefficients obtained using only positive trade flows are estimated inconsistently. However, when the zero trade flow is a genuine zero, it represents a choice, and Tobit model is more appropriate than models such as sample selection which is employed for missing trade values or no response.

IV. THE RESULTS

In this section, we present and discuss the results of the marginal effects of the Tobit model obtained from the estimation of the equation given above. We deal with zero-valued trade flows by adding $1 to them, due to the use of logarithm.

TABLE 2

Tobit Estimation for Sector Textiles and Clothing

Dependent variable: Log of each trade margin		
	Intensive Margin	Extensive Margin
$\log(GDP\_pc_{ot})$	0.136*** (0.024)	0.171*** (0.030)
$\log(GDP\_pc_{dt})$	0.206 (0.221)	0.258 (0.277)
$\log(distance)$	-0.433** (0.212)	-0.543** (0.267)
(Pre_ATC_t)	-0.246*** (0.054)	-0.310*** (0.068)
$(China\_quota_t)$	0.495*** (0.038)	0.622*** (0.048)
(tpm_{odit})	0.017 (0.011)	0.021 (0.013)

Observations: 42,518
Std. error in parentheses
*significant at 10%; **significant at 5%; ***significant at 1%

Table 1 shows the estimated marginal effects. All coefficients in the above table, for both the intensive and extensive margins, are significant. Signs for the coefficients of different independent variables are similar in both the cases.

GDP per capita of the exporting nation has the expected positive sign since the more developed the exporting market, the greater the level of exports and also the variety of goods and services exported. This is indicated by the larger magnitude of the extensive margin relative to the intensive margin. The development process itself entails greater innovations and inventions of newer product lines.

Distance reduces trade, and is a proxy for trade costs and has the expected negative effect on export flows. The pre-ATC dummy enters

with a negative sign in the regression as predicted, suggesting that the imposition of quotas had constrained the exports of textiles and clothing in the destination markets. The China quota dummy also has the expected positive sign, implying that South Asian exports are positively related to an imposition of safeguard measures on Chinese products. It is interesting to note that the coefficients for the extensive margin for all independent variables is larger than the intensive margin. These results provide empirical support for the Melitz model, i.e. the notion that when costs of trading are reduced, trade increases not only at the intensive margin, but also boosts trade in those product lines that were previously untraded.

In the next table, we present results table for the two sub-sectors textiles and clothing separately. We determine whether there is change in significance, magnitude and sign of variables for the sub-sectors vis-à-vis the whole sector.

TABLE 3

Tobit Estimation for Sub-Sectors Textiles and Clothing

Dependent Variable: Log of each Trade Margin for Sub-Sectors Textiles and Clothing				
	Intensive Margin		Extensive Margin	
	Textiles	Clothing	Textiles	Clothing
$\log(GDP\_pc_{ot})$	0.135*** (0.032)	0.139*** (0.037)	0.177*** (0.042)	0.164*** (0.043)
$\log(GDP\_pc_{dt})$	0.745** (0.307)	-0.031 (0.323)	0.975** (0.402)	-0.036 (0.380)
$\log(distance)$	-1.160*** (0.266)	2.259*** (0.356)	-1.519*** (0.348)	2.657*** (0.418)
(Pre_ATC_t)	-0.040 (0.074)	-0.455*** (0.080)	-0.052 (0.097)	-0.537*** (0.095)
$(China\_quota_t)$	0.475*** (0.051)	0.535*** (0.057)	0.622*** (0.067)	0.630*** (0.067)
(tpm_{odit})	0.002 (0.017)	0.023* (0.014)	0.003 (0.022)	0.027* (0.016)

Observations: textiles = 23256; clothing = 19263
Std. error in parentheses
*significant at 10%; **significant at 5%; ***significant at 1%

Table 3 presents marginal effects, conditional on being uncensored and censored for the two sub-sectors, textiles, and clothing. For both the

intensive and extensive margins, the magnitude of the coefficients of the independent variables is greater for sub-sector clothing as compared to textiles, except for extensive margin of GDP per capita of exporting nation. The magnitudes of extensive margin is greater for all independent variables than intensive margin in case of both the sub-sectors.

Signs of coefficients of all independent variables that are significant are the same for both textiles and clothing except for the variable distance. Distance for clothing is positive. What could explain this unexpected positive distance coefficient is India's graduation of the textiles sector in 2006 from the EU GSP scheme, while clothing sector remained in the scheme. Also Pakistan was not a beneficiary of GSP +, and instead availed preferences for textiles and clothing under the standard GSP. Bangladesh is included in the sample of exporters of clothing in this study, and gains from duty-free and quota-free access. Thus, all three exporters having preferential access for clothing sub-sector in destination market. In addition, Bangladesh is placed furthest from destination markets and enjoys the greatest preferential access. Transportation costs are overcome as costs accruing from other barriers to entry are curbed, i.e. having greater access to the markets incapacitates transportation costs. This finding may also explain why GDP of the destination market affects textiles exports but not clothing exports. That is irrespective of the level of average income of the importing nation, clothing exports find their way into the destination markets due to greater preferential market access.

GDP per capita of exporters have a positive influence on both margins of the two sub-sectors. The higher the level of development, the greater the ability to export. The extensive margin of textiles is more responsive to changes in average income than the extensive margin of clothing. For every 1 unit of increase in GDP per capita, exports of textiles increase by 0.177 units, while clothing by 0.164 units.

Trade preference margin and pre-ATC are significant for both margins of clothing product lines and have the expected signs, but insignificant in case of textiles. The magnitude of extensive margin being bigger than intensive margin indicates that when trade costs are reduced, new lines are traded more extensively than old lines. Generally, as fixed trade costs are reduced, a large variation in trade flows is explained by

the extensive margin relative to the intensive margin. Our analysis hence confirms the result that abolition of quotas and reduction of tariffs reduce the exporters' costs and increases diversification, since either more firms become exporters or existing firms within textiles and clothing industry respond by exporting a wider product range. Quota abolition created opportunities for South Asian exporters in the two developed destination markets but at the same time exposed them to tougher competition from exporters such as China.

A substantial portion of textile exports had already been shifted to preferential schemes in 1990s, and this may explain why the abolition of quotas led to significant impact on clothing trade but not on textile. However, safeguard measures on Chinese textiles and clothing products in the destination markets provided South Asian countries with protection from a much larger and cheaper competitor. The significant growth in export earnings of several countries post-ATC cannot be ascribed singularly to the elimination of the quota system, but also due to the re-imposition of quotas on China's exports of textiles and clothing by both the developed and some developing countries. Such temporary safeguard measures were agreed to by China during its accession to the WTO. The safeguard measures were eliminated in 2008. Moreover, Vietnam has also been able to capitalize on the opportunity of quota elimination by becoming a WTO member in 2007. The folding of these events implies an intense competitive pressure in T&C exports especially of the small players. Most ex-ante studies predicted an overwhelming rise in Chinese exports that would threaten exports of other smaller players like Bangladesh and Vietnam. The recent statistics (International Trade Statistics, WTO, 2014) concurs with their findings for some countries like Pakistan, in which its export share fell from 1.1 percent in 2000 to 1.0 percent in 2013 albeit the removal of quotas in 2005 and Pakistan being a beneficiary of the EU-GSP preference scheme. Nevertheless, Bangladesh was able to double its export share in the same period.

Thus, South Asian exporters face a serious challenge in maintaining its competitiveness post-ATC. Exports of new T&C product lines of South Asia responded better than old product lines as protectionist barriers crumbled because for very large exporters such as China, the abolition of quota served as a disincentive to diversify, while for

developing country exporters that feared loss in post-ATC era, they looked toward diversification as a survival strategy.

V. CONCLUSION

These empirical findings are significant from a policy point of view. The study by means of disentangling total trade at the extensive and intensive margins reveals that the total trade (at aggregate level) conceals the heterogeneous impact on trade. The analysis of differentiated impacts on margins helps to prioritize product lines/margins. In addition, counterfactual predictions can be generated to analyze changes in trade policies. Such information can help facilitate prioritization especially when faced with limited capacity and resources to implement interventions. Macro-economic policies, demand management and supply side policies, export marketing strategies, aid for trade, etc. are some of the interventionist measures that can be adopted.

The results of this study are consistent with Melitz heterogeneous firm model. The resulting expansion along the extensive margin in response to reduced barriers is in line with the heterogeneous firms models' predictions that heterogeneous firms face fixed entry costs of exporting to a foreign country (Melitz 2003; Bernard et al. 2003; Eaton, Kortum, and Kramarz 2011). In this model, a change in variable trade cost affects bilateral trade through the extensive margin as these costs alter the composition of exported products. Theoretical models such as Bernard et al (2011) explains firms' decisions over product extensive and geographic extensive margins of trade. This model is a generalization of the Melitz Model (2003). These models point out that firms' revenues and profits increase when variable trade costs are reduced. Incumbent exporters respond by exporting new products to the same destinations (within- firm product extensive margin), while firms that are less productive and served only the domestic market enter into export markets (the across-firm extensive margin). The implication of such a finding is that freer trade can increase average productivity by reallocating resources across firms within industries. The findings also deduce that the gravity equation is propelled by extensive margin rather than intensive margin of exports. Other recent variants of Melitz also are in keeping with these findings (Chaney, 2008; Feenstra and Kee, 2008).

Additionally, Klinger and Lederman (2006) and Cadot, Carrere and Strauss-Kahn (2011) reveal that poor countries have a concentrated export basket, and thus have a larger scope for diversifying into new products. This indicates that extensive margin activity is robust in the case of poor countries, meaning that the extensive margin of trade is an important driver of gravity equation. Therefore, when trade costs are reduced, firms respond strongly by exporting new products. Kehoe and Ruhl (2009) show that the set of least traded products that accounted for 10 percent of trade before trade liberalization grew to 30 percent after trade liberalization. Kehoe and Ruhl (2013) in another study show that when there is a dramatic growth in the extensive margin during episodes of trade liberalization, it suggests that important structural changes took place during these periods. Policies should help ensure a continuing inflow of new exporters, and help ensure successful continuance in exporting among more of those who begin to export.

Because there are differentiated impacts of policies on sectoral exports, sub-sectoral exports and their margins, this indicates that policy-makers and marketing strategists fine-tune their exporting policies and marketing strategies for different sectors and sub-sectors. Trade experts in international and bilateral negotiating forums must modify their negotiating skills and approaches, and need to analyze the extent to which third party preferential arrangements such as EU-India FTA are likely to seize market shares.

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APPENDIX

Tobit Estimation – Raw Coefficients

Dependent variable: Log of Exports

	Textiles & Clothing	Textiles	Clothing
$\log(GDP\_pc_{ot})$	0.189***	0.205***	0.173***
	(0.033)	(0.048)	(0.045)
$\log(GDP\_pc_{dt})$	0.285	1.126**	-0.038
	(0.306)	(0.465)	(0.400)
$\log(distance)$	-0.600**	-1.754***	2.800***
	(0.294)	(0.402)	(0.440)
(Pre_ATC_t)	-0.343***	-0.060	-0.568***
	(0.075)	(0.112)	(0.100)
$(China\_quota_t)$	0.687***	0.718***	0.664***
	(0.052)	(0.077)	(0.070)
(tpm_{odit})	0.023	0.003	0.029*
	(0.015)	(0.026)	(0.017)
Constant	11.035**	11.426*	-14.788**
	(4.494)	(6.699)	(6.170)