Effects of the Multi-Fibre Arrangement on Developing Countries' Trade

An Empirical Investigation

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and Paula Holmes

Rather than ease up, the MFA has been getting tougher on most developing country exporters of textiles and clothing. Trade gains for new exporters (except for marginal suppliers) due to MFA have been exaggerated; main beneficiaries were the domestic producers in industrial countries.

After analyzing data on trade and restrictions in U.S., EC, Canadian, and Swedish markets during the 1980s, Erzan, Goto, and Holmes conclude that:

• Rather than ease up, the Multi-Fibre Arrangement (MFA) became more restrictive, particularly for relatively new suppliers, during the 1980s. Proportionately more shipments were subject to quotas. The MFA's grip was tighter on clothing than on textiles but the pattern across markets and over time was the same for both.

• Volume generally grew less where quotas were binding.

• The unit value of shipments subject to binding quotas increased substantially more than the unit value of unconstrained items.

• Developing countries that were new exporters of textile products hoped to capture a larger share of the textile market as a result of quotas set for other developing countries. But c..:ept for marginal suppliers who emerged largely because of the MFA, the needy countries have benefited little from the MFA. And countries whose exports grow soon find themselves on the restricted list.

• Domestic producers in the United States have benefited most from the MFA.

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I. INTRODUCTION

The paper addresses two issues: (i) the extent of the restrictiveness/effectiveness of the MFA with respect to the developing country suppliers of textile products during the 1980s, and (ii) the extent to which these restrictions yield trade gains for the unconstrained/less established developing suppliers.

That there has been an escalation in the product and country coverage of restrictions in major industrial markets under the Multi-Fibre Arrangement (MFA) during the 1980s is well-documented (by the Textiles Surveillance Body and Raffaelli (1989)). However, attempts to apply some measure to this apparent change in the restrictiveness, and more generally the potency of MFA in distorting trade and investment face two major problems, bar the common methodological questions. The first set of problems relates to the complexity of the management of the restrictions under MFA. Various provisions of "flexibility", i.e., "swing", "carry over", "carry forward" and their often nonsystematic application make a precise identification of the ex ante effective quotas virtually impossible.

The second set of difficulties is of a statistical nature and stems from the ways in which products are grouped, quotas are specified and data on actual shipments are compiled. Each importer defines its own MFA groups, mainly based on the sensitivity of the products for its domestic industry. Quotas are specified and monitored in volume terms and often the

statistics pertain to the MFA groups rather than the underlying national tariff classifications. While import values for the products are available per tariff line, these sometimes are not matched with the MFA groups.[1] Furthermore, detailed national nomenclatures match with international trade classifications only at more aggregate levels.

To remedy some of the statistical problems faced in analyzing the trade effects of the MFA, an effort is being made at the World Bank to construct a consistent data base (see the Appendix on data). Currently, this data base covers the EC, US, Canadian and Swedish markets.

Using this data base, first, in Section II, the developments in the markets under question are reviewed in terms of the share of trade subject to bilateral restrictions, quota utilization rates and shipments which fall under binding quotas. In Section III, the supply and market response of individual developing exporters are characterized on the basis of the proportion of their trade covered by quotas and their average quota utilization rates. This two-dimensional characterization is then used to trace the pattern in the tightening of the MFA restrictions over time.

While Sections II and III attempt to evaluate some aspects of the evolution in the use of MFA restrictions in relation to the performance of the suppliers facing them, Section IV studies the changes in the volume and unit value of shipments subject to highly/fully utilized quotas as evidence of the restrictiveness/effectiveness of MFA. This also constitutes a test

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[1] Although the US and EC do have clear definitions as to which tariff lines comprise a given MFA category and quotas, this is not always the case in other markets.

of our working definition of a binding quota which we identify by

utilization rates.

As to the second question addressed concerning trade diversion, in

Section V, trade in products which were subject to binding quotas for the

major established exporters are traced to determine which foreign suppliers

tended to benefit. Finally, in Section VI, trade diversion in a

representative sample of apparel products is analyzed in a more rigorous

framework using a system of simultaneous equations depicting the demand and

alternative supply conditions. Simulations are undertaken to estimate the

likely magnitude of trade diverted to unconstrained developing exporters.

A concluding section (Section VII) relates the findings of the

paper to the theme of the Workshop.

II.   TRENDS IN MAJOR MARKETS AND A TYPOLOGY OF SUPPLIERS
      UNDER MFA

The EC and US accounted for, respectively, 37.8 and 40 percent of

OECD [2] imports of textile fibers, textiles, clothing and other textile

goods - henceforth textile products [3] from developing countries [4] in 1987.

With the inclusion of two smaller economies, Canada (3.3 percent) and

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[2] OECD excluding Turkey.

[3] In this section, for comparability across markets, textile products
are defined exhaustively as all textile fibers, textiles, clothing and related
goods covered by MFA categories of any of the importing countries at any point
in time during the 1981-1987 period. To obtain total imports of textile
products as the common denominator, the product group was defined broadly in
SITC. It consists of SITC (rev.2) 26 + 65 + 83 + 84 + (6123 + 62103 + 66494
+ 82122 + 85104 + 85105 + 89594 + 89984).

[4] For the definition of developing countries, see the Appendix on data.

Sweden (1.4 percent), they represented 82.6 percent of this market. From
1981 to 1986, the share of their combined imports of textile products from
developing countries in imports from all sources increased from 60 to 64
percent. [5] In 1987 there was a rapid surge to 69 percent. [6]

Against this background, we introduce four indicators of the
coverage, and indirectly of the restrictiveness of MFA: (i) Restricted
imports, i.e. imports subject to bilateral quotas, as a percentage of total
imports of textile products from developing countries (REST/TOT). (ii)
Imports from developing countries subject to "binding quotas" (defined by
utilization rates of 90 percent and above) as a percentage of total imports
from developing countries (BIND/TOT). (iii) Imports from developing
countries subject to binding restrictions as a percentage of restricted
imports from developing countries (BIND/REST). Finally, (iv) average quota
utilization rates. [7] These four indicators are presented, respectively, in
columns II to V of Table 1 for the EC, US, Canada, Sweden, and their
aggregate, for the period 1981-1987.

It should be stressed that these indicators are only probabilistic
yardsticks of the restrictiveness of MFA: Trade subject to quotas is more
likely to be harrassed than trade which takes place outside quotas. Higher

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[5] Excluding intra-EC trade.

[6] For comparability with 1986, when EC(10) rather than EC(12) was
considered, this ratio was 68 percent.

[7] In averaging quota utilization over MFA groups, any utilization rate
above 115 percent was assumed to arise from data deficiency since 15 percent
is often the maximum flexibility in quota utilization. In these cases the
quotas were adjusted upwards to yield utilization rates of 115 percent.

quota utilization rates and increasing proportions of shipments reaching quota limits entail greater probability of cases of export restraint and outright rejection of import licences. Or the other hand, even full quotautilization concerning a certain shipment does not necessarily imply a binding constraint since the quota could be "just redundant" meaning that shipments could have been exactly the same had there been no quota. [8] This latter question is addressed in Section III and the link between high utilization rates and their restraining effects is established.

As a snapshot of the overall situation as well as to clarify the content of the indicators, we first review the developments in the aggregate of the four markets. The trade coverage ratio of restrictions, REST/TOT, with all developing countries in its denominator was rather stable in a narrow range of 46 to 50 percent over the period. Given the fact that new suppliers were drawn into the MFA [9] and additional products were put under quotas, a stable trade coverage ratio implies a disproportionate expansion of the imports of nonrestricted products. This is the reflection of a relative slowdown in imports which were subject to quotas.

It should also be noted that the relatively low overall coverage ratio of 46 to 50 percent is due to the exhaustive definition of textile products used in the denominator. As the MFA product catagories are market specific, for consistency across markets, to serve as a common denominator,

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[8] Furthermore there are the flexibility provisions in applying quotas as well as the possibility of significant revisions of quota levels.

[9] See table AI.1 in the Appendix.

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Table 1: THE SHARE OF DEVELOPING COUNTRIES[a] IN IMPORTS OF THE EC, US, CANADA AND SWEDEN IN ALL TEXTILE PRODUCTS[b] AND INDICATORS OF THE COVERAGE AND RESTRICTIVENESS OF MFA 1981-1987 (per cent)

		I — Imports from developing countries as a percentage of total imports of textile products	II — Restricted imports[c] from developing as a percentage of total imports from developing (Trade coverage ratio or REST/TOT)	III — Imports from developing subject to binding restrictions[d] as a percentage of total imports from developing (BIND/TOT)	IV — Imports from developing subject to binding restrictions[d] as a percentage of restricted import[c] from developing (BIND/REST)	V — Average quote utilization rates[e]
EC[f]	1981	56.5	40.3	20.8	51.7	68.3
	1982	57.0	39.7	20.1	50.5	67.5
	1983	57.9	40.4	18.6	46.0	69.5
	1984	58.5	39.9	18.3	45.9	71.6
	1985	57.2	39.1	18.8	48.2	63.4
	1986	58.6	38.9	25.4	65.3	74.5
	1987	67.1	36.2	21.9	60.7	82.1
	1981-1987	59.7	38.8	20.9	54.0	72.1
US	1981	77.6	52.5	37.9	72.1	67.7
	1982	79.2	51.0	37.5	73.4	64.0
	1983	79.2	56.1	43.9	78.3	77.4
	1984	77.2	54.8	39.2	71.5	67.8
	1985	75.7	53.4	35.3	66.5	77.0
	1986	76.0	57.2	45.0	78.3	80.8
	1987	78.6	61.9	47.5	76.7	81.8
	1981-1987	77.5	56.2	41.8	74.3	75.0
Canada	1981	35.3	47.9	19.1	39.9	73.4
	1982	38.9	54.5	37.5	68.9	80.4
	1983	40.6	52.8	46.3	87.7	90.4
	1984	43.7	50.8	45.9	90.4	92.4
	1985	42.8	51.9	41.3	79.5	89.6
	1986	46.3	49.6	42.4	85.5	88.1
	1987	49.9	54.2	37.1	68.6	84.7
	1981-1987	43.3	51.8	39.4	76.0	86.1
Sweden	1981	24.2	53.1	24.6	46.4	82.2
	1982	25.2	61.7	41.1	66.5	88.7
	1983	24.0	60.0	22.2	36.9	85.6
	1984	24.4	59.4	29.6	49.8	85.9
	1985	23.0	57.5	34.5	60.0	81.9
	1986	23.5	54.8	45.3	82.6	93.2
	1987	26.4	49.9	43.9	87.9	97.9
	1981-1987	24.5	55.7	36.1	64.7	88.2
EC, US, Canada and Sweden	1981	60.3	46.1	28.1	61.0	68.6[g]
	1982	62.1	45.9	29.1	63.4	66.9[g]
	1983	63.7	49.0	32.4	66.2	75.3[g]
	1984	64.7	48.8	31.2	63.8	70.5[g]
	1985	63.6	47.9	29.4	61.3	73.4[g]
	1986	64.:	49.2	36.8	74.8	79.3[g]
	1987	69.2	49.6	35.3	71.2	82.3[g]
	1981-1987	64.5	48.4	32.4	67.1	74.7[g]

Source: World Bank computer files on MFA and UNSO COMTRADE Data Base (see the Appendix on data).

Notes:

(a) See the Appendix on data for definition of developing countries. The shares (Col. I-IV) are value shares. Utilization (Col. V) is based on quantities.
(b) Textile products are defined broadly as all goods covered by MFA categories of any of the importing countries at any point in time during the 1981-1987 period and consist of SITC (rev.2) 26 + 65 + 83 + 84 + (6123 + 62103 + 66494 + 82122 + 85104 + 85105 + 89594 + 89984).
(c) Restricted imports: imports subject to bilateral quotas.
(d) Imports subject to binding restrictions: shipments for which quota utilization rates were 90 percent or higher.
(e) A maximum of 115 per cent quota utilization was allowed in taking averages across MFA categories.
(f) 1981-1986 EC(10), 1987 EC(12). Trade shares exclude intra-EC trade.
(g) Approximate weighted average across markets using restricted trade values as weights.

a "universal" set of textile products was defined in terms of the SITC. [10]

The second indicator, BIND/TOT, as it has trade subject to binding quotas in its numerator, gives the share of trade which is effectively restricted. This indicator has increased by roughly one third, from 28 to 35 percent during the 1981-1987 period. The third measure, BIND/REST, is more focused and stands as a proxy for the restrictiveness of the quotas. This had a high value of 61 percent already in 1981 (and as the REST/TOT ratio remained stable), it has increased proportionately with BIND/TOT, to 71 percent in 1987. Finally, the overall average quota utilization in the four markets, [11] an alternative proxy to BIND/REST, increased, with some cyclical swings, from 69 percent in 1984 to 82 percent in 1987.

Developments in Individual Markets

There are considerable differences among the markets considered in terms of the share of imports from developing countries in textile products. While Sweden received, on average only one quarter of its imports from developing countries, this share was over three quarters for the US. Imports from developing countries accounted for, on average, 60 percent of the EC's imports of textile products. The relatively low figures for the EC and Sweden are in part due to EFTA, to which Sweden belongs, and the barrier-free trade between EFTA and the EC. With the exception of 1987 which witnessed a surge in all four markets under

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[10]   See footnote 2.

[11]   Overall average quota utilization rates are rough approximations obtained by taking averages across the markets by using values of restricted trade as weights.

consideration, Canada was the case (followed by the EC) for which the developing countries' share registered a major increase, from 35 percent in 1981 to 50 percent in 1987.

The trade coverage ratio of restrictions (REST/TOT) was generally stable around 55 percent except in EC where this was in the proximity of 40 percent. For the EC, the share of imports from developing countries under binding constraints (BIND/TOT) was also considerably low, around 20 percent, compared to the other three markets, which on average was twice as much and registered significant increases during the 1981-1987 period.

The share of restricted shipments which came under binding quotas (BIND/REST) was the highest in the US and Canada, on the average 74 and 76 percent, respectively. There was a secular and substantial increase of this ratio in all markets. Finally, the average quota utilization rates rose in a parallel fashion, reaching values above 80 percent in all four markets.

Reviewing the four markets individually using the proxies for the coverage and, indirectly for the restrictiveness of MFA, we conclude that there was no noteworthy sign of relaxation of the regime. On the contrary, almost all proxies registered significant increases during the 1981-1987 period indicating a tightening of the MFA in the four markets.

It should be noted, however, that besides indicating the predominant trend over time, the data presented here do not provide a solid basis for comparisons across markets. Firstly, there are some definitional and statistical inconsistencies, some of which are spelled out in the Appendix on data. Secondly, the administration of the MFA regimes can vary considerably across markets. In particular the comparison between the EC

and the US suffers from the fact that, on top of the quotas negotiated by the Community, individual EC members can resort to the safeguard clause contained in the EC treaty to curtail imports. [12] Furthermore, there are safeguards clauses in EC's preferential trade agreements which allow surveillance and protective measures. The EC also has concluded informal arrangements with some Mediterranean countries without explicitly referring to the trade agreements' safeguards provisions. [13] Finally there were major differences in the activity levels of West Europe and North America and substantial changes in the dollar rate during the period under study. At any given time, differences in the demand conditions and the relative attractiveness of the two major markets can overshadow the differences attributable to the MFA restrictions.

Clothing versus Textiles

Do the patterns observed for the broadly defined textile products hold when clothing items are considered alone?

The comparative advantage of developing countries is more pronounced in clothing than in textiles and man-made fibers. A major

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[12] Article 115 of the EC Treaty contains a safeguard clause to control the free movement of goods between individual EC members. This prevents goods from outside the EC that have been shipped to one EC country from being resold or "deflected" into another member country. Thus, in the extreme, a ban on the import of textile items can be imposed by separate EC countries, if prior authorization is given by the EC Commission.

Most Article 115 petitions are for textile items, and most petitions are granted! In 1985, for example, out of 211 total petitions, 143 were for textiles and of these textile petitions, 119 were granted.

[13] In this context, EC's arrangement with the Turkish Association of Textile Exporters is particularly important due to the fact that Turkey is one of the main suppliers in this market.

difference seems to be the greater possibilities to apply capital intensive technologies to the latter products. As a matter of fact, textile production in the industrial countries, especially in the EC, made a revival during the 1980s (GATT (1987)). Given these considerations, differences might be expected in the restrictiveness of the MFA vis-a-vis clothing versus textiles.

The yardsticks applied to the broad group of textile products were calculated for clothing items. [14] From the results reported in Table 2, compared to those in Table 1, no major differences were observed in the patterns across the markets or over time. The main difference was the level of import market share of developing countries and the trade coverage ratio of quotas. Both this share and the coverage ratio were almost uniformly ten percentage points higher for clothing compared to the broad group of textile products in both periods. On the other hand, the ratio of imports under binding quotas as a percentage of imports subject to restrictions, and the level of average quota utilization rates for clothing closely resembled that for all textile products. From these results, it can be concluded that restrictions on clothing were less selective or more general compared to textiles. Nevertheless the general trend of increasing restrictiveness held for both.

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[14] Clothing was defined as the aggregate of market specific MFA categories corresponding to SITC 84 to serve as a common denominator.

Table 2: THE SHARE OF DEVELOPING COUNTRIES IN CLOTHING IMPORTS
OF THE EC, US, CANADA AND SWEDEN
AND INDICATORS OF THE COVERAGE AND RESTRICTIVENESS OF MFA

1981 AND 1987
(per cent)

		I Imports from developing countries as a percentage of total imports of clothing	II Restricted imports from developing as a percentage of total imports from developing (Trade coverage ratio or REST/TOT)	III Imports from developing subject to binding restrictions as a percentage of total imports from developing (BIND/TOT)	IV Imports from developing subject to binding restrictions as a percentage of restricted imports from developing (BIND/REST)	V Average quota utilization rates
EC	1981	71.7	54.4	29.8	54.8	68.7
	1987	83.7	46.0	28.3	61.6	87.7
US	1981	88.9	68.3	51.1	74.8	72.4
	1987	87.3	76.5	58.8	76.9	84.4
Canada	1981	72.1	56.8	22.6	39.7	70.2
	1987	74.5	74.1	57.4	77.4	89.5
Sweden	1981	30.9	68.5	32.7	47.7	85.0
	1987	32.8	57.3	49.4	86.2	95.1
EC, US, Canada and Sweden	1981	76.4	61.5	39.9	64.8	71.2
	1987	82.2	63.7	46.2	72.6	85.8

Source: World Bank computer files on MFA and UNSO COMTRADE Data Base (see the Appendix on Data).

Note: Clothing is defined as SITC 84. For all other details, see notes to Table 1.

III. MFA SYNDROME FOR DEVELOPING EXPORTERS

Individual developing countries were affected by and responded to the quotas on their exports of textile products in different ways. The proportion of the countries' exports subject to quotas and their rate of quota utilization are two dimensions which provide a basis for the characterization of these supply and market responses.

To demonstrate the point, at one extreme were suppliers with only a few products facing quotas, who were unable to come close to filling them. At the other extreme were diversified exporters with quotas on almost all products who used them to the fullest extent. These extremities characterize supply versus market constrained situations. Consequently a transition from the former to the latter state increases the importance of conditions of access to the markets. Furthermore, as this transition involves imposition of new quotas and their utilization to the limit, the regime can be branded as becoming more restrictive.

We shall observe that this caricature resembles the predominant evolution for the developing suppliers in the EC and US markets.

Figures 1 and 2 give the two-dimensional characterization of the individual developing suppliers in the EC and US markets, respectively. The vertical axis in the scatter diagrams indicates the proportion of imports of textile products subject to quotas while the average quota utilization rate is measured along the horizontal axis. In the upper diagrams of both Figures, exporters are plotted by their 1981-1983 period

averages, and the lower diagrams depict the 1985-1987 situation. [15] As textile products in this case are defined narrowly by the EC's and US' own MFA categories, respectively, the standing of a supplier in the two markets is not directly comparable. [16]

The overall impression from the diagrams is of a concentration of exporters in the second period into the North East quarter. More specifically, it can be observed that among the 22 exporters in the EC market depicted for both periods, 11 of them (China, Egypt, Hong Kong, India, Indonesia, Macao, Pakistan, Peru, Philippines, Sri Lanka and Thailand) made a positive move on both axes towards full trade coverage and quota utilization. Another two (Korea and Taiwan) maintained their already "high" positions. In the US market there were 22 developing suppliers under restrictions in both periods and again 11 of them (Brazil, China, India, Indonesia, Macao, Mexico, Romania, Singapore, Sri Lanka, Thailand and Yugoslavia) moved in the North East direction. Four more exporters
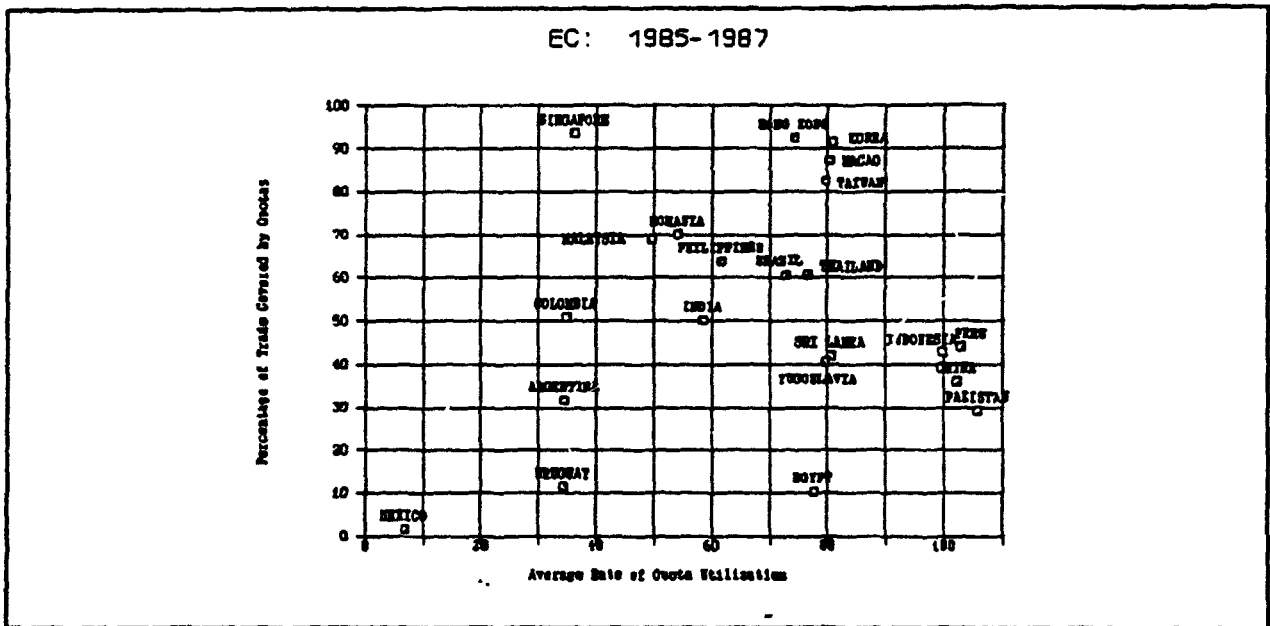
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[15] Weighted averages for the periods 1981-1983 and 1985-1987. When an exporter was subject to restrictions during only part of the period, the average pertains to the applicable year(s).

[16] Note that in Table 1 textile products were defined broadly in SITC to serve as a common denominator. Overall trade coverage ratios, especially in the EC, are considerably higher when based on own MFA categories.

	EC		US	
	1981-1983	1985-1987	1981-1983	1985-1987
Trade covered by quotas, %	63.1	63.4	78.9	83.3
Average quota utilization, %	68.4	75.3	70.1	80.1

Figure 1: SHARE OF IMPORTS OF TEXTILE PRODUCTS SUBJECT TO QUOTAS AND AVERAGE QUOTA UTILIZATION RATES FOR DEVELOPING SUPPLIERS IN THE EC MARKET, 1981-1983 AND 1985-1987

Source: World Bank computer files on MFA (see the Appendix on data).

Note: Trade coverage ratios are based on EC's imports in its own MFA categories (as opposed to the broadest definition of textile products based on SITC).
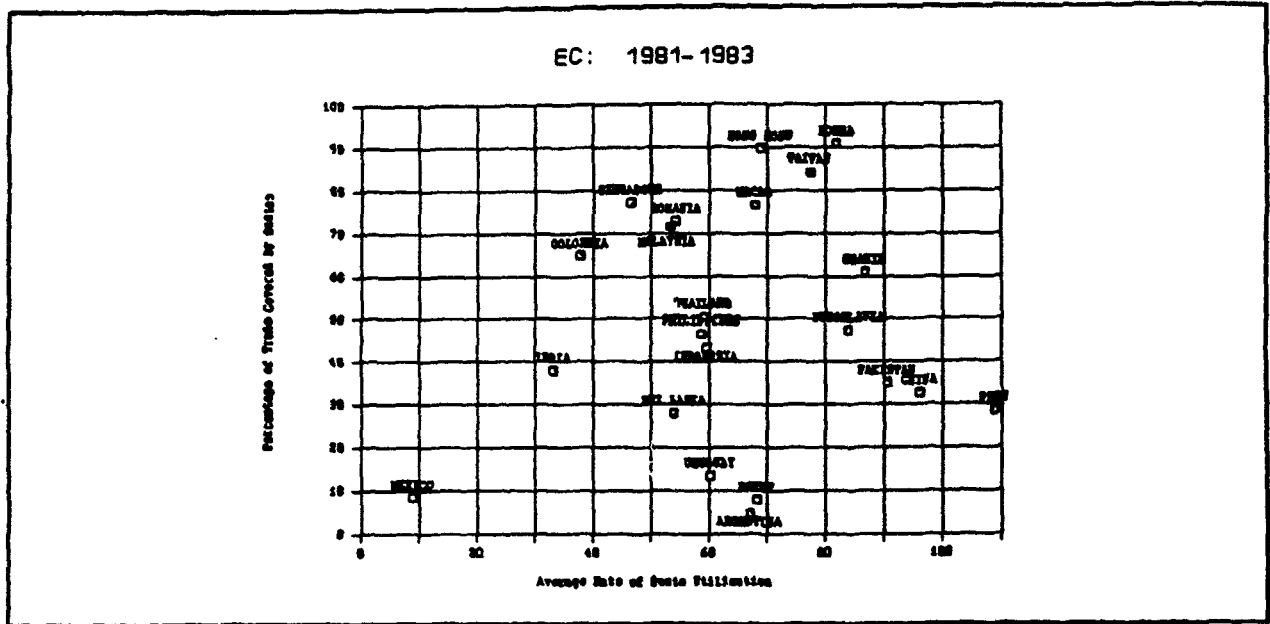
Figure 2: SHARE OF IMPORTS OF TEXTILE PRODUCTS SUBJECT TO QUOTAS AND AVERAGE QUOTA UTILIZATION RATES FOR DEVELOPING SUPPLIERS IN THE US MARKET, 1981-1983 AND 1985-1987
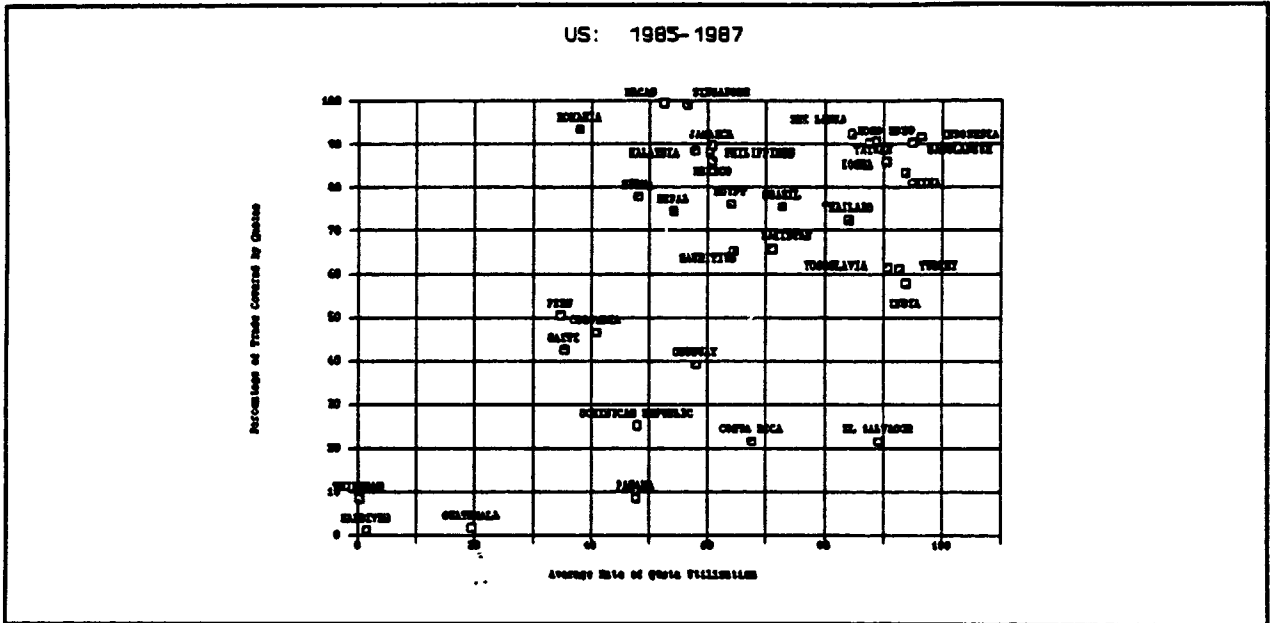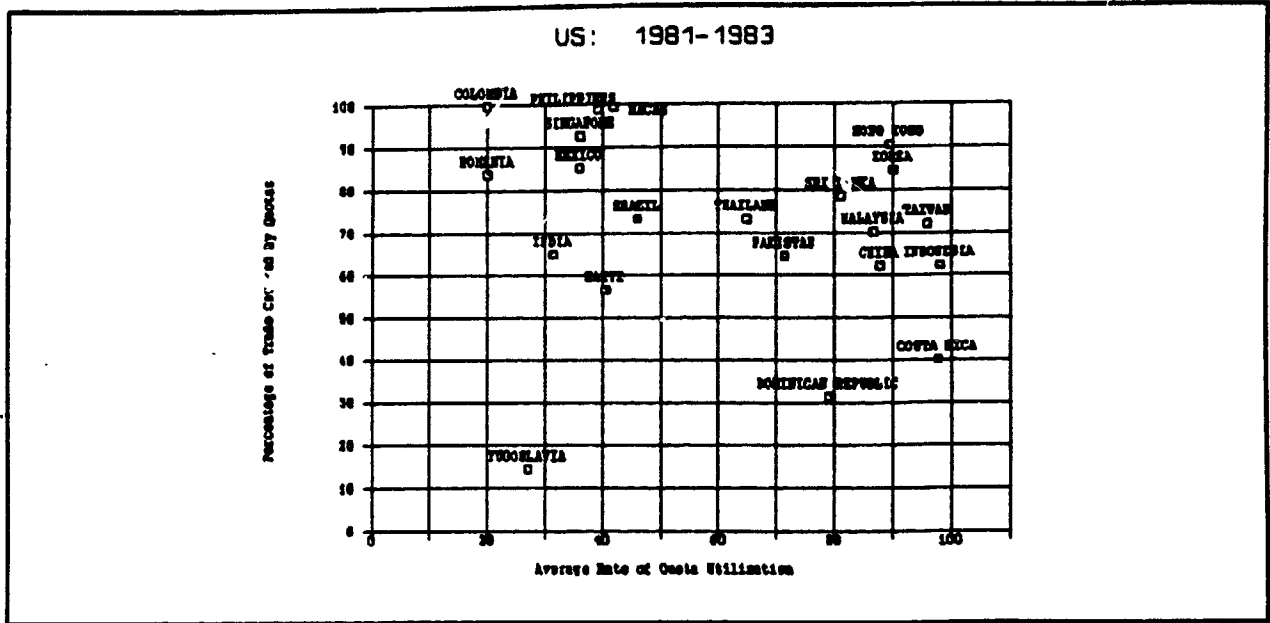
Source: World Bank computer files on MFA (see the Appendix on data).

Note: Trade coverage ratios are based on US imports in its own MFA categories (as opposed to the broadest definition of textile products based on SITC).

(Hong Kong, Korea, Pakistan and Taiwan) were stable in the proximity of the North Eastern corner of the diagram. Among these suppliers, ten (China, Hong Kong, India, Indonesia, Korea, Macao, Pakistan, Sri Lanka, Taiwan and Thailand) had a similar evolution in both markets and four of them (Hong Kong, Korea, Taiwan and, to a lesser extent, Thailand) were more or less "tied up" in terms of product coverage and quota limits.

In the US market, a dozen emerging exporters were placed under restrictions in the 1985-1987 period. Half of these, especially Bangladesh and Turkey, started their ordeal with a high coverage and tight quotas on their limited products.

Seven exporters in the EC market (Brazil, Colombia, Malaysia, Mexico, Romania, Uruguay and Yugoslavia) and three in the US market (Costa Rica, Dominican Republic and Haiti) drifted towards lower trade coverage and/or quota utilization. Furthermore, for two suppliers in the EC (Argentina and Singapore) and three in the US market (Colombia, Malaysia and the Philippines), product coverage and quota utilization rates moved in the opposite direction.

Differences among country experiences and inconsistencies in performance across the two markets underline the importance of supply conditions, including the administrative capacity for effective utilization of quotas (Hamilton 1986b). Low quota utilization rates can be traced to the anti-export bias in the case of some countries, and political distruptions in some others. Another explanation is increasing labor costs

and the consequent shift in comparative advantage. [17]

The most efficient suppliers always make the best use of the prevailing market conditions. The irony of discriminatory protectionism, in this case the MFA restrictions, is that good performance is punished. When a supplier shows a potential in a market, its most promising products are covered by quotas. Emerging suppliers usually start with a low coverage ratio and utilization rate, although there are some exceptions. [18] If they perform as expected, they soon hit the quota ceilings in those limited goods. They can move into new products, although these will also become subject to restrictions. Growth of quota ceilings do not catch up with the expansion of successful suppliers' shipments, and product diversification is more than compensated by imposition of restrictions on the emerging products.

The moral of the story is that it is not only the exports of the established suppliers which come under binding constraints. The newcomers, which might to some extent benefit from restrictions on the major suppliers, soon find themselves pressed; the more successful they are, the faster and tighter they are embraced by the MFA.

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[17] This appears to be the case of Singapore. Presumably due to quota rents, the phenomenon does not seem to surface often.

[18] An emerging exporter which gains competitiveness in a limited number of products can soon fully utilize its quotas. This was the case for half of the dozen newcomers in the US market.

IV. PRICE AND VOLUME EFFECTS OF BINDING QUOTAS

Volume restraints on developing countries' exports of textile products, inter alia, raise domestic prices in importing markets (Cline (1987), Hamilton (1984), Hufbauer et al (1988), Jenkins (1980), Spinanger and Zietz (1986) and Tarr and Morkre (1984)); yield quota rents to established suppliers (Hamilton (1988), Pelzman (1988) and Tarr and Morkre (1984)); and induce "upgrading" of the products exported (Cline (1987) and Wolf (1987)). It is the quantification of such effects which gives direct evidence as to the extent and the eventual intensification of the distortions of the MFA. In this Section, we simply compare the developments during the period 1981-1987 in the volume and unit value of imports subject to binding quotas with those shipments under nonbinding quotas. The comparison serves two purposes. First, it is a rough indicator of the changes in the effectiveness of MFA. Secondly, it constitutes a test of our working definition of a binding quota, i.e. those identified by a utilization rate of 90 percent or above.

For the comparison, the products/suppliers are limited to those which were subject to bilateral quotas in respective markets both in 1981 and 1987. [19] Thus the eligible products in the EC accounted for 83 percent of all imports of textile products from developing countries subject to quotas in 1987. The respective figures for the US, Canada and Sweden were 67, 61 and 79 percent. Shipments for which quota utilization rates were 90

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[19]   This is because, with the exception of the EC, reliable data on import volumes exist only for MFA categories that are subject to bilateral quotas.

percent or above in the earlier periods, i.e., 1981, 1982 or 1983, are

defined as being subject to binding quotas.

Volume Restraint

In all four markets, the 1981-1987 annual average volume growth of

shipments subject to binding quotas was lower than that for imports falling

under nonbinding quotas (see Table 3). For the EC, the growth rates of the

two categories were respectively 5.4 and 6.7 and for the US 2.4 and 13.6.

In Canada imports fulfilling the requirement above and not subject to

binding quotas constituted only 3 percent of shipments under restrictions.

This category had a growth rate of 24.4 percent as opposed to a 2.8 percent

annual growth in the bound items. In Sweden the distinction in growth

rates was marginal.

In the two major markets, based on volume growth in individual

shipments (quota/supplier), we applied a (two-tailed) t test to determine

whether the bound categories' sample means differed significantly from that

of unbound groups. [20] We found that in the case of the US there was not

even a 0.1 percent probability that the difference was coincidental whereas

for the EC there was a 25 percent chance.

Price Jack-up

Changes in unit values reflect two phenomena; (i) the price mark-

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[20] In Canada and Sweden the number of unbound categories/suppliers was too small to treat them individually.

Table 3: VOLUME GROWTH AND UNIT VALUE CHANGES IN IMPORTS
OF TEXTILE PRODUCTS FROM DEVELOPING SUPPLIERS UNDER BINDING
AND NONBINDING QUOTAS IN THE EC, US, CANADA AND SWEDEN

(1981-1987 average annual change, percent)

		EC	US	Canada	Sweden
I.	Change in volume				
	A. Under binding quotas	5.4	2.4	2.8	3.1
	B. Under nonbinding quotas	6.7	13.6	24.4	3.2
II.	Change in unit value				
	A. Under binding quotas	1.9	9.1	11.6	8.3
	B. Under nonbinding quotas	0.8	3.4	2.7	4.1

Memo item::

Shipments above (A and B) as a percentage
of (the value of) all imports of textile products from
developing suppliers subject to quotas in 1987, %

	EC	US	Canada	Sweden
A.	51.0	56.5	58.1	65.8
B.	31.5	10.8	3.0	13.2
A. + B.	82.5	67.3	61.1	79.0

Source: World Bank computer files on MFA (see the Appendix on data).

Note: The tabulation covers only products/suppliers which were subject to
bilateral quotas in respective markets both in 1981 and in 1987.
Shipments for which quota utilization rates were 90 percent or above
in 1981, 1982 or 1983 are defined as being subject to binding quotas.

up or the quota rent and (ii) product "upgrading" or quality improve-
ments. [21] We did not attempt to distinguish these two. [22]

It was observed that in all four markets, the increase in the unit
values was considerably greater in the case of shipments under binding
quotas compared to those falling under nonbinding quotas (see Table 3).
For the EC, the average annual growth rate of the unit value of the bound
category was 1.9 percent, more than twice the 0.8 percent for the unbound.
The difference was even greater for the US, respectively, 9.1 and 3.4
percent; and for Canada 11.6 and 2.7 percent. In Sweden the growth rate
for the bound items was also double; 8.3 and 4.1 percent.

When a t test was applied to differences in the unit value growth
of individual shipments falling under the two categories, the results were
identical with that of volume growth; extremely robust for the US and
rather weak for the EC.

We interpret the findings in this section as further evidence of
the volume restraining and value increasing effects of the MFA. More
importantly, the evidence, especially in the case of the US, verifies the
relevance of identifying bound quotas by the high level of quota
utilization rates - the assumption behind the main indicators used in the
previous Section.

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[21] In this respect quantitative restrictions have an effect similar to
that of specific as opposed to ad valorem duties.

[22] Cline (1987), by using wholesale price indices, attempts to isolate
the "upgrading" effect.

V. CHANGES IN IMPORT MARKET SHARES: A CONSEQUENCE OF TRADE DIVERSION?

When shipments of some exporters are bound by quotas, domestic producers and other foreign suppliers which are not effectively constrained, i.e., those which either are not subject to quotas or have not reached quota ceilings in the products concerned, would step in and partially offset this effect. As less established developing suppliers would more likely fall into this unconstrained category, they are among the potential beneficiaries of the resulting trade diversion. Consistent with this perception, some less competitive developing exporters regarded the extension of MFA as providing a "guaranteed market share" (Cable (1987)). However, trade diversion due to MFA also occurs in favor of the exports from developed countries since MFA restrictions do not apply to them (Keesing and Wolf (1980) and Hamilton (1988)).

The starting point of our analysis in this Section is the observation, e.g., by Wolf (1987) that from 1981 to 1985, US imports of textiles and clothing from Hong Kong, Korea and Taiwan grew at an annual rate of less than 10 percent, while those from other developing countries had a growth rate more than twice that (22 percent), and the growth rate of those items from Europe was over three times (33 percent). We go a step further and compare the 1981-1987 changes in market shares of various groups of developing and developed countries in precisely those products for which the established developing suppliers faced binding quotas.

In each market, a set of MFA categories was identified in which Hong Kong, Korea and Taiwan had quota utilization rates of 90 percent or above during most of the 1981-1987 period (i.e., at least four years in each case). Imports in these product categories from developing countries

accounted for 56 percent of EC's 1987 imports of textile products from developing suppliers. This coverage ratio was the same in the case of the US, 77 percent for Canada and 53 percent for Sweden.

It was observed that, in these products, the share of the three established developing suppliers in EC's imports declined from 13 percent in 1981 to 10.5 percent in 1987 [23] (see Table 4) while this share in the remaining textile products did not change. [24] The other developing exporters that had bilateral quotas with the EC made a market gain roughly corresponding to this percentage. Among them, it was only Brazil, Colombia, Singapore and Uruguay which experienced a market loss of some significance. This was not attributable to the MFA as they rarely reached quota ceilings. Those developing countries which were not subject to MFA restrictions in the EC nearly doubled their market share from 4.7 to 8.3 percent. These were predominantly Mediterranean associates of the Community. The African, Caribbean and Pacific (ACP) group of countries, which enjoy duty free status in the EC accorded by the Lome Convention, had half a percent market share in 1981 which became 0.8 percent in 1987.

Developed country exporters, including Intra-EC(10) trade, had around 65 percent of the market in 1981. In 1987 this was three percentage

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[23] Intra-EC trade is included in the denominator of the market shares. For comparability EC(10) is considered for both 1981 and 1987.

[24] This share, not reported in the Table, was slightly over 7 percent in both periods. Given the higher increase in unit values of the products under binding quotas, discussed in the previous Section, the decline in volume share was considerable.

Table 4: CHANGES IN IMPORT MARKET SHARE OF SUPPLIERS IN TEXTILE
PRODUCTS WHICH WERE UNDER BINDING RESTRICTIONS /a FOR
HONG KONG, KOREA AND TAIWAN IN THE EC MARKET, 1981-1987

Supplier	Import Market Share /b		
	I 1981	II 1987	II/I
The Three	13.07	10.48	0.80
Hong Kong	7.29	5.83	0.80
Korea, Rep. of	3.71	2.90	0.78
Taiwan	2.07	1.75	0.85
Other Restricted Developing	12.66	15.40	1.22
Argentina	0.03	0.05	1.91
Bangladesh	0.12	0.14	1.16
Brazil	0.81	0.55	0.69
China	1.53	2.58	1.68
Colombia	0.11	0.06	0.56
Egypt	0.38	0.55	1.42
India	2.10	1.97	0.94
Indonesia	0.13	0.60	4.74
Macau	0.86	0.86	1.00
Malaysia	0.39	0.39	0.99
Mexico	0.04	0.08	1.83
Pakistan	0.56	0.87	1.56
Peru	0.12	0.12	0.97
Philippines	0.55	0.53	0.95
Romania	1.23	1.08	0.88
Singapore	0.68	0.44	0.65
Sri Lanka	0.17	0.31	1.87
Thailand	0.86	1.32	1.52
Uruguay	0.02	0.01	0.49
Yugoslavia	1.95	2.89	1.48
All Restricted Developing	25.73	25.88	1.01
Other Developing	4.74	8.33	1.76
ACP	0.52	0.81	1.56
All Developing	31.00	35.02	1.13
Eastern Europe /c	2.65	2.23	0.84
Developed Countries	64.67	61.51 (61.86) /d	0.95
Intra-EC	52.33	49.60 (55.08) /d	0.95
TOTAL OF THE ABOVE	100.00	100.00	1.00

Source: World Bank computer files on MFA and UNSO COMTRADE Data Base.

Notes:

/a MFA product groups in which Hong Kong, Korea or Taiwan had quota utilization
rates 90 percent or above more than half of the period (at least four years)
1981-1987.

/b Calculated using value in current dollars. Including intra-EC trade; EC(10)
for both 1981 and 1987.

/c Bulgaria, Czechoslovakia, Hungary and Poland.

/d EC(12).

Table 5: CHANGES IN IMPORT MARKET SHARE OF SUPPLIERS IN TEXTILE
PRODUCTS WHICH WERE UNDER BINDING RESTRICTIONS FOR
HONG KONG, KOREA AND TAIWAN IN THE US MARKET, 1981-1987

Supplier	Import Market Share		
	I 1981	II 1987	II/I
The Three	55.11	43.45	0.79
Hong Kong	22.78	17.28	0.76
Korea, Rep. of	15.14	11.21	0.74
Taiwan	17.19	14.96	0.87
Other Restricted Developing	28.67	41.92	1.46
Bangladesh	0.02	1.66	102.22
Brazil	0.37	0.86	2.34
Burma	0.00	0.02	-
China	6.43	7.91	1.23
Colombia	0.57	0.44	0.77
Costa Rica	0.53	1.06	2.01
Dominican Republic	1.34	2.08	1.55
Egypt	0.16	0.29	1.87
El Salvador	0.14	0.13	0.93
Guatemala	0.01	0.22	37.99
Haiti	0.80	0.71	0.88
India	2.55	2.69	1.06
Indonesia	0.54	2.43	4.51
Jamaica	0.23	1.03	4.41
Macau	1.41	1.72	1.22
Malaysia	0.71	1.86	2.63
Maldives	0.02	0.07	3.84
Mauritius	0.14	0.68	4.78
Mexico	2.56	2.18	0.85
Nepal	0.00	0.16	-
Pakistan	0.78	0.99	1.27
Panama	0.03	0.26	8.66
Peru	0.45	0.22	0.49
Philippines	3.11	3.04	0.98
Romania	0.68	0.59	0.86
Singapore	2.26	2.84	1.26
Sri Lanka	1.20	1.97	1.63
Thailand	1.30	1.70	1.30
Trinidad & Tobago	0.02	0.00	0.31
Turkey	0.01	1.27	142.51
Uruguay	0.23	0.36	1.59
Yugoslavia	0.10	0.46	4.81
All Restricted Developing	83.78	85.37	1.02
Other Developing	0.94	1.29	1.38
All Developing	84.72	86.66	1.02
Caribbean Basin Initiative	3.59	6.01	1.67
Eastern Europe	0.67	0.57	0.85
Developed Countries	14.54	12.77	0.88
TOTAL OF THE ABOVE	100.00	100.00	1.00

Source: World Bank computer files on MFA and UNSO COMTRADE Data Base.
Note: See notes to Table 4.

points lower. Intra-EC trade, though, was up from 52 to 55 percent when EC(12) was considered.

Developments in the US market were similar to those in the EC. The share of the three established developing suppliers in products subject to binding quotas registered a greater decline, however, from 55 percent in 1981 to 43 percent in 1987 (see Table 5) while in the remaining textile products, this share was constant. [25] Other developing countries which had bilateral quotas with the US have increased their sha:s of the market by a roughly equal amount, 13 percentage points. For these countries, improvement in market share was also true on an individual basis. The only ones which had a noteworthy market share loss were Colombia, Peru and Trinidad and Tobago, none of which was severely constrained by quotas.

Developing countries that did not have any bilateral quotas with the US accounted for only 1 percent of imports in products under question and increased this share to 1.3 percent by 1987. Countries covered by the US Caribbean Basin Initiative (CBI), some of which were nominally subject to restrictions, nearly doubled their share from 3.6 to 6 percent of the market. [26]

Developed country exporters did not make any apparent gains from

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[25] This share, not reported in the Table, was slightly over 39 percent in both periods.

[26] The CBI countries qualify for the "Super 807" provision whereby imports of textile products which use US inputs fall under lenient special quotas (see, e.g., World Bank (1988)). The CBI beneficiaries are: Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Haiti, Honduras, Jamaica, Montserrat, Neth.Antilles, Panama, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenadines, Trinidad & Tobago and British Virgin Islands.

the restrictions on the major developing country suppliers in the US market. Their share has declined from 15 to 13 percent during the 1981-1987 period.

In Canada the decline of the market share of the established developing suppliers in products facing binding quotas was from 51 to 46 percent. The other developing suppliers, predominantly subject to quotas, increased their market share by 11 percentage points while the share of the developed countries declined from 28 to 23 percent.

In Sweden where the share of developing countries in textile products is relatively low, the situation was slightly different. While the established developing suppliers (only Hong Kong and Korea in this case) in product groups for which they faced binding quotas declined from 17 to 14 percent, other developing countries that have bilateral arrangements increased their share by 2 percentage points. Those developing suppliers which did not have quota restrictions doubled their marginal share from 1 to 2 percent. The developed countries which had a prominant share of the market, 71 percent, maintained their position throughout 1987.

We can conclude that in all four markets studied, binding constraints faced by the established developing suppliers have apparently been associated with loss of market shares. Except in the US, however, the scope of this seemed rather small.

Among the developing countries which did not have bilateral quotas with the respective markets, only the Mediterranean countries in the EC and the countries covered by the Carribbean initiative in the US seemed to have any noteworthy market share gain which might be associated with

restrictions on major suppliers.

We did not find any apparent gain for the developed country exporters. The case which came closest to a gain was Sweden, where developed suppliers maintained their market shares. However this, and the smallness of their market share losses in other markets might be related to the restrictions on major developing suppliers.

The observed changes in market shares are not necessarily or fully attributable to the MFA. Such changes could be due to shifts in comparative advantage. In the next Section, applying a more rigorous model framework to selected products, we estimate the likely magnitude of trade diversion due to MFA.

VI. A TRICKLE TO UNCONSTRAINED DEVELOPING SUPPLIERS DUE TO MFA: AN ESTIMATION

What is the likely magnitude of trade diverted to unconstrained developing countries (i.e., those which either are not subject to quotas or have not reached quota ceilings) from established developing suppliers constrained by binding quotas under the MFA?

We address this question by applying a relatively simple model that nevertheless incorporates demand and alternative supply conditions. To limit the data requirements and avoid an extremely complex model structure we confined our analysis to the US imports of a representative group of apparel products which are supplied predominantly by developing countries.

The Model [27]

The model we employ is an extended (and simplified) version of the model developed by Tarr (1987). This is a partial equilibrium analysis, i.e., the clothing sector is examined separately from the rest of the economy. Following the Armington (1969) tradition, goods are assumed to be differentiated according to the place of production. In the model, there is only one group of consumers - the US consumers. [28] The consumers are buying from three groups of suppliers: domestic producers (group 1), constrained foreign (developing) suppliers (group 2), and unconstrained foreign (developing) suppliers (group 3). Thus, there are three demand

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[27] For details of the model, see the Appendix.

[28] This assumption seems to be valid for many inexpensive clothing items. Developed countries import substantial amounts from developing countries while the reverse is insignificant. The main shortcoming of the model, on the other hand, is that it does not incorporate the simultaneous impact of the other major developed country markets, particularly the EC.

functions for each good. [29]

$$(1) \quad QD_i = \alpha_i + \beta_i PD_1 + \gamma_i PD_2 + \delta_i PD_3$$

where QD_i and PD_i are, respectively, the quantity of demand for and (consumer) price of product i (i = 1, 2, 3). As shown in equation (1), the amount of demand for product i is influenced by the prices of other products as well as by its own price, since there is (imperfect) substitutability among products.

Supply is characterized by the following three supply functions:

$$(2) \quad QS_i = a_i + b_i PS_i$$

where QS_i and PS_i are the amount of supply and (producer) price of product i (i = 1, 2, 3).

Under tariffs and MFA quotas, consumer prices of foreign products differ from producer prices. For simplicity when we ignore transportation costs, the following conditions hold in equilibrium:

$$(3) \quad PD_1 = PS_1$$

$$(4) \quad PD_2 = (1 + t)(1 + m) PS_2$$

$$(5) \quad PD_3 = (1 + t)PS_3$$

where, t and m are, respectively, the tariff rate and the quota premium due to the MFA. [30] Furthermore, in equilibrium, the quantity demanded must be equal to the quantity supplied.

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[29] We shall call a category of clothing (e.g., shirts) a "good", and the same good from different suppliers a "product".

[30] Note that m is endogeneous in the model. However, in our model estimations we plug in previously estimated values of m. See the Appendix for details.

In the absence of quotas, the quota premium on products from the constrained suppliers disappears. In order to obtain the magnitude of the effects of the MFA, we simply compare the values of endogeneous variables under quotas with their values in the absence of quotas. More specifically, we can calculate the magnitudes of excess domestic production, suppressed trade and trade diverted due to the MFA.

Estimation Results

We applied the model to US imports of six broad categories of the apparel products. These six items amount to about fifty percent of total US clothing imports. As shown in Table 6, developing countries accounted for over 90 percent of total imports in these products. For simplicity, we ignored the imports from developed countries. Given that imports from developed countries were less than 10 percent despite the MFA, this simplifying assumption is not unrealistic.

For some of the parameter values of the model, we followed Tarr and Morkre's (1984) approach. Based on Armington's (1969) formula, own price elasticities and cross price elasticities of differentiated products were calculated from the price elasticity of aggregate clothing and elasticity of substitution for each product. Furthermore, for the quota premium we used Pelzman's (1988) estimates of the tariff equivalents of the MFA quotas. As given in the Appendix, Pelzman's estimates are in the range of 28 to 37 percent. These are comparable with Hamilton's (1988) estimate for the US quotas on Hong Kong's clothing exports. The values of the other key parameters used in the estimations are also given in the Appendix on the model.

Table 6: US IMPORTS OF SELECTED APPAREL PRODUCTS, 1986

	Value of Imports, million US$			
	From all sources	From developing countries		Share of developing countries, percent
		Constrained	Unconstrained	
Knit shirts and blouses	2072.5	1718.5	245.7	94.8
Men & boys shirts, not knit	1239.7	959.3	226.3	95.6
Women & girls shirts and blouses, not knit	1343.0	1068.6	174.0	94.4
Sweaters, man-made fibre	864.3	415.6	398.4	92.5
Trousers, slacks and shorts	2432.8	1708.4	464.8	89.3
Underwear	167.6	80.3	68.2	88.6
Total of the above	8119.9	5950.7	1577.4	92.7

Source: The World Bank computer files on MFA.
Note: The six product groups listed above are, respectively, the following US MFA categories: (i) 338, 339, 638, 639, (ii) 340, 640, (iii) 341, 641, (iv) 645, 646, (v) 347, 348, 647, 648, and (vi) 352, 652.

Table 7 provides a summary of our estimation results. The magnitude of the alleged "spillover" appears to be fairly low. Due to the decline in shipments from constrained developing suppliers, the unconstrained suppliers could increase their shipments of these six clothing items by less than two hundred million dollars. This was only 14 percent of the revenue from current shipments of the six items from the unconstrained developing exporters.

Our results suggest that the main beneficiaries of the MFA are the domestic producers in the importing country. In the case of the six product groups we studied, the value of shipments from unconstrained developing countries seemed to have increased by roughly two hundred million dollars due to the MFA while domestic producers expanded their output by 1.6 billion dollars or 10 percent over their 1986 level. [31] It should also be noted that this gain was on top of domestic production made viable by very high tariffs (shown in the Appendix).

Our estimations also show that the volume of imports from constrained developing suppliers were curtailed by 19 percent (or over one billion dollars at nonquota prices) due to MFA quotas. [32] However as this

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[31] This is considerably higher than the Trela-Whalley (1988) estimate of a 3.4 percent change in the output of US producers.

[32] Trela and Whalley (1988) estimated that US imports would have been 130 percent higher than its current level if there were no MFA quotas. Our comparable figure is 15 percent (and 35 percent assuming infinite supply elasticities). There were three sources for this discrepancy: (i) the parameter value used for the import demand elasticity (0.28 in the present paper versus 0.60), (ii) substitutability of goods (the Armington assumption adopted here versus homogeneous goods), and (iii) the simplification adopted by Trela and Whalley that all quotas were binding.

Table 7: ESTIMATE OF THE IMPACT OF THE MFA ON SELECTED APPAREL
PRODUCTS IN THE US MARKET, 1986

	Increased value of shipments (million US$)			As a percentage of 1986 shipments		
	Domestic suppliers	Developing suppliers		Domestic suppliers	Developing suppliers	
		Constrained	Unconstrained		Constrained	Unconstrained
Knit shirts and blouses	420.5	-16.6	40.5	18.0	-1.0	19.7
Men & boys' shirts, not knit	200.4	-7.4	37.9	18.4	-0.8	20.1
Women & girls' shirts and blouses, not knit	284.1	-41.8	22.9	13.9	-3.8	15.2
Sweaters, man-made fibre	78.3	-20.2	57.6	15.5	-4.6	16.9
Trousers, slacks & shorts	592.3	-165.9	34.8	7.4	-8.8	8.1
Underwear	34.2	-12.6	1.2	1.6	-13.5	1.7
Total of the above	1,609.8	-264.4	194.9	10.0	-4.3	14.1
Memo item: Changes due to the quantity effect alone	947.3	-1,116.9	127.8	5.9	-18.8	9.2

Note: Changes due to the quantity effect alone give the changes in the value of shipments of the six items under MFA quotas valued at the non-quota price.

quantity decline was largely offset by higher prices due to quotas, their revenue losses were considerably lower; roughly three hundred million dollars (4 percent).

To test the sensitivity of our results with respect to the supply conditions, we estimated the model assuming infinite supply elasticities for all (domestic and developing) suppliers. The results of this exercise, given in the Appendix, might be interpreted as a longer term adjustment accounting for developments such as investments. Accordingly, the unconstrained developing suppliers made approximately three hundred million dollars of additional sales (25 percent) and the constrained ones have lost nearly nine hundred million dollars (13 percent). Domestic US production increased by 2.8 billion dollars (19 percent) due to the MFA. The results of the high scenario do not change the essence of the argument that the gains of the less restricted developing countries are relatively small, while the main beneficiaries of the MFA are the domestic producers in the importing country. The high scenario, on the other hand, underlines that the established developing suppliers may be losing in a big way.

Gains for Marginal Suppliers

In our estimation, we treated all unconstrained developing suppliers as a single group. While the magnitude of the trade gains for this group as a whole might be small, this does not preclude the fact that some marginal suppliers might have enjoyed a major spillover from the MFA. For example, during the period 1981-1986, the value of shipments of these

six product groups from the Caribbean Basin Initiative (CBI) countries [33]
to the US increased by an annual average of 32 percent - twice the rate of
the US imports of these products from all sources. Although they are
marginal suppliers to the US, these twenty-two countries, by quadrupling
the value of their shipments, were able to capture almost twice their
previous share of the US import market for the six items - from less than 3
percent in 1981 to 5.6 percent in 1986.

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[33]   Although some of the sixteen MFA categories that comprise the six
items were under restriction in a few of the CBI countries during this period,
these countries can be considered unconstrained on the whole. In only three
instances during the six years were quotas filled by more than 90 percent -
twice for Haiti and once for the Dominican Republic.

VII.   CONCLUDING REMARKS

The two questions pursued in the paper convey two messages to the workshop, one concerning the urgency of action in the direction of dismantling the MFA, the other relating to the exaggeration of the scope of trade gains purportedly enjoyed by some developing countries due to MFA. These messages are: (i) MFA has not been eased out, on the contrary it has become tougher for most developing exporters especially for the successful newcomers, and (ii) trade gains for less established exporters resulting from MFA may be exaggerated.

An Increasingly Restrictive/Effective MFA

At the stage of their conception, the only acceptable element of MFA and the arrangements preceding it was probably the purportedly temporary nature of these measures to give breathing space in the structural adjustment process. However not only has MFA become permanent, its restrictiveness/effectiveness has generally increased in terms of (i) the share of trade subject to restrictions, (ii) quota utilization rates, (iii) the share of shipments facing binding quotas, and (iv) developments in volume and unit value of shipments under binding quotas.

Given this development, the question is whether now the economies of the industrialized countries are more or less prepared for an elimination of non-tariff barriers in textiles and clothing, compared to, say early 1980s. More importantly, if the current trend in the restrictions under MFA continues, would this facilitate adjustment to freer trade by mid or late 1990s?

Sweden, taking the wise lesson from its painful experience with iron and steel and shipbuilding industries, says no and has decided to

terminate its textile and clothing quotas when the current MFA expires. We would like to interpret the April 1989 resolution on textiles and clothing of the GATT Contracting Parties as expressing the same intent.

Exaggerated Trade Gains for the Less Established

While it was sheer capitulation to far stronger parties in world trade, the generally shared belief that there was also some gross benefit for all parties involved made the acceptance of MFA by the developing countries less painful. For the smaller and/or relatively new developing suppliers, this was the prospect of capturing the trade diverted from the established developing suppliers due to binding MFA quotas. While apparent changes in market shares lend support to this presumption, what is attributable to the MFA turns out to be generally meager. Estimations reveal that in products which are predominantly supplied by developing countries, the trade gains of nonrestricted developing suppliers taken as a whole add up to not more than 15 percent, in the most extreme scenario 25 percent, of their exports - while the domestic producers in the protected market are the main beneficiaries.

Therefore, except for the marginal suppliers for whom the MFA might have been the principal reason of their emergence, the purported trade gains for the needy appear to be a weak argument. This is especially true considering the fact that any exporter soon finds itself restricted under the MFA in the event of sizable supply response.

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APPENDIX ON THE DATA

Coverage

The World Bank computer files on MFA contain the following variables, all in national MFA categories of the importing developed countries: (i) quota levels, in volume, (ii) actual shipments in volume and (iii) in value, and (iv) volume conversion factors, e.g., metric ton equivalents, when relevant. (v) A fifth variable, unit value, is derived from the above (with exception when unit values are provided by the national authorities). Also concordances for each national MFA group (for each year) with national tariff nomenclature and with SITC revision 2 are stored (the latter concordances being approximations).

As exporters, all developing countries and territories[1] are recorded individually, whether or not they are subject to MFA restrictions. Data for actual shipments into the markets concerned are stored for all suppliers, developed and developing. The period of coverage is 1981 to the current period with one-year lag, i.e., currently 1987. For the time being four industrial markets are covered: EC, USA, Canada and Sweden.

Sources and Some Specifics

Data for EC imports under MFA categories are available from the Community (microfiche SCE 2510) in terms of both quantity and value, specifying the source of the shipments. Imports subject to the restrictions and those which fall outside

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[1] Developing countries and territories are defined in accordance with the most commonly used definition for comparability. This classification has no prejudice whatsoever as to the status of the countries and territories and their treatment by the World Bank. Accordingly, developed market economies comprise OECD (excluding Turkey), Israel and South Africa. Socialist (developed) countries consist of Eastern European Socialist countries (including USSR but excluding Romania and Yugoslavia). All other countries, including Socialist countries of Asia (and Romania, Turkey and Yugoslavia) are designated as developing countries.

are also distinguished. Initial quota levels specified in volume were extracted from the EC Journal and merged with the data set on shipments. Modifications in the quotas resulting from the application of flexibility provisions could not be incorporated since this information is not available in a compiled form.

For the US, data on volume of quotas and actual shipment for MFA categories are available in the "Expired Restraints of the Performance Report" of the Department of Commerce. Based on the concordances (for respective years) between the national US tariff nomenclature, TSUSA, and the MFA groups, it was possible to ascertain the value of trade under specific restrictions using the trade values available on tape from the Bureau of Census according to the former classification. All three types of restrictions namely the "designated consultation levels" "minimum consultation levels" and "specific limits" were treated similarly as quotas. The US data take into consideration modifications to the initial quotas.

The Canadian data originate from the Department of External Affairs, Import Controls Division I of the Special Trade Relations Bureau. Quotas and shipments, in quantity, are available in "Restraint Utilization by Product" of this Bureau. Values are derived from the average unit values per product group/exporter, given in "Import Table by Product - Imports Unit Price". Quotas are defined to include "consultation levels" and "export authorization limits".

The Swedish data on constraints are compiled by the National Board of Trade in volume terms for MFA groups. Actual import figures in value terms from the Central Bureau of Statistics were matched with the MFA categories.

The kind collaboration of the national agencies named above and the valuable help extended by their officials are gratefully acknowledged.

APPENDIX ON THE MODEL

I. Structure of the Model

Our analysis in the paper is a partial equilibrium analysis, i.e., we consider the market of each clothing 'good' separately. Each good is differentiated by the place of production: (i) the product of domestic suppliers (group 1); (ii) the product of constrained foreign suppliers (group 2); and (iii) the product of unconstrained foreign suppliers (group 3). There is only one group of consumers in the model. This gives us the following three demand functions:

(A1) $\quad QD_1 = \alpha_1 + \beta_1 PD_1 + \gamma_1 PD_2 + \delta_1 PD_3$

(A2) $\quad QD_2 = \alpha_2 + \beta_2 PD_1 + \gamma_2 PD_2 + \delta_2 PD_3$

(A3) $\quad QD_3 = \alpha_3 + \beta_3 PD_1 + \gamma_3 PD_2 + \delta_3 PD_3$

where QD_i and PD_i are, respectively, the quantity demanded and the demand price of the i-th product. Supply is characterized by the following three supply demand functions:

(A4) $\quad QS_1 = a_1 + b_1 PS_1$

(A5) $\quad QS_2 = a_2 + b_2 PS_2$

(A6) $\quad QS_3 = a_3 + b_3 PS_3$

where QS_i and PS_i are, respectively, the quantity supplied and the supply price of the i-th product.

Under the nonquota equilibrium (without the MFA) the following equalities hold:

(A7) $\quad QD_1 = QS_1$

(A8) $\quad QD_2 = QS_2$

(A9) $\quad QD_3 = QS_3$

(A10) $\quad PD_1 = PS_1$

(A11) $\quad PD_2 = (1 + t)PS_2$

(A12) $PD_3 = (1 + t)PS_3$

where t is tariff rate. Under the nonquota equilibrium, the above 12 independent

equations determine 12 endogenous variables (QD_1, QD_2, QD_3, QS_1, QS_2, QS_3, PD_1,

PD_2, PD_3, PS_1, PS_2, PS_3).

Under the quota equilibrium (with (MFA) the values of QD_2 and QS_2 have

to be exogenously determined by $\bar{Q}_2$.

(A13) $QD_2 = \bar{Q}_2$

(A14) $QS_2 = \bar{Q}_2$

The demand price of product 2 is no longer the same as the tariff-inclusive

supply price of product 2, but

(A15) $PD_2 = (1 + t) (1 + m)PS_2$

where m is rate of price mark-up due to the MFA quota. Under the quota equilibrium,

13 independent equations ((A1)-(A7), (A9)-(A10), (A12), (A13)-(A15)) determine

13 variables (QD_1, QD_2, QD_3, QS_1, QS_2, QS_3, PD_1, PD_2, PD_3, PS_1, PS_2, PS_3 and m).

II. _Estimation Method_

In order to obtain the magnitude of the impact of the MFA, the values

of endogenous variables in the above two equilibria were compared. Instead of

estimating the values of all coefficients, we used an indirect method. We

assumed that the prices and quantities observed in 1986 were equilibrium values

determined by the specified system of supply and demand equations (under MFA quotas)

and we obtained values of parameters by using actual values of endogenous variables

in 1986. Note that, when own-price elasticities, cross-price elasticities, and

supply elasticities are known, we can obtain the values of b's, ß's, γ's, and

δ's:

$$QD_1 = \alpha_1 + \beta_1 PD_1 + \gamma_1 PD_2 + \delta_1 PD_3$$

$$\epsilon_{11} = - \frac{\partial QD_1}{\partial PD_1} \bullet \frac{PD_1}{QD_1}$$

$$= - \beta_1 \bullet \frac{PD_1}{QD_1}$$

where ϵ_{11} is the own-price elasticity of product 1,

then, $\beta_1 = - \epsilon_{11} \bullet \dfrac{QD_1}{PD_1}$

Since the own-price elasticities and cross-price elasticities of individual products are difficult to obtain, we used the Armington (1969) technique, which makes it possible to derive individual elasticities from the aggregate elasticity (η), the value share of each product (S_i), and the elasticity of substitution (σ). By assuming CES functions, Armington derived the following:

$$\frac{dX_{ij}}{X_{ij}} = \epsilon_i \frac{dD}{D}$$

$$- [(1 - S_{ij})\sigma_i + S_{ij}\eta_i] \frac{dP_{ik}}{P_{ik}}$$

$$+ \sum_{k \neq j} (S_{ik}\sigma_i - S_{ik}\eta_i] \frac{dP_{ik}}{P_{ik}}$$

$$+ \sum_{k \neq i} \eta_{i/k} \frac{dP_k}{P_k}$$

From this formulation, it follows:

$$\epsilon_{ii} = (1 - S_i) \sigma + S_i \eta$$

$$\epsilon_{ij} = (S_j \sigma - S_j \eta)$$

where ϵ_{ii} = own price elasticity of product i, and

   ϵ_{ij} = cross price elasticity of product i with respect to the price of product j.

Furthermore, we obtained the value of shift parameters (α's and a's) by using available estimates of m (quota premium) and the values of the other parameters

Table AII.1: AVERAGE TARIFF RATES AND QUOTA PREMIUMS FOR SELECTED
APPAREL PRODUCTS IN THE US MARKET

	Tariff rate (t)	Quota premium (m)
	(percent)	
Knit shirts and blouses	26.4	32.2
Men & boys' shirts non-knit	18.5	32.6
Women & girls' shirts and blouses, not knit	20.3	30.6
Sweaters, man-made fiber	28.4	36.8
Trousers, slacks & shorts	21.6	29.6
Underwear	19.3	28.9

Source: US Department of Commerce Trade Tapes and Pelzman's (1988) estimates.

which were derived as described above.

III. Values of Key Parameters

(1) Quota premium (m) and tariff rate (t)

(2) Demand elastiticies

As explained above, individual own-price elasticities and cross-price elasticities can be obtained from the aggregate demand elasticity (η), the elasticity of substitution among products(σ), and the value share of each product (S_i). S_i's were calculated from actual trade data. We used $\eta - 0.282$: Houthakker (1965)'s estimate which is used in the Tarr-Morkre (1984) study. We set $\sigma - 3$, which is approximately the mid-point of the high and low estimates (4.39 and 1.41) used in the Tarr-Morkre study.

(3) Supply elasticities

We adopted the following values for supply elasticities: domestic suppliers, 1.5; constrained and unconstrained developing suppliers, 2.0.

IV. Sensitivity Analysis with respect to Supply Conditions

The results of the main estimate using the parameter values reported above are presented in the main text Table 7. Table AII.2 gives the comparable results when all three supply elasticities are set to infinity.

Table AII.2: HIGH ESTIMATE FOR THE IMPACT OF THE MFA ON SELECTED
APPAREL PRODUCTS IN THE US MARKET, 1986

	Increased value of shipments (million US$)			As a percentage of 1986 shipments		
	Domestic suppliers	Developing suppliers		Domestic suppliers	Developing suppliers	
		Constrained	Unconstrained		Constrained	Unconstrained
Knit shirts & blouses	756.7	-174.6	67.4	37.8	-9.2	37.8
Men & boys' shirts not knit	363.3	-94.0	63.7	39.2	-8.9	39.2
Women & girls' shirts and blouses, not knit	498.2	-149.5	37.2	27.2	-12.3	27.2
Sweaters, man-made fibre	140.0	-60.7	95.5	31.5	-12.7	31.5
Trousers, slacks & shorts	985.3	-361.3	53.6	13.0	-17.5	13.0
Underwear	53.9	-22.3	1.7	2.6	-21.8	2.6
Total of the above	2,797.2	-862.4	319.0	18.8	-12.7	25.3
Memo item: Changes due to quantity effect alone	2,797.2	-2,287.3	319.0	18.8	-33.6	18.8

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