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TEXTILES AND CLOTHING IN THE WORLD ECONOMY

Addendum

APPENDIX IV

Relating Trade to Domestic Production and Consumption

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APPENDIX IV: RELATING TRADE TO DOMESTIC PRODUCTION AND CONSUMPTION

1. Empirical work on trade issues sometimes includes figures which relate imports and/or exports of particular products to domestic production or consumption of those products. Many researchers seem to accept uncritically the view that such ratios provide useful information in addition to that available from separate figures on production, employment trade and so forth. In certain circumstances, that may be the case. However, in many instances these ratios enter the analysis in ways that range from useless to harmful. There is a danger, in particular, of such ratios being used in ways that - wittingly or unwittingly - reinforce the mercantilist view that imports are bad and exports good.

2. The purpose of this Appendix is threefold: to provide a brief overview of the main conceptual problems involved in the use of ratios of trade in particular products to production or consumption, to note some of the more important statistical limitations of such ratios, and to present data illustrating the values of the ratios for textiles and clothing under different definitions. Because they are the most widely used, the focus is on import penetration ratios.

(1) Conceptual issues

3. There are two main approaches to measuring import penetration:

(A) $M/(P+M-X)$, and
(B) M/P or $M/(P+M)$

where P stands for the value of domestic production, M the value of imports and X the value of exports. The first measure is the ratio of the value of imports to the value of "apparent consumption", while the latter is the ratio of the value of imports to the value of domestic production, or the value of total supply (i.e. domestic production plus imports).

4. One way of approaching the question of the usefulness of such ratios is to ask whether there are certain questions or issues for which they provide useful additional information/insights over and above those available from statistics of the kind provided in Chapter 2 and Appendices I and II of this background study. Actual use of the ratios points to three main possibilities.

(a) The first concerns the use of such ratios as one possible indicator of the relative extent of international specialization in a particular product. For example, in many countries the ratio of imports to consumption for icecream or cement will be smaller than the corresponding ratio for machine tools or clothing; thus we could conclude that international specialization has been carried farther in the latter two products than in the first two.

(b) A second possible use arises in situations involving national security considerations. Armaments, food and certain critical raw materials are examples of areas where countries may believe that a certain level of self-sufficiency is necessary, despite the added costs which this entails during peacetime. Leaving aside the question of the extent to which import penetration ratios are relevant to this issue, it is not clear that many countries would base their concern with import penetration in textiles and clothing on national security arguments.

(c) Import penetration ratios are often used in ways that imply a positive correlation between the values of the ratios and some notion of "pressure" on the domestic industry. In this instance the most important practical shortcoming is that the trend in the value of the ratio tells us nothing about the trend in either imports or production; a rising ratio of imports to production is consistent with expanding domestic production as long as imports are increasing faster than production, and a declining ratio is consistent with declining domestic output provided imports are falling faster than production. Furthermore, if the ratio is based on formula (A) above, it is possible for domestic production to be growing faster than imports at the same time as the penetration ratio is increasing (for example, if as a result of an intensification of intra-industry trade, most of the increment to production is exported). In other words, by itself the fact that domestic production is supplying a smaller share of domestic consumption will say little about the state of the domestic industry if exports are expanding at the same time. These considerations suggest that the separate figures on production, employment and trade are more useful in gauging the output/employment/profit situation of the domestic industry, and the extent of any adjustment problems confronting the industry. This conclusion is reinforced by the fact that, in some circumstances, ratios based on formula (A) move in an opposite direction from those based on (B), plus the fact that there is no <u>a priori</u> basis for judging one formula as superior over the other.

5. Some additional conceptual problems may be mentioned. One involves the absence of objective criteria for selecting the appropriate level of product disaggregation to use when relating trade to production or consumption. For example, should we choose total clothing, ladies' mittens containing at least 51 per cent wool, or something in between? A second problem involves the lack of an objective criterion for choosing among the various definitions of import and export ratios. Finally, when import penetration ratios are used to examine the impact of trade on the size of the domestic industry, allowance must be made for the fact that such ratios yield biased estimates of the impact on domestic value added in the industry in question (see Keesing and Wolf, 1980, pp.205-211).[1]

6. The use of import penetration ratios may also involve a fundamental misunderstanding of the nature of the gains from international specialization. For example, it is sometimes argued that because the ratio of imports from developing countries to production and/or consumption in the developed countries is quite small for nearly all

manufactured goods, it follows that imports of those products from developing countries are not an important source of "disruption" in developed country markets. Although this argument has a practical appeal in certain circumstances, it implicitly endorses the mercantilist view that imports are harmful. This opens the door to debate over what constitutes a "small" import penetration ratio; it encourages the use of highly disaggregated product categories (the narrower the product classification, the more likely it is that some "high" ratios will turn up); and it encourages the argument that once the ratio passes a certain level, constant or even increasing trade restrictions are warranted (or at least are less objectional).

7. Proposals to "stabilize import penetration ratios" (by relating future import growth to the growth of consumption) can thus rest both on arbitrary definitions of product categories and arbitrary assumptions regarding the desirable level of international specialization in various product sectors.

(2) Statistical problems

8. Whenever possible, production statistics are expressed in value added terms to eliminate double counting (for example, counting the value of fabric twice, once at the fabric level and once at the clothing level). Statistics based on value added are not available, however, for imports and exports. As a result, data on a country's imports is virtually certain to include some of its own value added (e.g. if imported fabric is made from previously exported domestic fibres); similarly, its export data is very likely to include foreign value added (e.g. if any of its export products uses foreign inputs); trade figures may also include double counting, as when a country exports fibres, imports cloth made from those fibres, and then exports shirts made from that fabric (in this case, the fibres appear twice in the exports statistics).

9. Calculating import-to-production ratios using gross trade data and value added production data is not satisfactory because it exaggerates the values of the ratios. The usual way of trying to deal with this problem is to use production figures based on gross output rather than value added. In effect, this amounts to compensating for less-than-perfect trade data by introducing questionable production data. Since there is no reason to assume that the degree of distortion in these data is (i) the same for trade and production, (ii) constant over time, or (iii) similar across industries or countries, it is not easy to interpret import penetration ratios at a point in time, let alone their behaviour through time.

10. Other difficulties involved in relating trade to production or consumption include statistical problems with the production data (such as infrequent censuses, and poor coverage of smaller establishments - a particularly important point with respect to clothing), differences in the valuation of goods from different sources (for example, c.i.f.-f.o.b. differences, and exchange rate related problems), the lack of true price indices for imports (needed to calculate penetration

ratios in constant prices), problems of establishing an accurate concordance between trade and production data, and difficulties in being precise about the necessary degree of substitutability between imports and domestic production (the latter problem may be illustrated as follows: it would be absurd to calculate the ratio of imported bananas to domestic production of machine tools because they do not compete with one another, but what about the ratio of bananas to domestic apple production?)

11. Although the problems caused by many of the statistical limitations noted above are not confined to calculations of import penetration ratios, they are often more pronounced in this particular case.

12. In many instances, the main interest is the share of domestic demand supplied by imports. Formula (A) approximates this by using "apparent consumption" as a proxy for domestic demand. Two points need to be made in this connection. The first may be illustrated with the example of textiles. As the concept is used in calculating these ratios, "apparent consumption" of textiles does not take into account textiles embodied in imported clothing - that is, indirect trade - which is, of course, part of the domestic demand for textiles (the problem of indirect trade also affects formula B).[2] Second, it is often very difficult to correct estimates of apparent consumption for changes in inventories (moreover, the relative importance of inventories varies widely among various products).

13. Finally, import penetration ratios are sometimes calculated in physical rather than value terms - as, for example, when imports of textiles and clothing are converted into "tons of fibre equivalent" and related to domestic "mill consumption" of fibre. Such ratios suffer from the same problems as the value-based ratios, including the fact that mill consumption is calculated so as to avoid double counting, whereas the fibre equivalent trade figures are based on statistics for gross trade. An additional problem with the ratios based on physical units is that they ignore differences in value added per unit, that is, differences in quality and/or product mix. Thus when this measure is applied to broad product groups, the ratios will be distorted to the extent that imports are concentrated in higher or lower value added items and/or the product mix changes over time.

(3) Examples of ratios of trade to production and consumption

14. Among several attempts[3] to estimate import penetration ratios, a recent study by the World Bank is the most comprehensive in terms of both industry and country coverages.[4] By way of illustration, Table 1 shows estimates of import penetration ratios as well as export-output ratios from the World Bank study, calculated in value terms, with respect to manufacturing total (ISIC Division 3), textiles (321), clothing (322) and textile & clothing (321 + 322) in the United States, United Kingdom and Japan. Four distinct patterns can be seen from Table 1 in terms of movements in import penetration and export-output ratios:

(a) Not only import penetration but also export-output ratios showed an upward trend during the 1970s (manufacturing total in the United States, the United Kingdom and Japan; textiles in United Kingdom; clothing in the United States and United Kingdom).

(b) Import penetration ratios increased, while export-output ratios decreased during the same period (clothing in Japan).

(c) Import penetration ratios were on the increase, while export-output ratios remained almost unchanged or showed a slight fluctuation (textiles in Japan).

(d) Import penetration ratios remained almost unchanged or showed a slight fluctuation, while export-output ratios showed an upward trend (textiles in the United States).

It seems that except for the clothing industry in Japan, these trends reflect increasing specialization in international trade in manufactured goods, including textiles and clothing.

15. Table 2 presents import penetration and export-output ratios (for the same countries as shown in Table 1), based on data expressed in physical units (tons of fibre equivalent). A comparison of the 'textile & clothing' section of Table 1 with Table 2 shows that not only import penetration, but also export-output ratios calculated in terms of fibre equivalent, are much higher than those measured in value terms. This finding is consistent with the earlier remarks about the shortcomings of ratios based on physical rather than value data, as well as with the hypothesis that imports of textiles and clothing into the developed countries contain, on average, less value added per unit than the corresponding domestic output in the developed countries.[5]

TABLE 1. - ESTIMATES OF IMPORT PENETRATION AND EXPORT OUTPUT RATIOS IN VALUE TERMS: UNITED STATES, UNITED KINGDOM AND JAPAN
(Percentages)

	United States[e]					United Kingdom[e]					Japan[e]				
	(1)	(2)		(3)		(1)	(2)		(3)		(1)	(2)		(3)	
		(A)	(B)	(A)	(B)		(A)	(B)	(A)	(B)		(A)	(B)	(A)	(B)
	M/AC	M/P	M/P+M	X/P	X/P+M	M/AC	M/P	M/P+M	X/P	X/P+M	M/AC	M/P	M/P+M	X/P	X/P+M
Manufacturing[a]															
1970	5.6	5.5	5.3	5.8	5.5	16.3	16.0	13.8	18.1	15.6	4.7	4.5	4.3	10.0	9.6
72	6.5	6.5	6.1	5.5	5.2	17.3	17.0	14.5	18.5	15.8	4.1	3.8	3.7	10.6	10.2
74	7.9	7.9	7.3	7.7	7.2	23.4	23.6	19.1	22.5	18.2	5.9	5.5	5.2	12.6	12.0
76	7.5	7.5	7.0	7.9	7.4	23.5	23.1	18.8	24.8	20.1	5.1	4.6	4.4	13.7	13.1
78	8.9	9.0	8.3	7.6	7.0	26.3	25.9	20.6	27.2	21.6	4.2	3.9	3.7	12.3	11.8
80	8.7	8.6	7.9	8.9	8.2	28.2	27.8	21.8	29.1	22.7	6.3	5.7	5.4	15.0	14.2
Textiles[b]															
1970	4.5	4.6	4.4	2.6	2.5	14.1	13.2	11.7	19.8	17.5	4.0	3.5	3.4	16.6	16.1
72	4.7	4.8	4.6	2.7	2.6	18.0	17.5	14.9	20.6	17.5	5.3	4.7	4.5	14.9	14.3
74	4.5	4.4	4.2	5.2	5.0	24.0	23.5	19.0	25.6	20.7	7.6	6.9	6.4	16.0	15.0
76	4.1	4.0	3.9	5.0	4.8	24.7	24.3	19.6	25.8	20.7	6.2	5.6	5.3	15.4	14.6
78	4.7	4.7	4.5	4.7	4.4	29.5	30.6	23.4	26.9	20.6	7.3	6.9	6.4	13.1	12.2
80	4.4	4.3	4.1	6.3	6.1	32.9	33.7	25.2	31.2	23.4	7.4	6.7	6.3	15.9	14.9
Clothing[c]															
1970	6.4	6.8	6.3	1.2	1.1	13.5	13.6	12.0	12.4	10.9	4.4	3.7	3.6	19.3	18.6
72	7.9	8.5	7.8	1.1	1.0	19.2	20.8	17.2	12.9	10.7	3.9	3.6	3.5	11.2	10.8
74	8.8	9.4	8.6	1.6	1.5	25.4	28.7	22.3	15.5	12.0	13.2	14.3	12.5	5.7	5.0
76	11.9	13.2	11.7	2.0	1.8	32.7	38.0	27.5	22.0	15.9	10.3	10.9	9.8	5.7	5.1
78	16.3	19.1	16.0	2.2	1.9	34.0	37.9	27.5	26.6	19.3	9.4	10.0	9.1	3.9	3.6
80	16.7	19.4	16.2	3.2	2.7	38.6	44.9	31.0	28.5	19.7	10.7	11.5	10.3	3.7	3.3
Textiles & Clothing[d]															
1970	5.3	5.5	5.2	2.0	1.9	13.9	13.3	11.7	17.7	15.6	4.1	3.5	3.4	17.1	16.5
72	6.0	6.3	5.9	2.0	1.9	18.4	18.5	15.6	18.3	15.4	5.0	4.5	4.3	14.2	13.6
74	6.2	6.4	6.0	3.8	3.6	24.5	25.1	20.0	22.6	18.0	9.0	8.5	7.8	13.8	12.7
76	7.3	7.6	7.1	3.8	3.5	27.4	28.4	22.1	24.6	19.2	7.3	6.9	6.5	13.0	12.2
78	9.5	10.2	9.2	3.7	3.4	31.0	32.9	24.8	26.8	20.1	8.0	7.8	7.2	10.5	9.7
80	9.4	9.8	8.9	5.2	4.7	35.1	37.8	27.4	30.3	22.0	8.5	8.1	7.5	12.4	11.5

[a]ISIC Division 3 [b]ISIC 321 [c]ISIC 322 [d]ISIC 321 + 322 [e]The sample countries were selected on the basis of the availability of consistent data. The trade data for the United Kingdom include trade with other EC countries. Production data availability is as follows: US = 1970-76; UK = 1971-80 (The coverage for 1971-72 is incomplete.); Japan = 1970-77. For the remaining years, the figures of production are estimated by the World Bank.

Abbreviation: P = Production (total sales) M = Imports X = Exports AC = Apparent Consumption, defined as P+M-X

Source: World Bank 'Import Penetration' Tape.

TABLE 2. - ESTIMATES OF IMPORT PENETRATION AND EXPORT-OUTPUT RATIOS, FOR TEXTILES AND CLOTHING COMBINED, IN TERMS OF FIBRE EQUIVALENT[a]: UNITED STATES, UNITED KINGDOM AND JAPAN

	UNITED STATES			UNITED KINGDOM			JAPAN		
	1974	1979	1980	1974	1979	1980	1974	1979	1980
1) Mill Consumption (MC)[b] (1,000 tons)	4 511	4 940	4 561	771	710	525	1 869	2 234	2 145
2) Imports (M)[c] (1,000 tons)	581	825	840	401	602	550	239	382	301
3) Exports (X)[c] (1,000 tons)	398	528	602	310	309	296	516	416	524
4) Apparent Consumption (AC)[d] (1,000 tons)	4 694	5 237	4 799	862	1 003	779	1 592	2 200	1 922
5) M/AC (%)	12.4	15.8	17.5	46.5	60.0	70.6	15.0	17.4	15.7
6) M/MC (%)	12.9	16.7	18.4	52.0	84.8	104.8	11.3	17.1	14.0
7) M/(MC + M) (%)	11.4	14.3	15.5	34.2	45.9	51.2	7.5	14.6	12.3
8) X/MC (%)	8.8	10.7	13.2	40.2	43.5	56.4	27.6	18.6	24.4
9) X/(MC + M) (%)	7.8	9.2	11.1	26.5	23.6	27.5	24.5	15.9	21.4

[a] This table covers cotton, wool, flax, cellulosic and non-cellulosic (synthetic) fibres.

[b] Mill Consumption is defined as the volume of raw fibres used at the first stage of processing at home.

[c] Processed textile products and clothing imported from or exported to foreign countries are converted to fibre equivalent. For the coverage of textile products and clothing and the conversion factors, see "Explanatory Notes" in FAO (1983).

[d] Apparent Consumption (AC) = Mill Consumption (MC) + Imports (M) - Exports (X).

Source: FAO (1983), World Apparel Fibre Consumption Survey.

FOOTNOTES

[1]This does not exhaust the list of shortcomings. For example, a rise in the import penetration ratio could be a precondition for the survival of certain domestic firms, as when the opportunity to engage in OPT offers the only way of maintaining profits.

[2]However, it should be noted that if, for example, (i) imports of textiles are constant, and (ii) increased imports of clothing cause domestic textile production to decline, the import penetration ratio will increase.

[3]For example, see Hughes, J.J. & A.P. Thirwall (1977) 'Trends and Cycles in Import Penetration in the U.K.', Oxford Bulletin of Economics and Statistics, vol. 39, November, and Wells, J.D. & J.C. Imber (1977), 'The Home and Export Performance of United Kingdom Industries', Economic Trends, CSO, August. See also UNCTAD (1983). Handbook of International Trade and Development Statistics. Part Seven, pp. 544 - 551, FAO (1983), World Apparel Fibre Consumption Survey, U.S. Department of Commerce (1981), U.S. Production, Imports and Import/Production Ratios for Cotton, Wool, Man-made Fiber Textiles and Apparel, International Trade Administration, June., and Keesing & Wolf (1980) Table A.1.p.208.

[4]The World Bank study covers ISIC Division 3 (Manufacturing) that contains 82 4-digit ISIC groups, 23 of which are further disaggregated into 70 5-digit ISIC subgroups. Eleven industrial countries participated in this study; Australia, Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, United Kingdom and the United States. Production data are provided by the above countries.

[5]Among the alternative approaches that have been developed there is the one put forward by the International Ladies' Garment Workers' Union. The ILGWU's attempt to calculate import penetration in the US apparel industry is based on the view that the value of apparel imports should be expressed in prices charged for equivalent goods produced in the United States. If, for example, a certain amount of T-shirts made in Hong Kong would replace the same amount of higher priced domestically-produced T-shirts in United States market, the actual impact of increased imports of T-shirts on the United States apparel makers should be evaluated at domestic prices rather than import prices. See ILGWU Research Department (1983), "Estimation of Apparel (Knit and Woven) Imports: Methodological Note", April.