The multi fibre arrangement and South Asia

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Abstract: Withdrawal of Multi Fibre Arrangement affected the textile and clothing industries worldwide. This chapter studies impact of MFA phase-out on export growth for seven major Asian exporters between 1995 and 2005. We use constant market share analysis to reflect on the conditions of clothing and textile industries in these countries. We observe that the removal of quota led to significant changes in country-wise export shares – countries with more efficient production techniques captured larger shares in the post-MFA phase. It supports a recent theoretical proposition that removal of quota in this case would lead to concentration of textile production in few larger countries in Asia at the expense of many smaller ones that previously enjoyed considerable export shares.

Keywords: Multi Fibre Arrangement, WTO, Quota, Exports, Asia,

JEL Classification: F13, F14, F17

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1. Introduction

High degrees of economic transactions within the South vis-à-vis those between North and South countries was long described as the 'flight of the chicken' – one that is always promising, but never realised! Reasons behind this observed trend, naturally eclectic, has been discussed in various ways. Among these however, lack of intra-industry trade was considered reasonably potent in explaining why the North-South interactions are still overwhelmingly important. Differences in production technologies according to the Heckscher-Ohlin-Ricardo model of trade (Davis, 1995) or imperfect competition *à la* Krugman (1980, 1981) provide strong grounds for intra-industry trade, and yet smaller domestic markets and other institutional barriers did not allow these to successfully explain intra-South trade in goods. In more recent times, however, there has been a significant growth in the flow of goods and services within South countries mainly owing to the benefits of globalisation reaching large masses in the South. What we argue in this paper is that certain changes that ushered in with regime shifts in the WTO policies have caused to bring the South countries closer through competition than they ever were. With regard to such exogenous policy shifts we shall invoke the well-known Multi Fibre Arrangement (henceforth, MFA) in clothing and textile and its slow phasing out over a period of ten years. For a large number of Asian countries that traditionally enjoyed high comparative advantages in the production of these commodities, demise of the MFA brought in varied and significant economic changes. This chapter traces the impact of MFA withdrawal for a handful of Asian countries and reflects on the implications for the global South. Interestingly, albeit much has been written on the role

of MFA and its implications, a cross-country analysis of the nature we develop here is not available in the present literature.

The focal point in this analysis is the state of competitiveness for India in the manufacturing of textiles and clothing vis-à-vis other Asian exporters. As we have already mentioned, choice of textile and clothing sector is an outcome of the importance it carries for India and competing Asian countries. For India, in particular, it is the largest industry as well as the largest net foreign exchange earner. The contribution of this industry to the gross export earnings of India is over 20% while it adds only 2-3% to the gross import bill. Between textile and apparel, it is the apparel (clothing) industry, which is of more recent origin and produces exportable primarily. Secondly, in spite of being the largest net foreign exchange earning sector in India the industry's share in world exports of textile and apparel is still quite low as compared to other nations, such as, the Asian Giants like South Korea, Singapore and Hong Kong. Not surprisingly, export promotion policies in India strongly support this sector, which in recent times have become quite sensitive to changing global economic order and newly adopted rules.

In analyzing the impacts, we must keep in mind that the Agreement on Textiles and Clothing (henceforth, ATC) ensured the dismantling of only quotas on textile and apparel items, while tariff on these items were to stay.[1] The Multi Fibre Arrangement (MFA) provided a framework under which developed countries imposed quotas on exports of textiles and apparel from developing countries. These quotas were typically applied on a bilateral basis and were product-specific as defined by fibre and function. This allowed discrimination not only against specific fibres and products but also among

[1] The Uruguay Round of GATT launched at Punta Del Este led to the Agreement on Textiles and Clothing (ATC) in 1995. It is the institutional shape given to the promise to end quotas in an orderly process within ten years divided into three consecutive phases.

exporting countries. The exporting countries' governments administered the MFA export-quotas, which were allocated to them based on predetermined criteria.[2] This iniquitous system of quotas thus violated all the fundamental principles of the multilateral trading system, and discriminated against the poorest countries and those seeking to move up from reliance on primary commodities to manufacturing.

Hence, it is important to note as a starting point that despite removal of MFA trade in clothing and textile would still not be entirely free, but only 'quota-free'. In addition, in the presence of political equations in an ever more complicated world of multilateral negotiations the extent of compliance with ATC on the part of importing countries remains unclear. This impending reality brings the issue of competitiveness to the fore for all including India. In fact, as we shall observe in the following sections the changes give rise to a make or break proposition where some Asian countries will do much better than the rest. This should additionally serve to empirically verify a recent proposition that quotas can function as a competitive device! This stands contradictory to the accepted wisdom that quotas are anti-competitive in nature. Marjit, Kabiraj and Mukherjee (2009) have argued that entry of China in the WTO and removal of MFA shall work against the interest of many smaller countries in the South. The scale of production or sheer efficiency of Chinese manufacturers would negatively affect the erstwhile quota protected market shares of a large number of countries and might lead to a monopoly outcome. However, as long as the monopoly price set by a large exporting country stays below the import competing price in the importing countries, gains from trade via removal of quota at destinations still improve. Note that, between the north and the South the results are likely to be asymmetric. With India at the core of our analysis,

[2] For global implications of MFA see Trela and Whalley (1990).

we intend to see if withdrawal of MFA actually brings forth more competition or drives monopoly concentration within a host of Asian countries.

Section 2 examines India's performance in textile and clothing exports to the major world markets in comparison with her seven most important Asian competitors during the decade just before liberalization. As a follow up, we evaluate India's performance vis-à-vis these countries except for Sri Lanka during the transition to MFA phase-out. In both cases we use the well-known Constant Market share Analysis that is widely applied in measuring the export growth performance of a country. In section 3 we offer an analysis of the trends and stability patterns for export growth in textile and clothing for each country. Section 4 concludes. The Appendix to this chapter has three sections. An outline of the methodology adopted in section 2 is discussed in Appendix A.1. Relevant tables containing data and results are available in Appendix A.2. The charts and diagrams in support of our trend analysis are presented in Appendix A.3.

2. Effects of MFA on Major Asian Exporters *2(Pl. see the Response Sheet in the last page)

It is important to note as a starting point that the present section discusses the impacts of quota withdrawal on *aggregate* exports of textile and apparel items for a group of Asian countries and the evolving relative international competitiveness for each country. Since understanding changes in domestic market structure consequent on MFA dismantling at the country level is of critical importance, we would briefly comment on the extent of such investigations. We have studied the implications of changes in concentration ratios of each category of garment manufacturing firms during 1990–2005

for India in a separate exercise (Kar, 2009). The study drew on firm level statistics for a large number of Indian garment manufacturers. The study on concentration of different sectors is followed by an investigation dealing with causal relation between economies of scale and structure of the industry. Besides, we have also tried to evaluate the barriers to entry faced by different sectors of this industry by estimating the average cost facing the firms against their respective sizes. This led subsequently to finding out the critical size for a firm within the industry that helps to retain the cost-effectiveness. It is argued in typical industrial organisation framework, that the firm structure is exogenously determined by technical factors, more precisely, by economies of scale. We used similar framework to measure how scale economies affect the structure of an industry.[3]
We now focus on the present contribution and discuss the pre and post-ATC situations for a group of Asian exporters of textile and apparel.

The Pre-ATC Period

As discussed in the previous section, our analysis pivots on the status of India vis-à-vis other Asian exporters. We shall include the pre-WTO period to place this issue in an appropriate context. Analysing India's export performance in textile and clothing to five major regional markets in the world in comparison with seven major Asian countries is what we begin with. The period of analysis is set between 1985 and1994. The seven Asian competitors include China, Bangladesh, Pakistan, Sri Lanka, Indonesia, Malaysia and Thailand. However, the elite group comprising of newly industrialised countries

[3] Furthermore, in a related paper we have examined the performance of the firms in the Cotton Garment Industry of India to find a set of important factors responsible for firm level performances for the top twenty-five firms in the sector (Kar, 2009).

(NICs) of South-East Asia such as, Hong Kong, Republic of Korea, Taiwan and Singapore have already established themselves as large players in the field of textile and clothing exports in the world market and are excluded. Also, the markets and the composition of exports for these NICs are largely different from that of India. On the other hand, albeit China is the world's third largest exporter of textiles and the largest exporter of garments, we have included her for the following reasons. First, China's textile industry is heavily based on domestic cotton like that of India and her competitors. Second, China's major markets for textiles and clothing are Hong Kong, Japan, EU and U.S.A. offering the ground for direct competition with a number of other Asian countries. Interestingly, however, China's garments exports are understated by its own export figures. According to the World Bank, in 1991 China's clothing exports as reported by importing countries were 46 % more than those reported by China's own statistics (Debroy, 1996).

The five major destinations for the group of exporters thus selected are USA, Canada, EEC, EFTA, Japan and the Middle East and are chosen on the basis of high import volumes in any of these years. Note that, since this sub-section covers the period 1985-1994 the formation of European Union was yet to be completed, and this is the reason behind consideration of EEC and EFTA as distinctly different destinations. This study focuses on three prime categories of textiles and clothing chosen from the Standard International Trade Classification (SITC). The items are (i) Textile Fibres and Wastes (SITC - 26), (ii) Textile Yarn, Fabrics etc. (SITC - 65) and (iii) Clothing and Accessories (SITC - 84).

As a methodology we use the Constant Market Share (CMS) analysis (Richardson, 1971; Hickman *et al*., 1979). A detailed methodological treatment is also available in Leamer and Stern (2006, p. 171). The basic idea behind this method is the assumption that a country's share in the world market should remain constant over time. If there is a difference between the export growth according to this constant share norm and the observed export performance as per aggregate returns, it is attributed to the *competitiveness effect* broadly. Furthermore, the actual growth in exports is divided into three components: the competitiveness effect, the *market size effect* and the *interaction effect*. Data wise, for the Pre-ATC years we use UN Commodity Trade Statistics, Statistical Papers: Series D (different issues), Trade Statistics Yearbook and Statistical Yearbook (different volumes) for Asia and the Pacific. For the following sub-section covering the period 1995-2005 we solely use COMTRADE, the database of the UN Commodity Trade Statistics. This database is formed mainly by the reported statistics of different member countries of the UN for different years. [4] The CMS analysis is regularly used in many important studies to ascertain the role of competitiveness in the export growth for several countries (viz. Piezas-Jerbi and Nee, 2009 for cross-country analysis; Danninger and Joutz, 2007 for Germany; James and Movshuk, 2004 for Japan, Korea, Taiwan and USA; Tran, 2003 for APEC region; Simonis, 2000 a, b for Eastern Europe and Belgium; Lohrmann, 2000 for Turkey; Ichikawa, 1996 for APEC region and so on).[5]

The concept of 'international competitiveness' can be looked at from different angles. It may either be defined as the ability of the country to improve its sales in international markets at the expense of its competitors, or as the success of the country in

[4] See Appendix A.2 for data and results.
[5] For limitations and further scope of the CMS analysis, see Ahmadi-Esfahani (2006).

import substitution in the domestic market in competition with overseas suppliers. Whatever be the approach, the direct consequence of improvement in international competitiveness of a country is real income gain. Moreover, gains from trade do not rise automatically with increase in the volume of trade because the terms of trade for the country and the commodity composition of trade are also very crucial in this respect.

The export market share can be used as a crude but reliable indicator of international competitiveness. It shows directly the ability of a country to sell in international markets. Indirectly, it is supposed that by harnessing a growing share of international demand, the real incomes of the factors employed in a country's international sector increase vis-à-vis real incomes of its trading partners (Bhattacharya and Raychaudhuri, 1994). Koopman and Langer (1988) have also shown empirically a fairly close (positive) correlation between GNP/GDP growth rate and changing export market share in their study. There, GNP/GDP growth rate serves as a proxy for real income growth whereas market share is considered as the index of competitiveness.

Furthermore, Misra (1993) asserts that CMS analysis also serves as a simple method of quantifying the relative impact of different factors in determining the shifts in market shares. In terms of applications for India, Marjit and Raychaudhuri (1997) notably show that export performance can be largely explained by the competitiveness effect and there is an indication of an improvement in India's price competitiveness in terms of a downward movement of the relative WPI for India over time.[6] However, these studies also suggest that price factors do not explain changes in aggregate competitiveness of exports in a significant way when costs have little or no influence on

[6] Also see Hamilton, 1990; EXIM Bank of India, 1995; Kathuria, 1995; Gherzi Report, 2003; Sarkar, 2004; Hashim, 2005, etc.

the competitiveness of the manufacturing sector.

According to the CMS analysis a percentage change in the export share of a country for any item ($\dot{\gamma}$) can be decomposed into three constituent parts, namely: (i) percentage change in export share explained by the *competitiveness effect*, (ii) percentage change in export share explained by the *market size effect*, and (iii) percentage change in export share explained by the *interaction effect*.

This *competitiveness effect* isolates the influence of change in the competitiveness of country *i* in specific regional markets. *Market size effect* implies that the total exports of country *i* may increase or decrease without any change in its export competitiveness. The *interaction effect* measures the interaction between changes in market shares and market sizes. For the interested reader, components of $\dot{\gamma}$ are explicitly derived in expression (A.1.f) in Appendix A.1. We present calculations of these three components of $\dot{\gamma}$ in Appendix A.2 for India and her competitors for each of the three textile items during1985 to 1994. For India, the calculations have been performed on an annual as well as on a quinquennial basis. For computing the quinquennial changes, we have divided the period under survey into three time intervals constituting four years each. These are: (i) 1985 to 1988, (ii) 1988 to 1991 and (iii) 1991 to 1994. The years 1985, 1988 and 1991 have been used as base years with respect to which the changes in export share in the final years of the respective intervals have been computed. The latter exercise has been carried out for all the countries considered whereas the first one has been carried out only for India, in order to compare India's competitive position with those of other countries without much statistical clumsiness.

Tables 1A-1C (Appendix A.2) offer country-wise export of the three categories of textile and clothing items selected. Table 2 (Appendix A.2) shows the final results of our CMS analysis for the period 1985 to 1994. It offers the annual changes in India's export share along with its three constituents. Table 3 offers results based on quinquennial basis. Each table has three parts, part A corresponds to textile fibres (SITC - 26), part B corresponds to textile fabrics and yarns (SITC - 65) and part C to clothing (SITC - 84).

It is observable from Tables 2A, 2B and 2C that none of the items of India's textile and apparel exports showed consistent trends over this period. However, one aspect quite similar to the world trend was that in the final year export of textile fibres underwent negative percentage change with respect to the preceding year while both textile fabrics and clothing reflected positive percentage changes. Although, the results are just reversed if we consider the percentage changes in 1993 with respect to 1992, yet it can be argued that textile fibres gradually lost its importance in India's export basket of textile and clothing items and clothing expanded its portfolio. This is directly observed from Tables 1A -1C where export values of textile fibres, for most countries including India, declined considerably from1990 whereas that of clothing increased significantly over time. Another remarkable feature is that, in almost all the cases the competitiveness effect is the dominant component of percentage change in export performance of India. Although for 1985-86 and 1989-90 (for textile fabrics and yarns) and for 1985-86 (clothing) the market size effect dominates the competitiveness effect, differences are not statistically significant, unlike the case of textile fibres where competitiveness effect dominates significantly all through. The *interaction effect* has little or no contribution to the change in export shares.

It can be inferred from the above results that the internal production strength for India as reflected in the competitiveness effect were more important than external factors. Hence, removal of export quota should imply greater competition among suppliers and countries with strong domestic production base would be able to extract maximum benefits from withdrawal of quota. Moreover, for all of these three items the *market size* effect for India shows declining trend over the time span, especially in the final intervals. Since about three-fourth of India's exports were destined for those countries, which imposed MFA restrictions, the share of quota exports within total exports was fairly high. It is expected that the removal of quotas should stimulate India's textile and clothing exports.

Are these effects similar for other Asian countries?

Table 3 presents the quinquennial changes in export shares along with their constituent parts for eight exporting countries. These tables give a rough idea of the relative gainers (and/or the losers) over each interval and over the entire time span and also indicate the specific factors (viz. relative market shares or market sizes), which contribute significantly to the country's gains (or losses). With the help of this empirical exercise we can make a broad comparative study of India's export performances in textile fibres (Table 3A), textile fabrics and yarns (Table 3B) and clothing (Table 3C) vis-à-vis seven major competitors in the same markets following the CMS norm.

First, consider Table 3A offering outcomes for textile fibres. During the first interval i.e. 1985-1988 only four countries (India, Indonesia, Malaysia and China) showed improvement in export shares to major regional markets of the world. In the second interval (1988-1991) Pakistan and China were the only losing countries. Pakistan

was the worst sufferer and Indonesia was the largest gainer in this interval followed by Thailand. India's percentage change in export share for textile fibres was highest in this interval among all quinquennial intervals. However, Sri Lanka and Bangladesh had also shown remarkable increases in their shares while Malaysia's performance had drastically fallen. The final interval (1991-1994) showed reduction in shares of exports for all the countries (except China) as compared to the previous interval, implying a gradual decline in importance of textile fibres in the basket of exportable. The effects essentially show a roller coaster change for most countries, such that export performance of both Pakistan and Indonesia took nosedives in the final quarter.

Table 3B offers results for textile fabrics and yarns. Here, during the first interval (1985-1988) the only losing countries were Bangladesh and Malaysia. The best performer was Indonesia, followed by Sri Lanka. In the second interval (1988-1991) Bangladesh remained the net loser with China as its only companion. India, Pakistan, Indonesia and Malaysia were able to improve their performances in comparison to the previous interval. The last interval (1991-1994) reveals a dramatic increase in the share of exports for Bangladesh by about 126 %. More surprisingly, such an improvement in the performance of Bangladesh was accompanied by reduction in percentage shares for India, Pakistan, Indonesia, Malaysia and Thailand. Over the entire period the competitiveness effect, unambiguously, remained the most crucial determining factor in explaining changes in export shares of all the countries except China.

Finally, we consider Table 3C which shows quinquennial percentage changes in export shares of India and its seven competitors for clothing. The table records Sri Lanka as the worst sufferer during the first interval (1985-1988) with large negative percentage

change in the market size effect being the major factor. India and China were also net losers in this period and the highest gain was accrued to Thailand (a growth of more than 39%). In the second interval (1988-1991) India, Malaysia, Thailand and China were the net losers though India and China saw improvements in their relative positions compared to the previous interval. Indonesia was again the largest gainer followed by Sri Lanka. The last interval (1991-1994) shares some common features with the previous one. India remained a net loser in clothing exports recording the worst performance. However, China and Bangladesh registered considerable gains. The market size effect was the major explanatory factor for the unsatisfactory performances of India and Pakistan but for other countries the competitiveness effect remained the strongest one.

A salient feature of Table 3C is that while Pakistan, Malaysia and Thailand show a monotonically declining trend over the entire period, China has been successful in increasing its percentage share of exports of clothing gradually and has become the largest gainer in the final period. Besides, India's experience was fairly unique for clothing exports; percentage change in India's export share explained by the competitiveness effect was negative but gradually declining in magnitude. On the other hand, the market size effect revealed a gradual loss for India's export of clothing. Previously, the market size effect had been dominated by the competitiveness effect but in the final interval the former dominated the latter and thereby confirmed that the loss of market size was so high that it largely influenced India's performance. Therefore, it appears that the market size effect as determined by quotas and other protectionist measures of MFA may function as the major constraint for growth in clothing exports from India.

The Post-ATC Period

The enactment of the regulation to put an end to textiles quotas worldwide was a huge step for the industry and for a large number of activities directly or indirectly linked to it. It is best to admit that it would require a mammoth effort to capture all these effects in one attempt. Presently, therefore, we shall restrict ourselves to the output effects and subsequently its implications for the state of competitiveness among the Asian exporters. Importantly, this is also the period when the EU has taken shape and is now treated as a composite importing country. Here, we chose six Asian competitors of India, namely, China, Bangladesh, Pakistan, Indonesia, Malaysia and Thailand and three regional markets namely North America, European Union and Japan. North America consists of United States of America, Canada and Mexico. European Union is the association of 27 European countries. Lastly, Japan is the single largest importer of textiles and clothing in Asia. However, unlike in the previous sub-section, we have to exclude Sri Lanka due to non-availability of matching data for the country for each year beyond 1995. Given the acquired importance of clothing when textile fibres and yarn steadily lost ground for India during the pre-ATC period, we would concentrate on the impact of MFA phase out on SITC 84 during the post-ATC regime. The period of this study starts from 1995 (the beginning year of quota liberalization) and ends at 2005 (the year of full integration of textile and apparel trade into ATC).

Once again, the approach is to calculate the three components of expression (vide expression A.1.f in Appendix A.1) for India and her six competitors for SITC-84 during1995-2005. The calculations are done on an annual basis, where, changes in the relative export shares and their components are calculated by considering the

preceding year as the base year. The calculations are based on the original values of total exports of clothing of each exporting country to all the importing regions, clubbed together and depicted in Table 4 in Section A.2.

We offer detailed numerical results of the CMS analysis along with its constituent parts in seven consecutive tables (Table 5.1 to Table 5.7). Each table exhibits annual percentage change in export shares of each country as well as its constituent parts in a time series with the preceding year held as the base year. The most remarkable feature of all these tables is that in almost all the cases the competitiveness effect is the most dominant component of change in export performances of India as well as for all of her competitors. For example, during 1995-96 the share of Indian export of clothing in all markets taken together has declined by more than 16% out of which more than 14% decline is caused by the internal factors. This is due to the competitiveness effect as against only 1.5% decline resulting from other market restraints. This pattern replicates for the following years where roughly 10% of the decline is caused by the declining competitive edge. The trend saw a turnaround by 2003-04 when India's export share started rising substantially since 2003-04 and still the competitiveness effect accounted for much of it. China (Table 5.2) exhibits almost a consistent pattern of the dominance of the competitiveness effect over the entire period with the exception of 1997-98 and 1998-99 when the market-size effect dominates over the competitiveness effect by a small margin. The role of competitiveness effect is even more prominent in the second interval. Pakistan also is not an exception in this regard (Table 5.4). However, with few exceptions the magnitude of the market-size effect is smaller than the competitiveness effect although this difference is not significant enough to bestow the entire change to the

second factor up to 2001-02. The last three intervals again show that the competitiveness effect is dominant.

Tables 5.5, 5.6 and 5.7 describe similar kind of situations for Indonesia, Malaysia and Thailand respectively. For all these countries, competitiveness effect dominates over the market-size effect very significantly. Interestingly, for all these countries the export shares are on steady but unmistakable decline, except for one or two years of positive changes. Bangladesh (Table 5.3) on the other hand, is one of the countries that reaped the maximum benefit from MFA withdrawal. The huge percentage change in its export share during 1995-96 is largely owing to improvements in her internal conditions captured by the competitiveness effect. More precisely, Bangladesh is among the first beneficiaries of ATC as indicated by the magnitude of the percentage change in export share for the first phase of integration i.e. up to 1997-98. In the following years, competition aggravated and her export share also faced fluctuations over time with respect to previous intervals. In general, Bangladesh has been able to improve its export share vis-à-vis close competitors from a miniscule 3% to a respectable 9% by 2004-05 and has caught up with India (at approximately 10%). Clearly, the growth performance of Bangladesh is better than all of her competitors except China. Although the plan we have set for ourselves in this study precludes us from venturing into finer details on what might have caused this, it is certainly worth exploring.

In fact, according to the proposition by Marjit, Kabiraj and Mukherjee (2009) it is a distinct possibility that the country with the most efficient production technique would move towards monopoly market share when quotas are lifted. Our numerical results display that while China, Bangladesh, India and Pakistan benefitted

from the abolition of the quota, the textile sector went into steady contraction for a number of other countries. The existence of quota in other words should then be deemed as purveyor of greater competition at the country-level. Stated simply, the existence of quotas actually provided a protected market for a large n umber of countries, which had positive demand for their exports without being exposed to threats from low cost, relatively efficient and better-quality product suppliers. In brief, the net global gains from the withdrawal of MFA needs to be evaluated by incorporating all these changes and preferably in a dynamic set up in future.

In addition, much in contradiction to the conventional belief the regime of bilaterally negotiated quotas did not actually restrain exports of clothing from the developing nations. The insignificant percentage changes explained by the market-size effects for most of the years bear direct testimony to this fact. The net gains accruing to China and Bangladesh in particular has come at the cost of countries like Malaysia whose export share went down to an all time low.

3. Trends and Stability

In the previous section we discussed the patterns of changes in export performance for India and a number of other countries classified over pre-ATC and post-ATC periods. This section analyses certain characteristic features in the growth patterns over the entire span of 20 years. Among these, we are interested in simple observations such as existence of structural breaks, stability and time dependence (projections) of industry level growth paths for all of these countries. Note that, since the data we acquired is up to the year 2005 these projections can now be re-tested against actual data.

But, it would still be interesting to see in retrospect what the estimates suggested.

Following Brown, Durbin and Evans (1975) we test for structural change over time, which is an important application of the recursive residuals. Recursive residuals are a set of residuals, which, if the disturbances are independently and identically distributed will be independently and identically distributed thus facilitating tests of the null hypothesis. Assuming the usual linear model, $y = X\beta + u$, the null hypothesis of no structural change can be specified as

$$\begin{aligned} &H_0 = \beta_1 = \beta_2 = ... = \beta_n = \beta \\ &and \quad \sigma_1^2 = \sigma_2^2 = ... = \sigma_n^2 = \sigma^2 \end{aligned} \qquad (1)$$

where, $\beta_t \quad and \quad \sigma_t^2$ denote the vector of coefficients ruling in period *t* and the disturbance variance in that period, respectively.

The null hypothesis would be violated if the β vectors remained constant but σ^2 varies, which represents heteroscadasticity. On the other hand, the null hypothesis of no structural break would be violated if there is variation in β's. Such variance in the coefficients may be tested by using the *Cusum* (Cumulative Sum of Recursive Residuals) and the *Cusum of Squares* (Cumulative Sum of Squares of Recursive Residuals) tests.[7]

Since it is known that the Cusum test is less powerful than the Cusum of Squares test, we provide both tests for evaluating the absolute export trends for India and her Asian competitors. Results of Cusum and Cusum of Squares tests are graphically shown in Figures 3.1-3.7 (presented in Section A.3 of the Appendix) where, the bold curves provide the trends for respective variables along with appropriate ranges (straight lines) that mark the acceptable zone.

[7] A detailed treatment of recursive residuals is available in Johnston (1984), pp. 207.

Generally speaking, Figures (3.1 – 3.7) show that the respective variable registers a 'stable' pattern if the bold curve – showing the trend – remains within the critical bounds (no intersections). Conversely, we witness an 'unstable' pattern if there exists one or more intersections between the trend curve and the bounds. The Cusum of Squares test reveals instability in the export growth for most of the countries. For India, the prolonged break stretches for a decade (1994 – mid 2005) indicating substantial change in the growth structure of Indian clothing exports to the world markets as a result of the dismantling of MFA regime. A similar trend is observed for China the other beneficiary of the new regime. For China the break occurs in 1996 and lasts for almost a decade. But for both these big countries, the weaker Cusum tests show stable patterns. For Bangladesh, Cusum test shows a break in exports growth during 2004, while the Cusum of Squares test indicates an unstable pattern between 1994 and 1997. A marginal break appeared in 1996-1997 for Pakistan though the Cusum test does not confirm it. Indonesia is the only country with no structural break at all in its export trend as verified by both tests.

Malaysia, like Bangladesh, faces an unusual trend in exports in 2004 (Cusum test) along with a different, unstable pattern between 1994 and 2000 (Cusum of Squares test). Thailand experiences a minor structural break starting in 1994 and ending in the middle of 1996, as observed from the Cusum of Squares test. Table 8 summarizes the findings from the above exercises.

Table 9 provides the time dependence of exports via OLS estimations for all exporters in our study. Thus, total clothing exports of each country to the major regional

markets taken together is considered as the dependent variable and a constant term A and Time (*T*, in years) are chosen as the regressors:

$$Y_{ij} = A_{ij} + \beta_{ij} T + u_{ij} \qquad (2)$$

where, *i* stands for the product type and *j* for the respective country. We carry out OLS regression analysis with 21 observations (from 1985-2005) for each country. The estimated values indicate that the value of exports of all these countries is positively related to the *time trend* and the coefficients are statistically significant. The coefficients along with country-wise $\overline{R}^2$'s are reported in Table 9.

In brief, therefore, the entire exercise offers several interesting and counterintuitive results. For example, it was often claimed that since India is restrained by the quota system its withdrawal should promote production and exports for India. In reality, the export share declines (from 18% to 10%) between pre-ATC to the post-ATC over 1984-85 and 2005 (Table 7).[8] Second, it is apparent from Table 8 that the structural break occurs in 1994 for most countries (except for China and Pakistan for which the break starts in 1996). Third, China and Bangladesh are the two real beneficiaries of the entire dismantling process whose export shares went up from 42% to 61% and from 4% to 9% respectively, while Pakistan, Indonesia, Malaysia and Thailand face sectoral contractions. Thailand is the worst affected country among all, with export share falling from 13% in 1985 to mere 4% in 2005. The downward change for Thailand started around 1996 (Cusum of Squares test). Malaysia had also seen similar change of fortune for its textile and clothing sector and these issues may be taken up for further research in

[8] Note that, falling shares do not imply fall in total value of exports. On the contrary, countries with falling world share of exports have also undergone increases in the value of exports as the market expanded during these years. Comparison of export shares, however, provides ample evidence in favour of the state of competitiveness.

future at the individual country level.

4. Concluding Remarks

Implementation of the Agreement on Textile and Clothing by the WTO lead to complete withdrawal of the Multi Fibre Arrangement in the year 2005. This chapter analysed the effects of this withdrawal on a number of Asian exporters of textile and clothing items to major destinations worldwide. It is common knowledge that trade-related quotas and non-tariff barriers are non-competitive in nature and removal of such restrictions create competitive field for all countries that do not necessarily enjoy the most favoured nation status with importers. At the same time, in a recent study it was pointed out that inclusion of China in the WTO and the concomitant withdrawal of MFA might turn out to be unfavourable for many smaller countries in Asia. With the help of commodity trade statistics in select items within the textile and clothing industries for seven major Asian exporters we establish that such apprehension carries substantial credibility. In particular, during the ten year transition of MFA phase-out we observe that countries such as China, Bangladesh, India and Pakistan that were traditionally the more efficient exporters of textile merchandise have been the greatest beneficiaries. Some Asian countries that enjoyed the protection of bilateral import quotas but were not necessarily the efficient producers have suffered in the aftermath of MFA withdrawal.

We chose three main items within the clothing and textile industry according to their importance in overall export shares and analysed the implications for each country over a period of ten years between 1995 and 2005. In addition, we offer expected movements in the country-wise export growth path for these commodities over the next

decade and illustrate stability of growth path for each. A phenomenal upsurge in the production and export from Bangladesh for all product categories in our study, along with complete diminution of textile fibres industry in India contribute to our set of interesting results. It is observed that the competitiveness effect – one of the three components in the constant market share analysis that we deploy as a methodology, is the most dominant factor in the observed transitions. In other words, the effect of MFA phase out on countries that gained and lost can be largely explained by the competitiveness effect. One again, much in contradiction to the earlier belief, that removal of quota shall lead to market expansion for all exporters seem unsubstantiated. This holds true for the quinquennial and the annual results for most of the countries. That, countries like Thailand, Malaysia and Indonesia would suffer most in the face of competition from China and India turns out to be a natural outcome of the drive towards freeing world trade from non-competitive impediments.

A host of other issues, including the impact of textile industry on general growth and welfare levels should in future help to understand the broader reach of the trade policy dealt with in this chapter. Similarly, it would be interesting to investigate the implications of MFA withdrawal on the labour market in each country and discuss relevant policy aspects for the internal economies. Finally, over the last decade many Asian economies have seen unprecedented growth with avenues for trade creation among these countries opening up at a much faster rate. With more recent data, estimates of intra-Asia trade can add newer dimensions to the analysis of post-MFA textile and clothing industries offered here.

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Appendix

Section A.1:

Methodology

This section presents the methodology used in section 2. We use the method of CMS analysis developed by Hickman *et al*. (1979). The CMS analysis uses aggregate export data to measure the difference between constant share norms and actual export performance. The following symbols are used in the CMS model.

X_{ijt} = Exports from country *i* to region *j* in year *t*.

$X_{it} = \sum_{j=1}^{n} X_{ijt}$ = Total exports of the country *i* to all the *n* regions in year *t*.

$M_{jt} = \sum_{i=1}^{m} X_{ijt}$ = Total imports of the j^{th} region from all the *m* exporters in year *t*.

$W_t = \sum_{i=1}^{m} X_{it} = \sum_{j=1}^{n} M_{jt}$ = Total exports to all the *n* regional markets by all the *m* exporters or total imports by all the *n* regional markets from all the *m* exporters in year *t*.

$\alpha_{ijt} = \frac{X_{ijt}}{M_{jt}}$ = The market share of the exporting country *i* in region *j* in year *t*.

$\beta_{jt} = \frac{M_{jt}}{W_t}$ = The import share of region *j* of the total imports by all regions in year *t*.

$\gamma_{it} = \frac{X_{it}}{W_t}$ = The market share of the country *i* in terms of total exports to all regions in year *t*.

j = 1……..n, where, n is the number of regional markets.

i = 1…….m, where, m is the number of exporting countries to those regional markets.

0 - The subscript used to denote the base year.

Applying these definitions and summing over all the regional markets, we can derive expression (A.1.a) that decomposes total export by country i in year t, to all the regional markets taken together, into four components

$$X_{it} = \sum_{j=1}^{n} X_{ijt} = \left[\sum_{j=1}^{n} \alpha_{ij0}\beta_{j0}\right]W_t + \left[\sum_{j=1}^{n} \beta_{j0}\Delta\alpha_{ijt}\right]W_t + \left[\sum_{j=1}^{n} \alpha_{ij0}\Delta\beta_{jt}\right]W_t + \left[\sum_{j=1}^{n} \Delta\alpha_{ijt}\Delta\beta_{jt}\right]W_t \qquad \text{(A.1.a)}$$

Constant Market Share:

The first term in the expression (A.1.a) gives the constant market share or the value of exports for country i in year t assuming that the i^{th} country's share of the regional world markets taken together has remained unchanged since the base period. To show this, we note that in the base period,

$$\Delta\beta_{jt} = \Delta\alpha_{ijt} = 0,$$

Therefore, expression (A.1.a) reduces to

$$X_{i0} = \left[\sum_{j=1}^{n} \alpha_{ij0}\beta_{jo}\right]W_0 \qquad \text{(A.1.b)}$$

where, $\gamma_{i0} = \left[\sum_{j=1}^{n} \alpha_{ij0}\beta_{jo}\right]$ is the base period market share of total exports for country i such that, $\gamma_{i0} = \frac{X_{i0}}{W_0}$ (A.1.c)

The Competitiveness Effect:

The second term of the expression (A.1.a) summarizes the effects of changes in the ith country's market shares ($\Delta\alpha_{ijt}$) for all regions since the base period, holding constant the relative size (β_{j0}) of the different importing regions. This term isolates the influence of changes in the competitiveness of country i in specific regional markets.

The Market Size Effect:

The third term measures the net effect of shifts in the size of the various regional markets (βjt) holding constant the i^{th} country's share in each market (α_{ijt}). On account of this market size effect, total exports of country *i* may increase or decrease without any change in its export competitiveness (α_{ijt}). This term therefore isolates the influence of changes in the sizes of different regional markets.

The Interaction Effect:

Finally, the last term measures the interaction between changes in market shares and market sizes. The interaction effect serves largely as a residual term and takes into account changes that cannot be attributed exclusively to either the competitiveness effect or the market size effect.

The export share for country i in total exports of each item to the regional world markets taken together may be obtained by dividing the expression (A.1.a) by W_t

$$\gamma_{it} = \frac{X_{it}}{W_t} = \left[\sum_{j=1}^{n} \alpha_{ij0}\beta_{j0}\right] + \left[\sum_{j=1}^{n} \beta_{j0}\Delta\alpha_{ijt}\right] + \left[\sum_{j=1}^{n} \alpha_{ij0}\Delta\beta_{jt}\right] + \left[\sum_{j=1}^{n} \Delta\alpha_{ijt}\Delta\beta_{jt}\right] \quad \text{(A.1.d)}$$

Since the first term on the right hand side of the expression (A.1.d) is the market share of country i for the base period, this expression may also be written as:

$$\Delta\gamma_{it} = \gamma_{it} - \gamma_{i0} = \left[\sum_{j=1}^{n} \beta_{j0}\Delta\alpha_{ijt}\right] + \left[\sum_{j=1}^{n} \alpha_{ij0}\Delta\beta_{jt}\right] + \left[\sum_{j=1}^{n} \Delta\alpha_{ijt}\Delta\beta_{jt}\right] \quad \text{(A.1.e)}$$

Finally, the change in export share in each period can be, more conveniently, expressed in the form of a ratio to the export share of the base period, by dividing expression (A.1.e) by γ_{i0}:

$$\dot{\gamma} = \frac{\Delta\gamma_{it}}{\gamma_{i0}} = \frac{\left[\sum_{j=1}^{n} \beta_{j0}\Delta\alpha_{ijt}\right]}{\gamma_{i0}} + \frac{\left[\sum_{j=1}^{n} \alpha_{ij0}\Delta\beta_{jt}\right]}{\gamma_{i0}} + \frac{\left[\sum_{j=1}^{n} \Delta\alpha_{ijt}\Delta\beta_{jt}\right]}{\gamma_{i0}} \quad \text{(A.1.f)}$$

Therefore, expression (A.1.f) reveals that the percentage change in export share of a country in any item ($\dot{\gamma}$) can be decomposed into three constituent parts, namely,

(i) Percentage change in export share explained by the competitiveness effect,

(ii) Percentage change in export share explained by the market size effect and

(iii) Percentage change in export share explained by the interaction effect.

Section A.2

Table 1A: Country-wise Total Export of Textile Fibres *(SITC - 26)* to Five Important Regional Markets 1985 – 1994

[Value In Million $US]

YEAR	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
1985	23.42	195.91	12.57	17.51	1.35	1.30	5.64	544.57
1986	68.24	220.84	12.19	19.19	0.68	1.54	3.01	597.11
1987	51.16	273.39	11.13	17.91	0.75	2.12	4.67	805.34
1988	40.09	275.36	11.26	15.94	2.51	44.10	6.80	950.90
1989	69.76	198.15	14.55	16.86	19.51	43.40	15.86	915.30
1990	122.08	196.88	13.13	10.48	13.80	46.30	18.69	629.72
1991	49.73	144.68	16.60	20.04	14.88	38.87	30.06	622.93
1992	34.93	143.61	13.74	15.12	11.16	30.14	38.36	498.48
1993	47.79	66.21	12.20	9.66	8.12	28.76	47.57	418.98
1994	40.30	55.74	16.85	23.29	9.50	40.79	58.03	628.67

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 1B: Country-wise Total Export of Textile Fibres *(SITC - 65)* to Five Important Regional Markets 1985 – 1994

[Value In Million $ Us]

YEAR	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
1985	575.14	730.62	11.42	211.34	155.60	90.12	248.37	1246.26
1986	710.09	927.86	20.12	170.46	155.56	102.72	289.14	1354.70
1987	1198.74	1320.65	28.11	191.12	293.30	136.01	417.48	1965.66
1988	1134.84	1342.47	27.24	165.87	404.58	109.92	484.29	2273.28
1989	1319.15	1391.07	18.15	160.13	453.59	128.97	512.06	2358.45
1990	1630.75	1770.87	20.27	179.31	648.66	148.03	612.06	2225.72
1991	1810.79	2025.84	39.55	175.46	813.72	178.23	684.42	2458.65
1992	2191.41	2288.20	63.51	226.36	1187.49	213.94	728.95	2631.78
1993	2160.81	2324.72	81.64	229.47	1180.32	231.98	781.76	3010.98
1994	2646.16	2500.21	104.70	211.55	1256.70	282.34	846.33	3680.60

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 1C: Country-wise Total Export of Textile Fibres *(SITC - 84)* to Five Important Regional Markets 1985 – 1994

[Value In Million $ Us]

YEAR	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
1985	704.54	219.22	272.64	162.47	310.12	307.79	511.27	1659.03
1986	914.31	406.25	316.51	232.24	382.28	389.96	712.11	1919.07
1987	1284.16	517.82	411.34	406.44	563.12	578.57	1209.06	2560.04
1988	1324.38	557.31	424.26	401.36	718.90	788.37	1497.29	3034.02
1989	1928.45	664.55	479.67	428.82	1050.68	987.26	1907.12	3273.74
1990	2185.35	950.53	631.54	576.49	1500.15	1186.15	2147.05	3086.78
1991	2234.59	1131.94	1054.68	784.01	1941.36	1347.92	2593.32	5077.85
1992	2806.33	1384.35	1177.45	1037.66	2613.30	1664.49	2565.60	6795.91
1993	2673.11	1475.70	1323.52	1227.83	2877.21	1760.88	2854.32	10526.58
1994	3339.31	1509.45	1435.37	1151.10	2680.64	1844.07	2984.85	12830.48

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D

Table 2A: Annual Percentage Change In India's Export Performance of Textile Fibres *(SITC - 26)* to all Regional Markets for 1985 - 1994.

YEAR	PERCENTAGE CHANGE IN EXPORT SHARE	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY COMPETITIVENESS EFFECT	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT
1985 – 86	110.924	86.655	2.721	21.548
1986 – 87	-49.747	-44.001	16.645	-22.391
1987 – 88	-31.841	-34.411	-4.182	6.752
1988 – 89	80.194	75.570	3.687	0.937
1989 – 90	115.438	127.441	-7.972	-4.031
1990 – 91	-54.277	-53.658	0.415	-1.034
1991 – 92	-10.956	-14.928	8.517	-4.545
1992 – 93	68.307	68.195	2.148	-2.036
1993 - 94	-37.939	-34.195	-4.201	0.457

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 2B: Annual Percentage Change In India's Export Performance of Textile Fabrics and Yarns *(SITC- 65)* to all Regional Markets for 1985 - 1994.

YEAR	PERCENTAGE CHANGE IN EXPORT SHARE	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY COMPETITIVENESS EFFECT	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT
1985 - 86	8.764	3.646	4.361	0.757
1986 - 87	12.128	14.310	-2.020	-0.162
1987 - 88	-12.553	-9.100	-4.116	0.663
1988 - 89	9.361	7.492	1.695	0.174
1989 - 90	10.075	2.531	7.106	0.438
1990 - 91	3.897	5.201	-1.860	0.556
1991 - 92	4.481	3.142	0.990	0.349
1992 - 93	-5.861	-4.096	-1.639	-0.126
1993 - 94	3.016	6.277	-2.217	-1.044

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 2C: Annual Percentage Change in India's Export Performance of Clothing *(SITC - 84)* To All Regional Markets For 1985 - 1994.

YEAR	PERCENTAGE CHANGE IN EXPORT SHARE	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY COMPETITIVENESS EFFECT	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	PERCENTAGE CHANGE IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT
1985 - 86	2.149	-2.073	4.606	-0.384
1986 - 87	-1.907	-4.071	2.947	-0.783
1987 - 88	-11.201	-8.597	-2.572	-0.032
1988 - 89	19.340	20.313	-0.974	0.001
1989 - 90	-7.439	-10.237	3.222	-0.424
1990 - 91	-16.305	-15.512	-0.231	-0.562
1991 - 92	1.385	5.522	-3.160	-0.977
1992 - 93	-22.733	-19.551	-3.151	-0.031
1993 - 94	9.317	14.506	-2.304	-2.885

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 3A: Quinquennial Percentage Changes in Export Shares of Eight Exporting Countries for Textile Fibres *(SITC -26)* for 1985 - 1994.

YEAR 1985 - 88	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	0.918	-16.270	-59.907	-45.455	5.700	3148.400	-24.829	3.914
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	0.197	-21.553	-46.481	-52.541	0.550	3187.800	-9.543	5.936
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	6.231	-6.978	-6.538	39.577	35.450	-34.500	10.214	0.565
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	-5.510	12.261	-6.888	-32.773	-30.300	-4.900	-25.500	-2.587

Continued…

Table - 3A

YEAR 1988- 1991	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	78.113	-24.569	110.375	81.175	701.250	25.973	535.980	-5.847
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	79.163	-25.314	147.263	80.275	501.500	6.570	540.060	-4.635
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	-7.130	-2.732	-5.425	14.025	-1.650	-16.139	1.080	1.667
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	6.080	3.477	-31.463	-13.125	201.400	35.542	-5.160	-2.879

Continued.....

Table – 3A

YEAR 1991 - 94	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	-13.665	-58.500	10.156	26.566	-31.575	12.798	107.228	8.327
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	-9.974	-59.803	3.256	30.095	-14.919	27.467	119.616	6.484
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	5.366	-2.682	15.661	4.257	-23.756	-22.821	-6.422	1.960
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	-9.057	3.985	-8.761	-7.786	7.100	8.152	-5.966	-0.117

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 3B: Quinquennial Percentage Changes in Export Shares of Eight Exporting Countries for Textile Fabrics and Yarns *(SITC - 65)* for 1985 - 1994.

YEAR 1985 - 88	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	8.538	1.151	41.933	-47.994	42.213	-32.688	7.405	0.338
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	7.588	-0.207	50.933	-52.771	43.444	-32.848	11.854	-0.292
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	-0.474	0.179	-8.367	0.748	-6.058	-0.381	1.505	2.012
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	1.424	1.179	-0.633	4.029	4.827	0.541	-5.954	-1.382

Continued.....

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Table – 3B

YEAR 1988 - 91	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	15.859	9.521	2.520	-22.572	46.125	19.300	2.378	-20.499
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	10.929	9.595	1.500	-26.961	36.735	23.511	-1.758	-16.416
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	3.906	-0.463	1.280	10.746	2.968	1.256	7.211	-4.588
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	1.024	0.389	-0.260	-6.357	6.422	-5.467	-3.075	-0.505

Continued.....

Table – 3B

YEAR 1991 - 94	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	0.631	-14.876	80.300	126.415	10.738	10.199	-15.098	1.551
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	4.527	-13.782	83.820	121.448	7.878	10.086	-14.071	-1.240
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	-2.975	-0.930	0.160	-1.457	2.239	1.927	-0.701	2.346
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	-0.921	-0.164	-3.680	6.424	0.621	-1.814	-0.326	0.445

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 3C: Quinquennial Percentage Changes in Export Shares of Eight Exporting Countries for Clothing *(SITC - 84)* for 1985 - 1994

YEAR 1985 - 88	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	-10.993	20.624	-19.032	17.293	10.584	21.102	39.200	-13.391
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVE - NESS EFFECT	-11.494	19.334	-8.941	32.672	23.204	36.880	26.855	-17.940
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	6.064	8.343	-13.570	-20.382	-7.960	-10.143	2.142	3.254
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	-5.563	-7.053	3.479	5.003	-4.660	-5.635	10.203	1.295

Continued.....

Table – 3C

YEAR 1988 - 91	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	-8.658	9.652	25.083	4.839	45.881	-6.955	-6.178	-9.504
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVENESS EFFECT	-8.456	8.156	37.898	10.615	44.676	-2.246	-7.526	-12.163
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	0.666	1.158	-7.137	-6.872	-6.041	-6.750	3.339	3.035
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	-0.868	0.338	-5.678	1.096	7.246	2.041	-1.991	-0.376

Continued.....

Table – 3C

YEAR 1991 - 94	INDIA	PAKISTAN	SRI LANKA	BANGLADESH	INDONESIA	MALAYSIA	THAILAND	CHINA
PERCENTAGE CHANGES IN EXPORT SHARE	-19.672	-24.016	-22.659	17.201	-20.537	-22.128	-30.691	44.850
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY COMPETITIVENESS EFFECT	-3.415	-11.277	-16.735	20.096	-11.835	-16.728	-28.966	28.140
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY MARKET - SIZE EFFECT	-13.107	-13.700	-3.272	-7.273	-8.242	-6.375	-4.217	15.301
PERCENTAGE CHANGES IN EXPORT SHARE EXPLAINED BY INTERACTION EFFECT	-3.150	0.961	-2.652	4.378	-0.460	0.975	2.492	1.409

Data Source: Commodity Trade Statistics; UN Statistical Papers: Series D.

Table 4: Country-wise Total Export of Clothing to Three Important Regional Markets

1995-2005

[Value In Million $Us]

YEAR	INDIA	CHINA	BANGLADESH	PAKISTAN	INDONESIA	MALAYSIA	THAILAND
1995	3522.23	13963.29	1005.68	1454.9	2583.77	1992.44	2923.33
1996	3554.42	14597.68	2193.34	1690.16	2748.7	2055.14	6491.23
1997	3535.24	15361.44	2655.48	1628.46	2176.22	2014.07	2995.92
1998	3726.06	15433.09	3748.45	1679.22	2167.19	2063.08	3006.09
1999	3813.8	17169.39	3493.5	1712.73	3004.95	1975.71	3003.95
2000	4596.26	21640.57	3972.02	1954.21	3815.81	2016.63	3293.15
2001	4063.99	22471.94	4218.1	1882.75	3592.82	1849.94	3124.66
2002	4651.62	23504.55	4929.06	1894.77	3101.66	1774.77	2722.03
2003	2974.64	26254.11	4951.63	2485.2	3333.65	1771.53	3114.42
2004	5028.41	30275.72	6160.36	2621.47	3697.51	1970.9	3411.04
2005	7624.68	43208.61	6364.61	3058.38	4314.98	2033.89	3489.19

Data Source: UN Database COMTRADE: Database of Commodity Trade Statistics, UN Statistical Papers; Series D

Table 5.1: Annual Percentage Changes in Export Share of Clothing for *India*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	-14.871	-1.518	-0.515	-16.904
1996-97	5.101	4.444	-0.378	9.168
1997-98	-2.350	3.003	-0.079	0.574
1998-99	-2.018	-2.580	-0.089	-4.686
1999-00	2.498	-2.809	0.061	-0.250
2000-01	-10.387	-1.048	0.035	-11.399
2001-02	5.140	5.508	0.117	10.765
2002-03	-39.505	-2.217	2.384	-39.338
2003-04	40.873	-1.577	3.419	42.715
2004-05	7.614	7.080	0.316	15.010

Data Source: UN Database COMTRADE

Table 5.2: Annual Percentage Changes in Export Share of Clothing for *China*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	-12.875	-0.522	-0.518	-13.915
1996-97	18.025	-2.353	-0.169	15.503
1997-98	-0.743	-3.158	-0.230	-4.131
1998-99	0.571	3.041	-0.014	3.598
1999-00	2.140	2.198	-0.015	4.323
2000-01	3.229	0.852	-0.026	4.055
2001-02	4.526	-3.335	0.029	1.219
2002-03	4.155	2.232	-0.430	5.958
2003-04	-1.316	-1.190	-0.136	-2.642
2004-05	12.602	-5.352	0.998	8.249

Data Source: UN Database COMTRADE

Table 5.3: Annual Percentage Changes in Export Share of Clothing for *Bangladesh*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	83.429	-5.617	1.775	79.587
1996-97	28.112	4.552	0.223	32.887
1997-98	30.166	3.452	1.080	34.699
1998-99	-10.840	-2.948	0.576	-13.212
1999-00	-2.543	-3.291	-0.061	-5.894
2000-01	7.661	-1.250	0.002	6.413
2001-02	6.549	5.453	1.081	13.083
2002-03	-2.745	-2.034	0.074	-4.705
2003-04	4.266	1.134	-0.366	5.034
2004-05	-26.894	7.095	-1.838	-21.637

Data Source: UN Database COMTRADE

Table 5.4: Annual Percentage Changes in Export Share of Clothing for *Pakistan*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	-2.957	0.312	-1.696	-4.342
1996-97	2.425	4.148	-0.819	5.754
1997-98	-5.113	3.644	-0.133	-1.602
1998-99	-1.824	-3.095	-0.102	-5.021
1999-00	-3.306	-2.485	0.229	-5.562
2000-01	-2.450	-1.006	-0.003	-3.460
2001-02	-6.552	4.385	-0.442	-2.609
2002-03	28.245	-3.051	-0.773	24.420
2003-04	-12.758	2.362	-0.549	-10.945
2004-05	-18.010	7.809	-1.310	-11.510

Data Source: UN Database COMTRADE

Table 5.5: Annual Percentage Changes in Export Share of Clothing for *Indonesia*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	-12.021	1.269	-1.648	-12.400
1996-97	-14.413	2.438	-1.125	-13.100
1997-98	-8.153	2.940	0.241	-4.972
1998-99	32.818	-2.845	-0.854	29.118
1999-00	7.259	-1.955	-0.201	5.103
2000-01	-4.844	-0.867	0.060	-5.651
2001-02	-18.679	3.370	-1.148	-16.457
2002-03	5.438	-3.145	-0.337	1.956
2003-04	-9.050	2.924	-0.233	-6.360
2004-05	-17.614	7.519	-1.390	-11.485

Data Source: UN Database COMTRADE

Table 5.6: Annual Percentage Changes in Export Share of Clothing For *Malaysia*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	-17.503	4.555	-2.117	-15.065
1996-97	6.721	1.277	-0.430	7.567
1997-98	-6.074	3.925	-0.105	-2.254
1998-99	-7.849	-3.274	0.300	-10.823
1999-00	-14.383	-1.332	0.198	-15.517
2000-01	-7.427	-0.701	0.051	-8.078
2001-02	-8.945	2.228	-0.443	-7.160
2002-03	-2.136	-3.198	0.022	-5.312
2003-04	-8.618	2.988	-0.443	-6.073
2004-05	-26.129	6.604	-2.203	-21.728

Data Source: UN Database COMTRADE

Table 5.7: Annual Percentage Changes in Export Share of Clothing for *Thailand*: 1995-2005

Year	Percentage Change in Export Share Explained by Competitiveness Effect	Percentage Change in Export Share Explained by Market-Size Effect	Percentage Change in Export Share Explained by Interaction Effect	Percentage Change in Export Share
1995-96	74.741	1.874	6.228	82.843
1996-97	-49.482	-1.197	1.337	-49.342
1997-98	-7.372	2.836	0.284	-4.252
1998-99	-4.167	-2.709	-0.069	-6.945
1999-00	-8.362	-0.920	0.019	-9.263
2000-01	-4.347	-0.595	0.020	-4.922
2001-02	-17.352	1.625	0.029	-15.697
2002-03	12.136	-4.012	0.411	8.535
2003-04	-9.961	3.020	-0.593	-7.534
2004-05	-26.480	6.285	-2.219	-22.414

Data Source: UN Database COMTRADE

Table 6: Country-wise Share in Three Important Regional Markets For Clothing (1995-2005)

YEAR	INDIA	CHINA	BANGLADESH	PAKISTAN	INDONESIA	MALAYSIA	THAILAND
1995	0.128	0.509	0.037	0.053	0.094	0.073	0.107
1996	0.107	0.438	0.066	0.051	0.082	0.062	0.195
1997	0.116	0.506	0.087	0.054	0.072	0.066	0.099
1998	0.117	0.485	0.118	0.053	0.068	0.065	0.094
1999	0.112	0.502	0.102	0.050	0.088	0.058	0.088
2000	0.111	0.524	0.096	0.047	0.092	0.049	0.080
2001	0.099	0.545	0.102	0.046	0.087	0.045	0.076
2002	0.109	0.552	0.116	0.045	0.073	0.042	0.064
2003	0.066	0.585	0.110	0.055	0.074	0.039	0.069
2004	0.095	0.569	0.116	0.049	0.070	0.037	0.064
2005	0.109	0.616	0.091	0.044	0.062	0.029	0.050

Data Source : UN Database COMTRADE: Database of Commodity Trade Statistics, UN Statistical Papers; Series

Table 7: Country-wise Share in Important Regional Markets For Clothing

(1985-2005)

YEAR	INDIA	CHINA	BANGLADESH	PAKISTAN	INDONESIA	MALAYSIA	THAILAND
1985	0.182	0.428	0.042	0.057	0.080	0.079	0.132
1986	0.184	0.387	0.047	0.082	0.077	0.079	0.144
1987	0.180	0.360	0.057	0.073	0.079	0.081	0.170
1988	0.159	0.365	0.048	0.067	0.086	0.095	0.180
1989	0.188	0.320	0.042	0.065	0.103	0.096	0.186
1990	0.188	0.265	0.050	0.082	0.129	0.102	0.185
1991	0.148	0.336	0.052	0.075	0.128	0.089	0.172
1992	0.149	0.360	0.055	0.073	0.139	0.088	0.136
1993	0.114	0.450	0.052	0.063	0.123	0.075	0.122
1994	0.127	0.487	0.044	0.057	0.102	0.070	0.113
1995	0.128	0.509	0.037	0.053	0.094	0.073	0.107
1996	0.107	0.438	0.066	0.051	0.082	0.062	0.195
1997	0.116	0.506	0.087	0.054	0.072	0.066	0.099
1998	0.117	0.485	0.118	0.053	0.068	0.065	0.094
1999	0.112	0.502	0.102	0.050	0.088	0.058	0.088
2000	0.111	0.524	0.096	0.047	0.092	0.049	0.080
2001	0.099	0.545	0.102	0.046	0.087	0.045	0.076
2002	0.109	0.552	0.116	0.045	0.073	0.042	0.064
2003	0.066	0.585	0.110	0.055	0.074	0.039	0.069
2004	0.095	0.569	0.116	0.049	0.070	0.037	0.064
2005	0.109	0.616	0.091	0.044	0.062	0.029	0.050

Table 8: Country-wise Stability Patterns of Clothing Exports

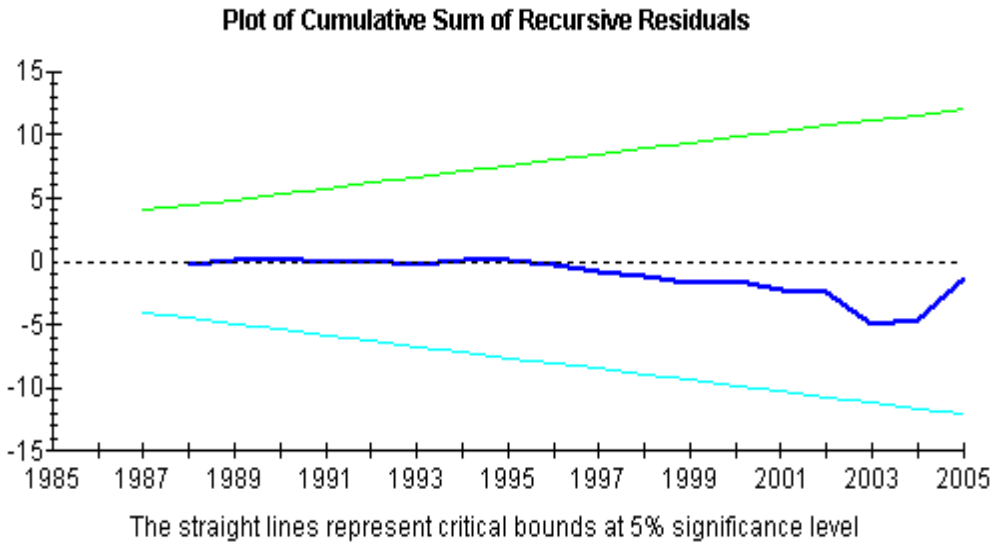
COUNTRY	Time Trend		Break Year	
	CUSUM	CUSUM Squares	CUSUM	CUSUM Squares
INDIA	Stable	Unstable	NA	1994- mid 2005
CHINA	Stable	Unstable	NA	1996 – mid 2005
BANGLADESH	Unstable	Unstable	2004	1994-1997
PAKISTAN	Stable	Unstable	NA	1996-1997
INDONESIA	Stable	Stable	NA	NA
MALAYSIA	Unstable	Unstable	2004	1994-2000
THAILAND	Stable	Unstable	NA	1994- mid 1996

Table 9: Results of Ordinary Least Square Estimation for all the Countries

Countries / Coefficients	INDIA	CHINA	BANGLADESH	PAKISTAN	INDONESIA	MALAYSIA	THAILAND
Time	232.37	1684.7	319.49	116.17	178.11	80.12	126.85
(t-ratios)	(8.96)	(12.99)	(14.31)	(16.47)	(10.63)	(6.79)	(3.65)
Constant term (A)	609.90	-4501.1	-1128.7	192.56	382.48	660.30	1297.8
(t-ratios)	(1.87)	(-2.76)	(-4.03)	(2.17)	(1.82)	(4.46)	(2.97)
Value of $\overline{R}^2$	.7985	.8935	.9106	.9311	.8486	.6933	.3819

SECTION A.3:

Figure 3.1: Results of Cusum and Cusum of Squares Test: India



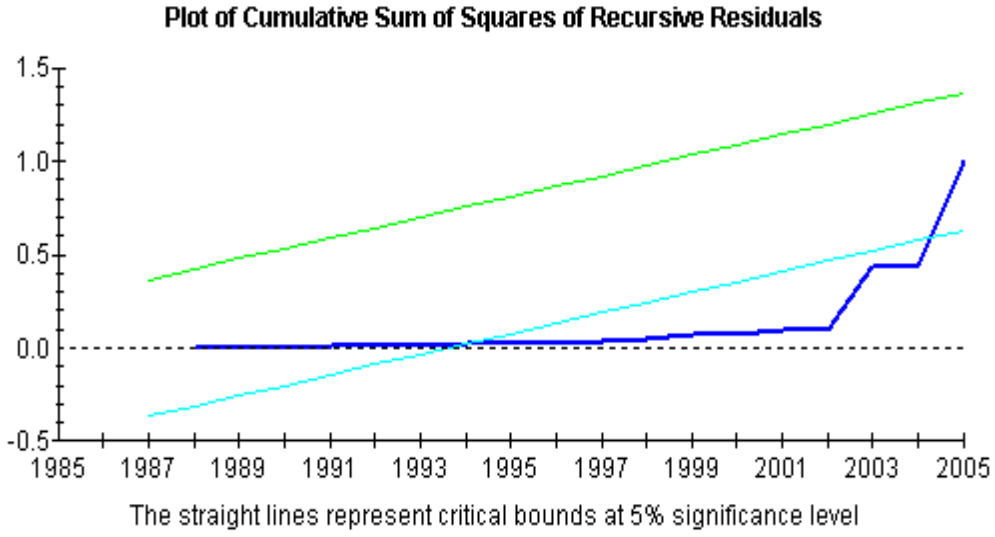
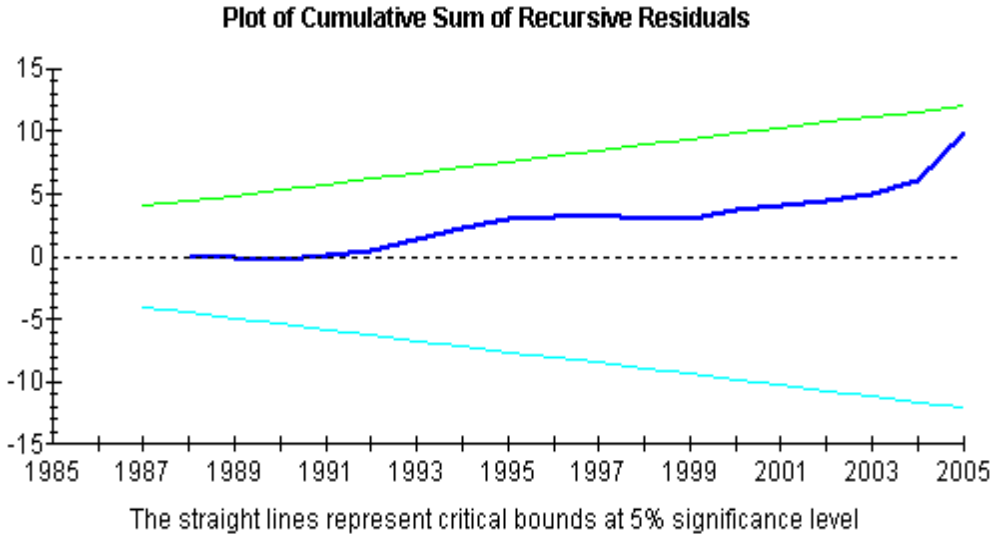


Figure 3.2: Results of Cusum and Cusum of Squares Test: China



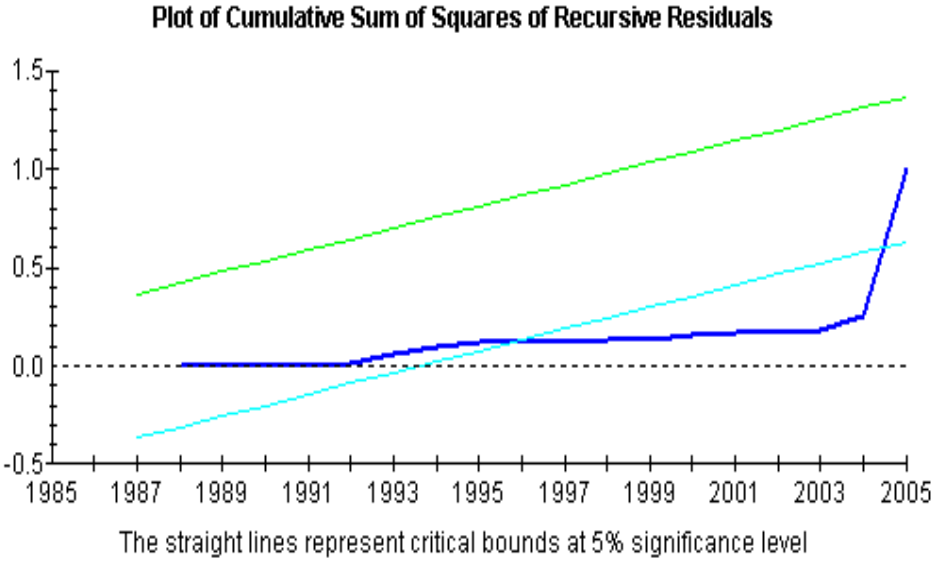
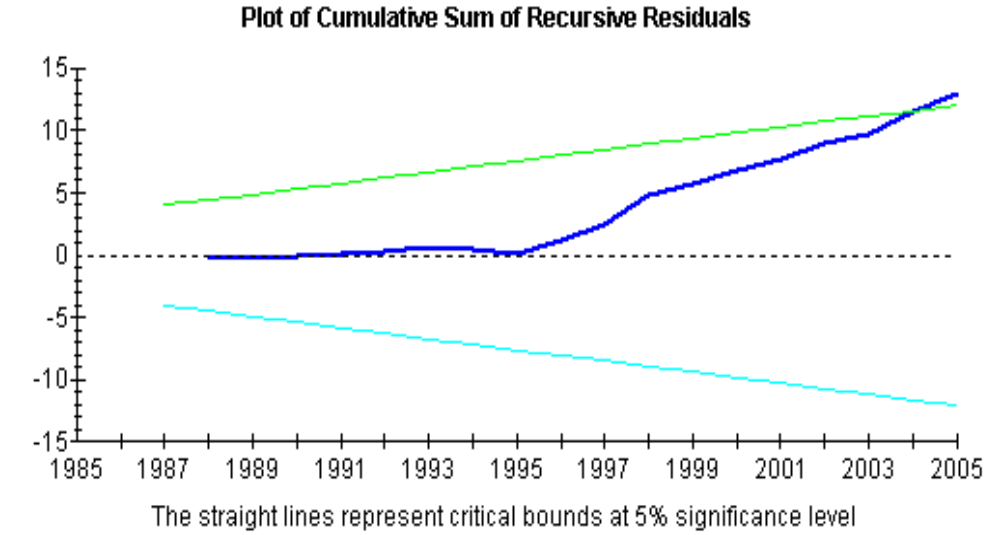


Figure 3.3: Results of Cusum and Cusum of Squares Test: Bangladesh



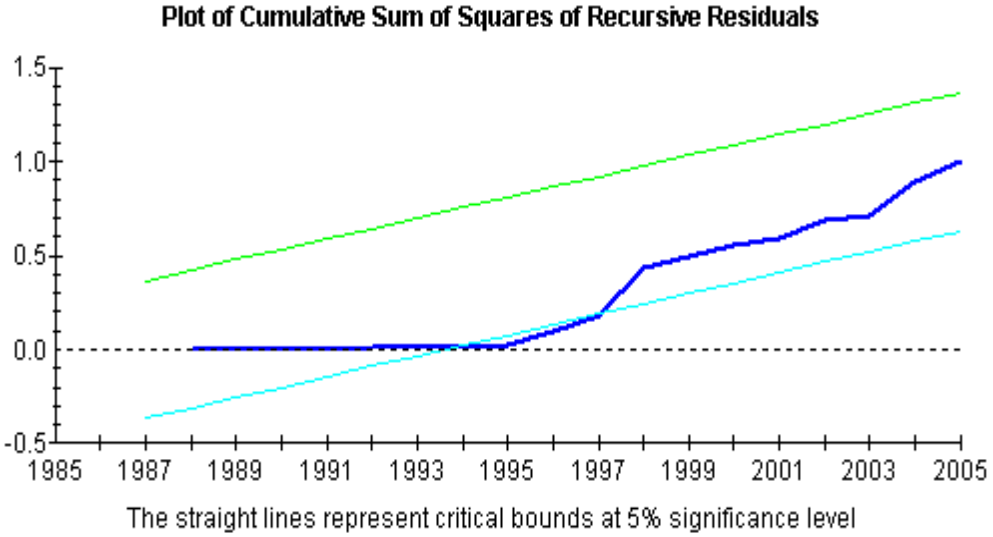
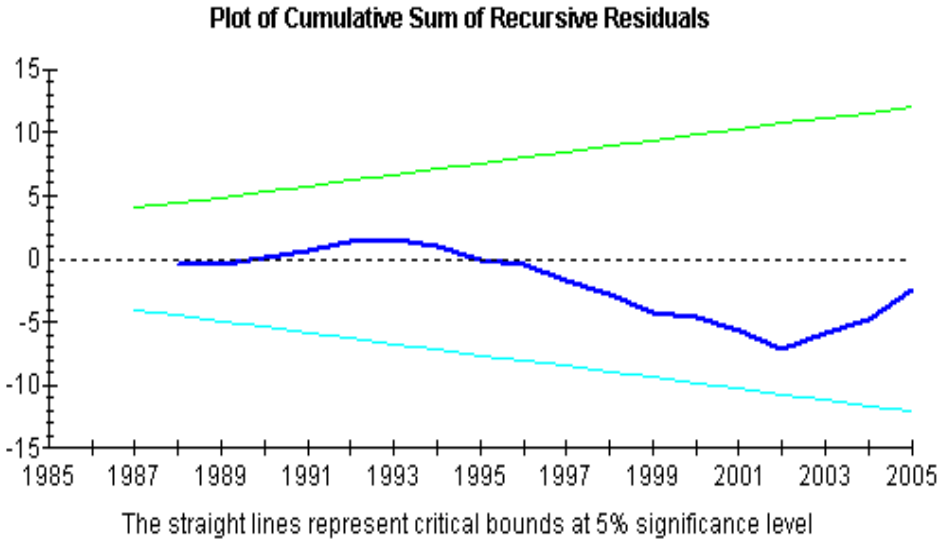


Figure 3.4: Results of Cusum and Cusum of Squares Test: Pakistan



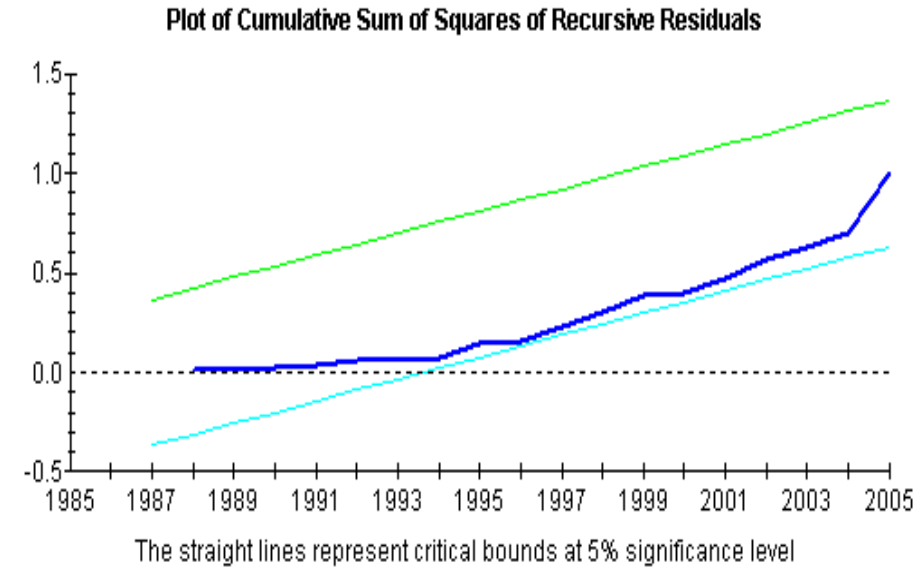
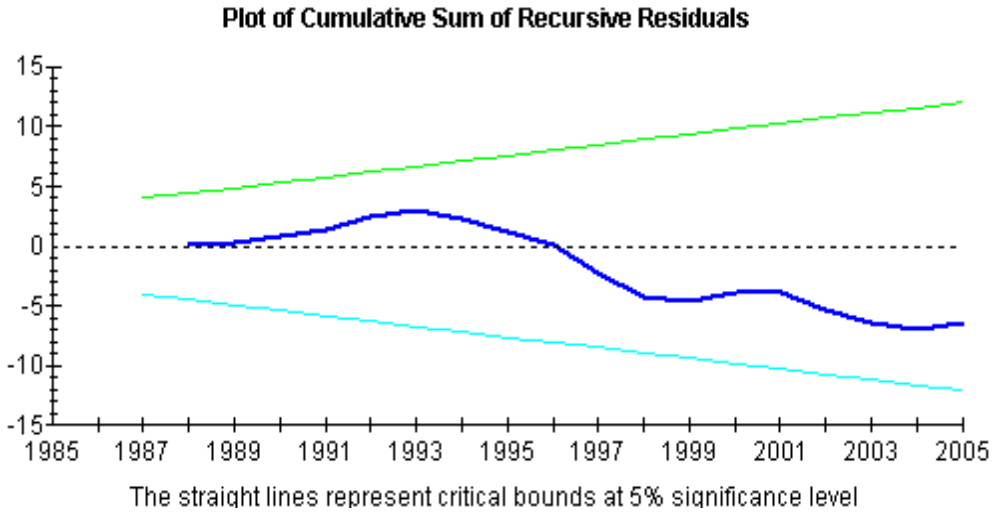


Figure 3.5: Results of Cusum and Cusum of Squares Test: Indonesia



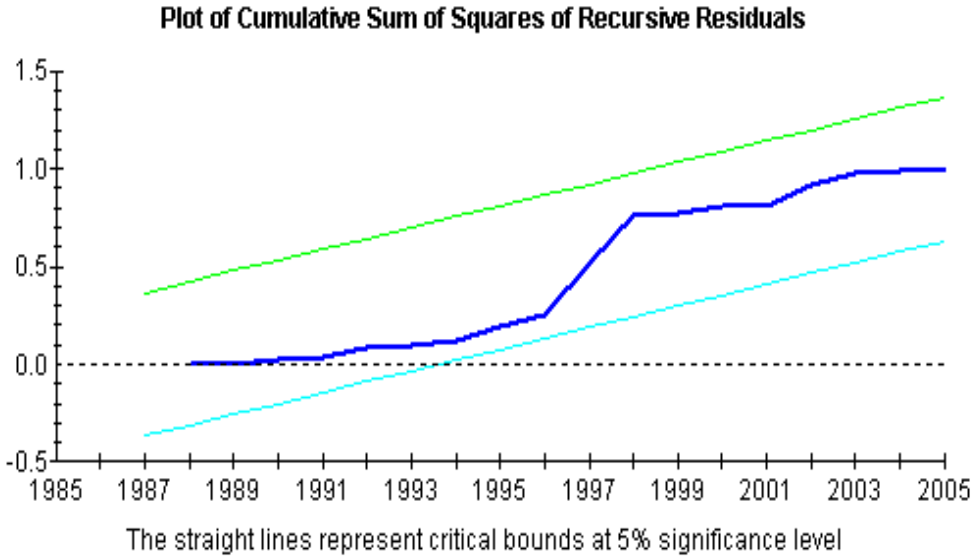
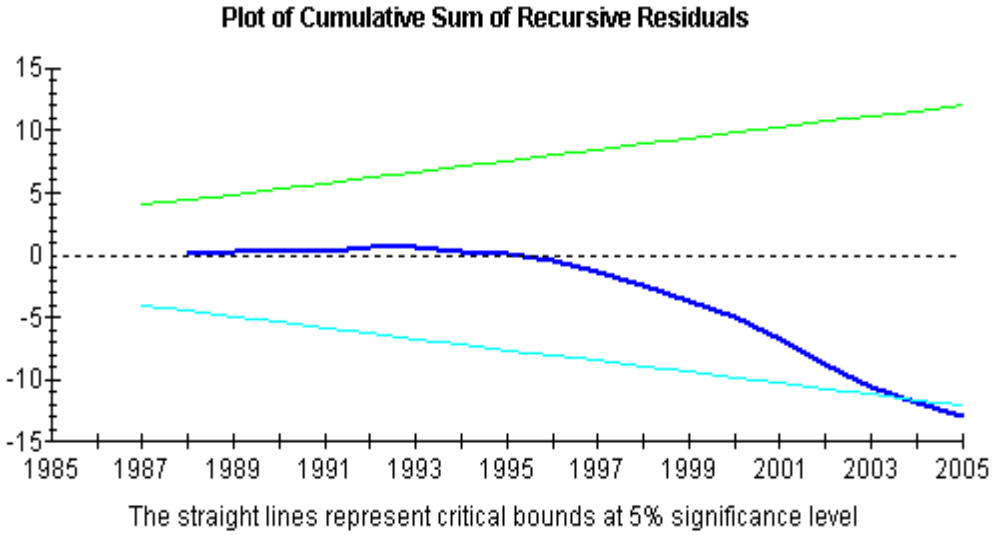


Figure 3.6: Results of Cusum and Cusum of Squares Test: Malaysia



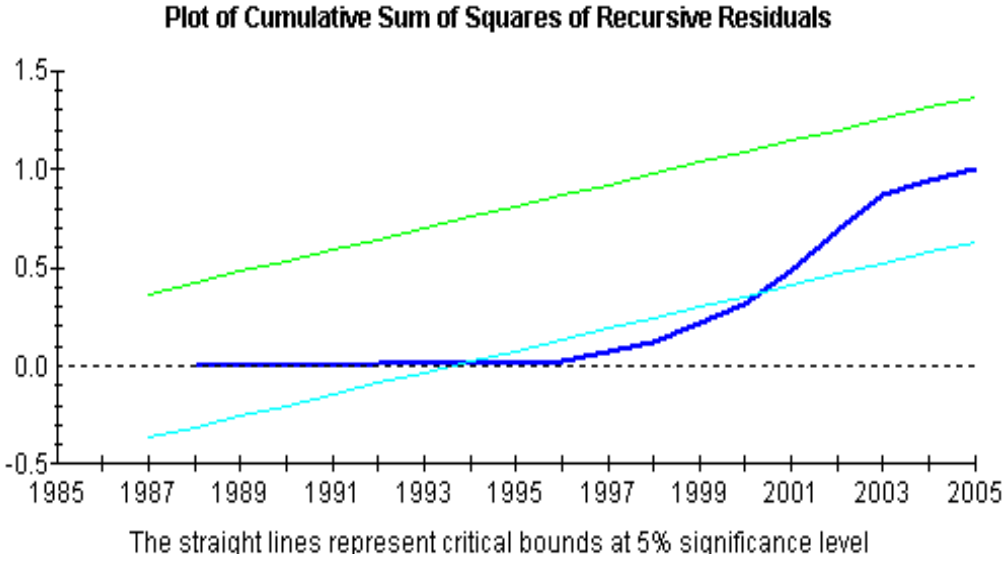
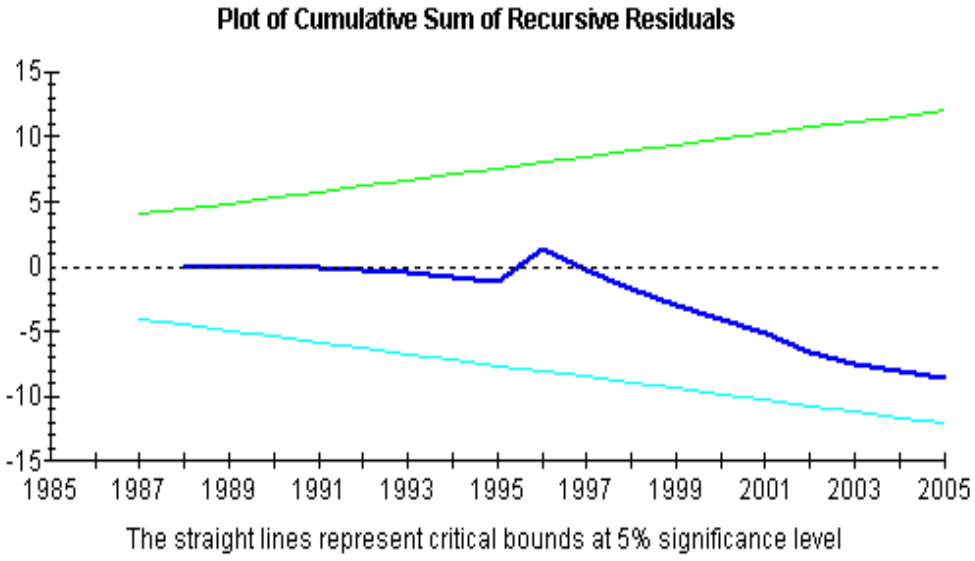
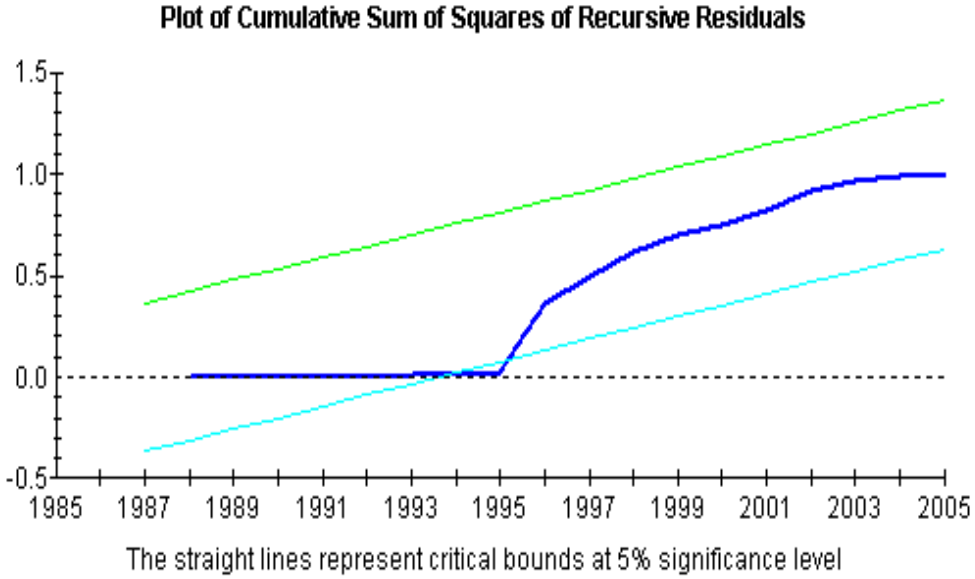


Figure 3.7: Results of Cusum and Cusum of Squares Test: Thailand





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Response Sheet (For the Editors only, not to be published):

*2 (Inserted as main text in pg 5 above)

It is important to note as a starting point that the present section discusses the impacts of quota withdrawal on *aggregate* exports of textile and apparel items for a group of Asian countries and the evolving relative international competitiveness for each country. Since understanding changes in domestic market structure consequent on MFA dismantling at the country level is of critical importance, we would briefly comment on the extent of such investigations. We have studied the implications of changes in concentration ratios of each category of garment manufacturing firms during 1990–2005 for India in a separate exercise (Kar, 2009). The study drew on firm level statistics for a large number of Indian garment manufacturers. The study on concentration of different sectors is followed by an investigation dealing with causal relation between economies of scale and structure of the industry. Besides, we have also tried to evaluate the barriers to entry faced by different sectors of this industry by estimating the average cost facing the firms against their respective sizes. This led subsequently to finding out the critical size for a firm within the industry that helps to retain the cost-effectiveness. It is argued in typical industrial organisation framework, that the firm structure is exogenously determined by technical factors, more precisely, by economies of scale. We used similar framework to measure how scale economies affect the structure of an industry.[9]

[9] Furthermore, in a related paper we have examined the performance of the firms in the Cotton Garment Industry of India to find a set of important factors responsible for firm level performances for the top twenty-five firms in the sector (Kar, 2009).