CHINA'S TERMS OF TRADE

with Special Reference to Sino-British Trade

by

TIM BEAL

Presented for the Degree of Doctor of Philosophy
University of Edinburgh
1981

I declare that this thesis has been wholly composed by me and that it is entirely my own work.

ABSTRACT

China is the largest developing country in the world, and yet internationally comparable data about her economy is very scarce, to the detriment of our knowledge both of China and the Third World as a whole. This thesis attempts to piece together a crucial statistic, her terms of trade, from the 1930's when the last major Chinese series ends to the 1970's when CIA estimates become available. Because of the lack of Chinese data, the thesis constructs core unit value indexes for Sino-British trade from British returns, and subsequently adjusts the component weights to allow for the difference in composition between China's trade with Britain and her trade with the West. This necessitates the development of a specific methodology and the meticulous construction of the Sino-British indexes at a high level of disaggregation.

Chapter One examines the available statistics and explains the strategy of using British data. Some of the problems of defining Sino-British trade, especially undeclared indirect trade via Hong Kong, are examined in Chapter Two, while Chapter Three describes the methodology and documents the structure of the sample (which incorporates some 600 commodities). Chapters Four and Five describe the intellectual and historical contexts in which the study is located. Chapters Six and Seven construct the core indexes, Chapter Eight examines the weighting modes used, Chapter Nine focuses on the 1930's and links the British indexes with the Chinese ones. Chapter Ten analyses the price movement of the components of Sino-British trade over the period and Chapter Eleven arrives at an estimate of China's terms of trade with the West and links up with the 1970's statistics, thus completing China's long-term terms of trade from 1867 to 1976. The investigation is extensively documented with some 1,000 pages of tables and figures.

TABLE OF CONTENTS

PREFACE

Bill Brugger has recently written: "The study of contemporary China suffers not only from a lack of adequate conceptual framework. There is also a major problem of evidence."[1] The lack of adequate conceptual framework has, of course, as the title of the book he was editing implies, become painfully obvious since the death of Mao and the fall of the "Gang of Four".[2] Before 1976 it seemed as if China could be identified; that one could, for instance, talk of a "Chinese Road to Socialism",[3] or, less specifically, of "China's Road to Development".[4] Subsequent developments threw all this conceptual apparatus into doubt and even rendered the certainties of the past illusory. There is nothing new in this. China has been stripping off mask after mask for a long time, and with increasing rapidity over the last century, and in the process astonishing and confusing both the world and herself.[5] We should have been warned, and should expect more transformations in the future, perhaps, as suggested in the postscript to Chapter Eleven, in the very near future.

---

[1] Bill Brugger, ed., *China Since the Gang of Four* (London, Croom Helm, 1980), p.14.

[2] The widespread acceptance of the label "Gang of Four" in itself implies a lack of political identification.

[3] Title of a book by E.L. Wheelwright and Bruce Mcfarlane (New York, Monthly Review Press, 1970).

[4] Title of a collection edited by Neville Maxwell. The first version of this appeared as a special issue of *World Development* for July/August 1975. By the time the second, enlarged, edition appeared in 1979 (Oxford, Pergamon) it had been painfully overtaken by events in China, a predicament bravely faced by Neville Maxwell in his introduction.

[5] Raymond Dawson's *The Chinese Chameleon* is perhaps the best study of this but it very much needs to be supplemented by a thorough investigation of foreign perceptions of 20th century China.

The inadequacies of our conceptualization of the Chinese chameleon have led to, and have in turn been exacerbated by, the failure to place China within a proper comparative framework. She has frequently been regarded as *sui generis*, in which case no comparison can be made and she can only be described in herself, or, paradoxically, *any* comparison can be made, since one is as good as another, and *anything* said.

Sometimes this absence of a comparative framework is manifested as ahistoricism. How often do we read (not merely in the press) that the Chinese economy dates from 1949, or 1976, or 1978?[6] Occasionally, although this is a lesser absurdity and one becoming increasingly uncommon, China is seen as little more than her history - the pattern of the Chinese past overwhelms all.

However, the problem usually has been one of trying to force China into an unsuitable framework - the genus "Communist". This is not for one moment to say that the classification "Communist" is meaningless or cannot be used, rather that we have to be clear what we mean by it and what we don't mean by it, or perhaps, how little we can justifiably mean by it in any rigorous way. The label "Communist" is applied to so many countries, with such diverse histories, economies and cultures, that any encompassing definition is likely to be suffused with so many qualifications and exceptions as to merge imperceptibly into the background.

A far more fruitful framework for comparison, though not exclusive of the historical or communist perspective, and certainly as diffuse and undefined as the latter, is that afforded by the definition "developing

---

[6] This often happens because the rhetoric of the post-Mao regime fits in so well with the assumptions (and ignorance) of many western observers. My favourite is a heading in *International Petroleum Times* (February 1, 1979, p.14) which claimed: "The commercial exploitation of oil probably started in China, but not much has been done since. Post-Mao thinking is aligned to change that quickly." The article in fact gave a reasonable description of the enormous expansion of the oil industry during Mao's lifetime (an expansion which, ironically, had stopped a few years after his death).

country".[7] This, it should be said, does not exhaust the directions of comparison; for instance, many observers fail to connect issues, problems and policies in China (or elsewhere) with actualities at home: perceptions of foreign events are not anchored in the consciousness of the experience and practice of one's own society.[8] However, the relevance and primacy of the developing country framework as a major aspect of the perceptual matrix is brought home by a simple, but overwhelming, statistic - China's current per capita GNP is approximately $220 a year.[9]

One reason for the frequent failure to see China as a developing country lies in what Dr. Brugger called "the problem of evidence". He was thinking principally of the problem a Sinologist faces in piecing together fragmentary and contradictory evidence. That is part of it, but there is also the further problem, especially for the non-China-specialist, not merely of the paucity of the Chinese "evidence", but also of its non-comparability and of the difficulty of access. Nowhere is this difficulty keener than in the field of international trade because here, paradoxically, the potential evidence is enormous, and the demands for comparison most pressing.

Trade, like the tango, takes two, and comparability is of the essence of trade statistics. At the same time trade is perhaps the most documented of economic activities for good practical reasons - it has been, historically, an excellent way of levying taxes. Within the plethora of international trade statistics there is a notable lacuna - China. When

---

[7] This label has gone through many transformations - developing country, under-developed country, less developed country, newly industrializing country (some of them), Third World and more recently, South. The latest, apart from smacking of euphemism, is in geographical terms rather inappropriate for China; indeed, when her population is included, probably most of the South actually live in the Northern Hemisphere.

[8] For instance: "The attack on Mao's belief that material incentives alone are of limited value is based on simple ignorance of all the studies made in the West for the last generation on work motivation." Jack Gray, *Mao Tse-tung* (Guildford and London, Lutterworth, 1973), p.77.

[9] *Beijing Review*, No.52 (December 29, 1980), p.3. (See also Appendix L postscript for fuller quotation.) Like all 'simple statistics' it should be treated with caution.

the China trade does appear it is as the reflection of that of other countries and is often as difficult to embrace as Li Po's moon.[10] As a result even the simplest of statistics, such as aggregate exports or imports, need to be laboriously pieced together from trade partner reports and are subject to severe uncertainties.[11]

Much of the post-war debate about economic relations between developed and developing countries, or what is known now as the North-South dialogue, has taken place without China. True, since the beginning of the seventies, and the restoration of the U.N. seat, she has been increasingly a participant, but 'China as evidence' is still lacking. This thesis sets out to furnish a crucial piece of the evidence - the terms of trade.

The original academic argument about the deterioration in the terms of trade of primary products, or of developing countries (the connection between the two classifications being part of the question), has merged into wider issues. This is partly because the pioneering work of Prebisch and Singer was necessarily based on narrow and uncertain statistical foundations, whilst today we are inundated with data (except, of course, for China).[12]

Nevertheless, the terms of trade loom large in the consciousness of the Third World, and many perceive that there is a deterioration which makes, in the words of the then Jamaican Prime Minister, Michael Manley, "the development process...like trying to walk up the down escalator". Mr. Manley, who, significantly, was delivering the "Third World Inaugural

---

[10] Li Po, the T'ang Dynasty poet, drowned, it is said, by trying to embrace the reflection of the moon on the water while drunk.

[11] See, for instance, Tables 5-14, 15. Chapter One examines these problems.

[12] For a recent summary of the statistical aspect of the debate see John Spraos, "The Statistical Debate on the Net Barter Terms of Trade between Primary Commodities and Manufactures", *The Economic Journal*, 90 (March 1980), pp.107-128. Spraos concludes that "...though the relative price of the developing countries' primary products has had its ups and downs since the war, it has on average done quite well by the standard of pre-second war decades, even when petroleum is excluded as a special case since 1973. So, while the deteriorating tendency cannot be decisively refuted, it is open to doubt when...the record up to the 1970's is taken into account." (p.126).

Lecture" continued:

> In 1965, the average price per ton of sugar realised by Jamaica was Jamaican $73.7 compared with Jamaican $1,536 (cif) for the Ford 5000 tractor - a ratio of one tractor to 20.84 tons of sugar. In 1979, the Ford 5000 tractor is no longer available. It has been replaced by a new model called the 66,000 which is slightly more powerful but is designed for exactly the same purposes. For 1979, the provisional average price per ton of sugar is Jamaican $534 compared with Jamaican $30,905 for the Ford 66000 tractor - a ratio of one tractor to 57.87 tons of sugar. Insofar as sugar and tractors are concerned, the ratio has moved from 21 to 58 tons of sugar to provide the foreign exchange to bring one tractor into Jamaica.
>
> And lest this might seem to be proof by selected instance drawn from the Jamaican experience, it would be of interest to examine figures published by the International Sugar Organisation comparing the export value of manufactured goods with the daily price of sugar in US cents per lb, which is one of the two major indices of the world market price of sugar. And these figures of course show a general international trend. Starting from a base of 100 in 1970, the unit export value of manufactured goods moved to 245 by the first half of 1979. The price of sugar, on the other hand, declined from 3.68 cents a lb in 1970 to 3.30 in the first half of 1979.[13]

On a more general level *New Society* recently commented:

> For those which have no oil and whose prosperity depends on a single primary product, these are difficult times. Despite the fall in the value of the dollar, there is no major commodity, apart from oil, whose price has kept up enough for the same quantity today to be exchangeable for the same number of dollars as in 1975.
>
> To buy the same amount of oil as in 1975 you need, on average, twice the quantity of the major commodities; in the case of jute, maize, tea or zinc, about three times as much. With a ton of cotton, you could buy 119 barrels of oil in 1975: the same ton would buy you about 65 barrels today. In 1975, a ton of copper covered $17,800 of debt repayments: today, about $12,000. The total debt burden of the oil-less developing countries is expected to rise to about $450 billion this year.[14]

---

[13] Michael Manley, *The Politics of Affirmation: Inaugural Third World Lecture, 1979* (London, Third World Foundation, 1979; Third World Foundation Monograph 1).

[14] *New Society*, 15 January, 1981, p.87, "Reagan's globe".

This thesis, then, is basically a process of investigation to determine China's terms of trade. Two chapters deal with other issues: Chapter Four covers the genesis and development of the concept of terms of trade in classical and neo-classical literature,[15] and Chapter Five surveys China's foreign trade from earliest times to the present. Apart from that, the rest of the study is a sequential piecing together and assessment of data. Chapter One examines the available statistics and explains the strategy of building up a core of indexes from data on China's trade with Britain. Some of the problems of defining that trade, principally the question of indirect trade through Hong Kong, are examined in Chapter Two, while Chapter Three describes the specific methodology developed and documents the structure of the sample. The unit value indexes on various levels (individual commodities, sections, etc.) are built up on a year-by-year basis in Chapters Six (1930-69) and 7 (1946-69). Such is the complexity of the data that eleven pages are needed for each year.

Chapter Eight examines the various weighting modes that are used and concludes that unit values in the sample are not section-specific (that is, the prices of foodstuffs do not move in a coherent and distinguishable group compared with chemicals or machinery). Chapter Nine focusses on the thirties and links the Sino-British terms of trade indexes with the pre-war Chinese ones. Chapter Ten analyses the price movement of Sino-British trade at various levels of disaggregation, both for intrinsic reasons and also in order to identify areas in which the British trade might be particularly unrepresentative. This question of the representativeness of China's trade with Britain is continued in the final chapter, where the composition of Sino-British trade is compared with that of her trade with the West,[16] and the weighting of the British indexes adjusted to take account of this and other possible distorting factors, to arrive at an estimate of China's terms of trade with the West.

---

[15] It had been planned to write a chapter on the post-Prebisch debate but time was not available.

[16] Suitable international data was not available until 1953.

An investigation of this type must be carried out primarily by means of tables - the text is ancillary and comparatively slight. Tables are unfortunately quite appalling things to 'read', if that is what one does to them, and because of the complexity of the investigation there are an unconscionable number. In order to abate the agony, mine as well as the reader's, I have given some thought, if not sufficient skill, to the lay-out of each table so that its form serves its function. At the same time, wherever possible, I have also graphed the information, or the salient aspects of it. Taken together the two forms (with the overlays[17]) can be a very powerful tool to analyse, comprehend and develop the information.

I have no pretensions to an advanced command of statistics or econometrics and a specialist may well find my efforts both inelegant and undeveloped. Nevertheless, I trust they will be found sufficient for their purpose.

An enterprise which has taken so many years cannot but have led to the acquiring of innumerable debts. Firstly, my earliest supervisors at the Department of Business Studies, Robin Bade and Simon Coke. Then their successors, Vassilis Droucopoulos, and Jack Gray of the Institute of Development Studies; to the latter I owe an additional intellectual debt stretching back to the days when I was a student of his, and stretching forward, I am sure, for as long as he keeps writing.

Many people have commented or advised on work in progress or have helped in other ways, and especially Premen Addy, Doug Anthony, Joan Atkins, Pia Bloch, Srikanto Chatterji, Pat and Barbel Daly, Philip Deakin, Andy Exon, Ian Gow, Ian Glendon, Ankie Hoogvelt, Pat Heron, George Jelinek, Judy Matthews, Bob Rait, Ruth Victorin and Keith Wilson.

All these debts fade in comparison with those to my wife Christina. Not merely did she correct my spelling, criticise, edit and type the thesis - a gargantuan task in itself and one, it will be obvious, done

---

[17] The overlays, it should be explained, sometimes do not fit together for unavoidable technical reasons - both the photocopying and transparency reproduction distort the original, but they do it in different directions.

with great skill - but she also had a full-time job and supported us for most of the period:

> "A cold coming we had of it,
> Just the worst time of the year
> for a journey, and such a long journey"

That we have come to the end of such a long journey is due very much to her and I hope she finds this Birth more satisfactory than Eliot's Magus found his.

This work could be dedicated to no other person but her.

TABLES

APPENDIXES

FIGURES

OVERLAYS

PART A

Objectives & Method

CHAPTER ONE

Precedents, Problems & Strategy

One result of "The Invasion of China by the Western World"[1], of the highest importance both in practice and symbol,[2] was the establishment of a modern Customs service. This was initially[3] administered by the Chinese government, but following the seizure of the Shanghai Customs by the Taipings in 1853, an event which perhaps nicely epitomised interplay between the three main actors, people, government and foreigner, a Foreign Inspectorate was set up there the following year.[4] Its activities were subsequently extended to the other Treaty Ports and its role

---

[1]The phrase is the title of a book by E.R. Hughes, published in 1937 (London, Black). On the importance of the Customs to both the Chinese government and the foreign powers, Hughes notes: "The steady revenue derived from the Customs proved of immense advantage to China, even though after 1900 it was made the security for a second and enormous indemnity." (p.34).

[2]Fairbank saw it as becoming "the eventual compromise between China and the West - a joint Chinese and Western administration of the modern centers of Chinese life and trade in the treaty ports." John King Fairbank, *Trade and Diplomacy on the China Coast* (Harvard, 1964), p.462.

[3]Following the Treaty of Nanking (1842).

[4]In order, it was claimed, that the Chinese government should not lose any of its due revenues. This attempt at self-policing by the foreign community was not a complete success - the American merchants paid up by one-third of what they owed, and the British none. "...this perfidy seems to have disappointed the Chinese authorities more than it surprised them - they had never regarded the barbarians as particularly trustworthy. Meanwhile the new foreign collectorate at Shanghai was bringing them a greatly increased revenue." Fairbank, *Trade and Diplomacy on the China Coast*, p.461.

confirmed by the Treaty of Tientsin (1858).[5] It was on the basis of statistics compiled and issued by the Imperial Maritime Customs (the name was changed to Chinese Maritime Customs after the fall of the Ch'ing in 1911) that the first major study of China's terms of trade was made. This was done by a team under Franklin L. Ho at the Institute of Economics, Nankai University, Tientsin, and was published in 1930. (It is designated in Table 1-1, Fig.1-1 as Ho 30.[6]) It covered virtually the whole period up to that date during which statistics had been collected - 1867 to 1928.

The starting data was largely determined by a problem which was to re-appear, in different guises, in the future. Ho noted that the Customs had begun publishing an annual *Returns of Trade* in 1859, and that this had been joined by the annual *Returns of Trade and Trade Reports* in

---

[5] Fairbank, *Trade and Diplomacy on the China Coast*, pp.393-461. He describes the role of the Customs thus:

> "The Maritime Customs soon became the key institution in the use of these foreign treaty rights, no less important than the foreign consulates. Under Robert Hart as Inspector General (1863-1908) the Customs became a chief financial pillar of the Chinese government, providing both an unprecedented and reliable revenue from foreign trade and useful security for foreign loans and indemnities. Hart and his commissioners became the trusted counsellors of Chinese officialdom. They supplied at first some of the functions of a diplomatic service and supported financially the early efforts to educate and train such a corps. Lighthouses on the China coast, harbor conservancy and aids to inland navigation, hydrographic charts, pilotage and quarantine, the collection of many special dues and taxes were all by degrees added to the Customs' original functions. *The great variety of Customs statistical, commercial and scientific publications partially made up for the lack of a modern Chinese government printing office.* The Maritime Customs organized and until 1911 financed China's modern Postal Service." [emphasis added] (p.462)

An insider's view (with the limitations that implies) is afforded by Hosea Ballou Morse who, having been an official of the I.M.C., became the pioneer historian of China's foreign trade. See especially his *The Trade and Administration of China* (London, Longmans, 3rd rev.ed., 1921, first published 1908), Chapter 12, "The Inspectorate of Customs", pp.385-410.

[6] Franklin L. Ho, *Index Numbers of the Quantities and Prices of Imports and Exports and of the Barter Terms of Trade of China, 1867-1928* (Tientsin, Nankai University Committee on Social and Economic Research, 1930).

Table 1-1

China's Terms of Trade, 1867-1936

(3-year average annual value)
(Nankai : 1913 = 100 ; Young 1926 = 100)

	NANKAI INDEXES			YOUNG
	HO (30)	HO (37)	HOU	
1867-69	113	102	134	
1870-72	113	101	134	
1873-75	127	114	151	
1876-78	135	121	161	
1879-81	121	109	145	
1882-84	106	95	127	
1885-87	98	94	127	
1888-90	123	122	162	
1891-93	126	126	165	
1894-96	84	84	108	
1897-99	97	97	122	
1900-02	98	98	120	
1903-05	106	106	111	
1906-08	112	as HOU	112	
1909-11	91		91	
1912-14	95		95	
1915-17	121		90	
1918-20	101		72	
1921-23	114		81	
1924-26	137		98	100 ~~101~~*
1927-29	135**		99	99
1930-32			86	74
1933-35			75	59
1936			91	68

*1926 only **1927-28 only

Sources:

-Ho(30): Franklin L.Ho, *Index Numbers of the Quantities and Prices of Imports and Exports and of the Barter Terms of Trade in China, 1867-1928* , Tientsin, Nankai University, 1930, p.24.

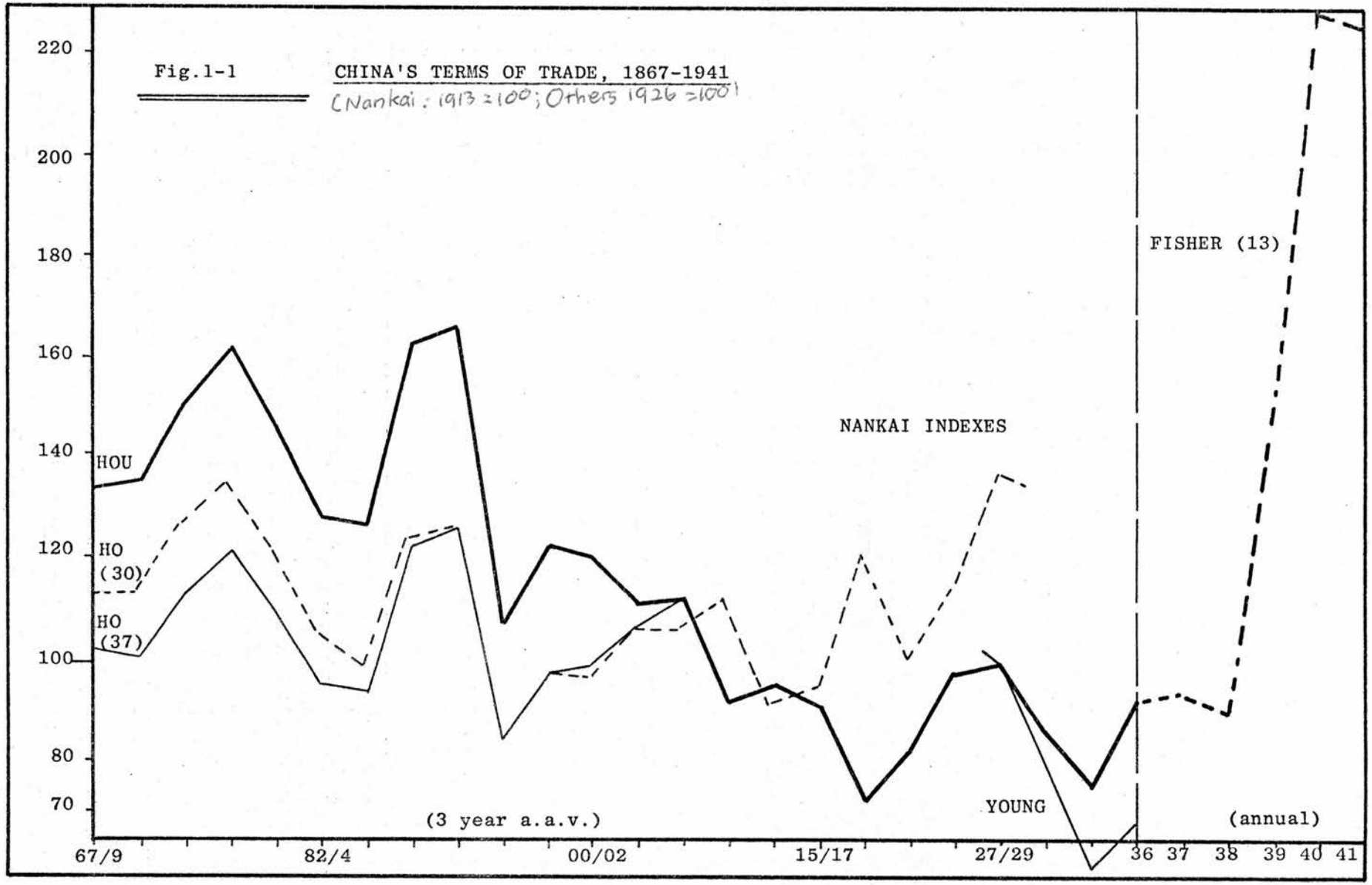
-Ho(37): Franklin L.Ho, "Economic Indices", *Nankai Social and Economic Quarterly*, July 1937.

-Hou: Chi-ming Hou, *Foreign Investment and Economic Development in China 1840-1937*, Harvard, Camb.(Mass), 1965, p.198.

-Young: National Tariff Commission, *An Annual Report of Shanghai Commodity Prices, 1936*, Shanghai, 1937, p.22. cited by Young, *op.cit.* p.172.

Fig.1-1 CHINA'S TERMS OF TRADE, 1867-1941

(Nankai: 1913=100; Others 1926=100)



1864[7] but that 1867 had been selected because:

> Previous to that year, returns of trade were given by some ports in Mexican dollars[8] and by others in taels.[9] The currency question presents peculiar difficulties in the analysis of trade statistics, rendering a direct comparison of the results almost an impossibility. In 1867, however, the first attempt was made to bring uniformity in the currency employed for the trade returns. The Haikwan tael[10] was introduced and, since that time, it has become the standard currency at all ports for trade returns.[11]

---

[7] The two publications were amalgamated in 1882 (Ho, *Index Numbers*, p.2).

[8] It is one of the curiosities of history that, because of the Chinese bartering of silk for silver, via the Spanish galleon trade through Manila, the Spanish or 'Mexican' dollar became the dominant silver currency on the China coast, the name still lingering on with the Hong Kong dollar. (cf. Fairbank, Reischauer and Craig, *East Asia, the Modern Transformation*, London, Allen and Unwin, 1965, p.26.) *The China Yearbook* (Shanghai, The North-China Daily News and Herald Ltd.,various years) gives an excellent, succinct, coverage of this and other subjects. It describes the Mexican dollar as "the most widely used coin in the world... (being) current in North and South America, the West Indies, the islands of the Pacific, Japan and throughout the major portion of Asia." (1934 ed., pp.392-393).

[9] According to the *China Yearbook* (1934 ed., p.392) the word is of Malay or Indian origin, the Chinese term being, of course, the unit of weight LIANG. The expression 'sycee tael', a 'liang' of silver in the shape of a shoe (there is a fine illustration in H.B. Morse, *Trade and Administration of China*, facing page 167 in the 1921 edition) comes from the Cantonese pronunciation of XI SI, 'fine silk', the idea being, it appears, that both silk and silver, if of good quality, could be spun into fine thread. The word SI, incidentally, is the origin of the Roman's 'seres' for Chinese according to Sir Henry Yule, whose *Cathay and the Way Thither* is the pioneer work on the subject (revised edition by Henri Cordier, London, Hakluyt Society, 1915).

[10] The Haikwan tael (HAIGUAN, literally 'Customs') was a 'purely fictitious and non-existent currency'; for an account of the complications of ascertaining its value see Morse, *Trade and Administration of China*, pp.169-172.

[11] Ho, *Index Numbers*, p.2. Remer, however, says that it was not until 1873 that all values were given in Haikwan taels; cf. Remer, *The Foreign Trade of China* (Shanghai, 1926), p.43.

In 1930 the Haikwan tael was replaced by another unit of account, the Customs Gold Unit, for the assessment of the import tariff, and consequently the compilation of import statistics. The sycee taels actually in use, of which there had been hundreds of local varieties, had been over the years supplanted by the minted silver dollar. There were again many varieties of dollar - the original Spanish 'Carolus', the 'Mexican' dollar, the Straits dollar, the Maria Theresa 'Thaler' (the original 'dollar', and one still being minted today in Vienna for investors), the American Trade dollar, the Canton 'Dragon' dollar, which lost its popularity because of the custom of leasing out the mint to persons of less than perfect probity, and the two main dollars of the Republican period, the Yuan Shih-kai dollar of 1914 and the Sun Yat-sen dollar of 1927, amongst others. In 1933, in an attempt to establish a uniform currency, the government introduced the new standard Chinese National Dollar (CN$) which was minted only at Shanghai.[12] This was used for export statistics and frequently, after conversion from Gold Units, for imports as well from then up to 1949, although its real value (in terms of commodities, or more usually, vis-a-vis foreign currencies, especially the US$) became increasingly erratic and uncertain.

Ho's original series underwent a number of revisions during the early thirties and the period covered was extended to 1936. The final indexes were republished in *Nankai Index Numbers 1936* and in *Nankai Social and Economic Quarterly* (July 1937)[13] along with other indexes of commodity prices, cost of living, etc.

The original indexes were accompanied by a short commentary which gave the formulae used (Fisher's 'ideal' formula), trend equations, annual aggregate coverage and the method used for adjustment for incomplete coverage, and outlined some of the problems of compilation and calculation. Regrettably this commentary was not carried forward to the 1937

---

[12] *China Yearbook*, 1934, pp.394-396.

[13] Both published in Tientsin. The tables in the *Nankai Quarterly*, which appear to have been identical both in substance and presentation to those in the other Nankai publication, are referred to hereafter as HO 37.

publication, nor was there any explanation of the revisions. This presentation of quite different indexes (cf. Table 1-1, Fig.1-1) led to confusion and caused Theodore Morgan to complain:

> We have, after a considerable enquiry, rejected data from three countries that we once hoped to include: Australia, China, and Argentina....(n 16).... For China, the most hopeful series we have been able to find are those of Franklin L. Ho, *Index Numbers of Quantities and Prices of Imports and Exports in China*, Tientsin, 1930; and also under the direction of Ho, Nankai Institute of Economics, *Nankai Index Numbers*, Tientsin, 1937. But the series (for 1867 to 1928) of these two publications, for unexplained reasons, march off in opposite directions: one shows China's terms of trade improving, the other shows them deteriorating, though the data are supposedly identical.[14]

Hou Chi-ming, who has tracked down explanations of the revisions in Chinese,[15] claims that they "were made because of technical computational

---

[14]Theodore Morgan, "The Long-Run Terms of Trade between Agriculture and Manufacturing", *Economic Development and Cultural Change*, Vol.8, 1959/60, pp.8-9.

[15]The sources quoted by Hou (*Foreign Investment and Economic Development in China 1840-1937*, Camb.,Mass., Harvard, 1965, pp.268-269, n 23 and 24) are:

a. Ho Lien (Franklin L. Ho), "Chung-kuo chin-ch'u-k'ou mao'i wu'liang chih-shu wu-chia chih-shu yü wu-wu chiao-i-lü chih-shu pien-chih chih shuo-ming" [Index numbers of quantities and prices of imports and exports of China, an explanation], *Ching-chi t'ung-chi chi-k'an* 1.1: 128-149 (Mar.1932).

b."Min-kuo erh-shih nien chih Chung-kuo tui-wai mao-i" [China's foreign trade during 1931], *ibid.*, 1.4:741-810 (Dec.1932).

c. Wu Ta-yeh and Hu Yuan-chang, "Min-kuo erh-shih -szu* nien chih Chung-kuo tui-wai mao-i" [China's foreign trade during 1935], *Cheng-chih ching-chi hsueh-pao* [*Quarterly Journal of Economics and Political Science*], Vol.5, No.1, October 1936.

At the time of writing I have not yet located a copy of these articles.

*In his note Hou (incorrectly) gives the date as "er-shih nien"; that is, 1931.

errors; the basic method of constructing the series...remained the same."[16] Hou then himself made a further revision of the series (labelled HOU in tables and figures) to take account of a change in the valuation method of the Chinese Customs at the beginning of the century. Before 1902-4, contrary to usual practice, imports were valued inclusive of import duties "and all other charges incurred in delivering the imported goods to the market", while the export valuation excluded duties and "other charges". During 1902-4 the method was changed to the more usual practice of valuing imports c.i.f. and exports f.o.b. (see Chapter Two) and this necessitated the adjustment of the pre-1904 data to make it compatible with the subsequent statistics.[17]

In addition, there are features of Ho's commentary which are disquieting. At times he is baffling:

> Whereas in index numbers of *prices*, all commodities, whatever be their individual peculiarities, are expressed by means of a single common denominator - the monetary unit; in index numbers of quantity it is necessary to work with data in tons, in pieces, in quarts, in pounds, in gallons, etc.[18] [emphasis added]

Since price is the relationship between value and quantity ("in tons, in pieces, in quarts, in pounds, in gallons, etc."), the passage as it stands is meaningless - indeed, both price and quantity indexes use the

---

[16] Hou Chi-ming, *Foreign Investment*, p.195.

[17] Hou, *Foreign Investment*, pp.196-198. The adjustment he uses is "duty plus 7 per cent for other charges" deducted from imports and "duty plus 8 per cent for other charges" added to exports. The ratio of what he calls his "adjusted series" (not to be confused with Ho's 'adjusted series' which is in fact percentage deviation around a trend) to the Nankai (HO 37) terms of trade is approximately 75 per cent. Since both of them use an inversion of the usual relationship (that is, they put import prices over export prices) this represents an increase of some 33 per cent.

[18] Ho 30, p.2.

same data, but in different combinations. Presumably he means an index number of value.[19]

Elsewhere he mentions that his indexes "are based on data recorded by Chinese Maritime Customs" and notes:

> The practice of the Chinese Maritime Customs, again, has been to give the total value of a commodity imported or exported with or without its quantity. Those commodities that were reported in value only have to be excluded from the study, *or else their quantities have to be "derived" by dividing the reported value by their prices. The difficulty in obtaining the price data in China is insurmountable.*[20] [emphasis added]

It is doubtful whether he is really using 'prices' within or without the trade returns to estimate quantities where these are not given. To have done so would have been extremely hazardous since, although to the researcher it may seem that Customs omit quantities out of perversity and malignancy (sometimes, when they give a quantity in one year and omit it in another, one suspects that this is indeed the case), they do so precisely for those commodities or commodity groups which are so heterogeneous that there are no common measures of quantity, or where unit value would be meaningless - a problem which is discussed in some detail in Chapter Three.

Ho is also puzzlingly modest about his coverage:

> In the calculation of the index number of imports and exports it is impossible to include *directly* all articles imported or exported. For a large number of these articles either no quantities are given or the given quantities lack significance. However most of the major articles are reported with quantity. The

---

[19] In fact Ho, and anyone using Customs statistics, calculates from unit values rather than prices. There is no clear distinction between the two; they are both value divided by quantity, but a price is more specific. The unit-value of shoes in a shop may be £10, with the prices depending on quality, style, size, etc., ranging from £5 to £50. In this case the unit value, calculated from the total 'value' of the shoes divided by the number of pairs, would be a weighted arithmetic mean. In practice, the term 'price' is often used where, because an average of some sort is meant, 'unit value' would be more correct - "The price of beer has gone up" (but "prices" would be correct).

[20] Ho 30 , p.2.

Table 1-2

China's foreign trade 1936-41: Indexes

(1936 = 100)

	1936	1937	1938	1939	1940	1941
IMPORTS						
Σ PcQc	191,176	197,230	240,434	484,623	843,980	1,045,439
Σ PoQc	191,176	178,293	195,378	481,440	504,462	443,150
Σ PcQo	191,176	217,222	211,328	238,665	346,269	498,802
Paasche UVI	100	111	123	101	167	236
Laspeyres UVI	100	114	111	125	181	261
Fisher UVI	100	112	117	112	174	248
Coverage	20	21	27	36	42	48
EXPORTS						
Σ PoQc	386,430	501,097	469,859	531,575	941,062	1,204,218
Σ PoQc	386,430	405,052	393,138	257,792	204,702	200,647
Σ PcQo	386,430	408,407	417,757	663,444	1,608,743	2,417,567
Paasche UVI	100	124	120	206	460	600
Laspeyres UVI	100	106	108	172	416	626
Fisher UVI	100	115	114	188	437	613
Coverage	55	60	62	52	48	47
TERMS OF TRADE						
Paasche	100	112	98	204	275	254
Laspeyres	100	93	97	138	230	240
Fisher	100	102	97	168	251	247
Fisher (13)	91	93	89	154	229	226

Fisher (13): adjusted to link with Nankai index (1913=100; 1936=91; for explanation see text)

The data from which these indexes are derived is given in Appendix J, Tables 1M and 1X.

> value of those articles entering into the *direct* calculation of the index numbers of imports or exports represents something over two thirds of the total import-value or export-value. Table I and Table II in the Appendix give the percentage of the value of commodities *directly* covered by the index number of imports or exports in each year to the total value of all commodities imported or exported.[21]

However, Table I shows import coverage ranging up to 99 per cent, and averaging 83 per cent, while exports average 91 per cent - on both sides high, even embarrassingly so,[22] and certainly well above three-quarters, let alone two-thirds, of the value.

These may be quibbles, a too-punctilious reading of what is perhaps a translation. There are, however, further difficulties. Both the initial and revised versions give quantity and price indexes for both imports and exports, the fixed-base re-adjustments (to base 1913) as well as the original year-to-year linkage, the net barter terms of trade (annoyingly upside down in terms of the usual convention of export prices over import prices) and a table which he rather cryptically entitles: "Quantity and Price Index Numbers of Imports and Exports of China, 1867-1928. Ordinate of Trend = 100", but which the commentary identifies as percentage deviation around a second degree polynomial trend. He gives equations for the trends, although he does not mention that the time units (x) are half-years around the centre of the period. The resulting series of deviations he calls an 'adjusted index'. Ho 37 does not give the trend equations (which, of course, will now be different), but Table 1-3, Figs.1-2, 1-3, examines his import series on the subsequently validated assumption that he is again using a parabolic trend. It will be seen that the two trends differ and, consequently, so do the deviations. This of course affects any conclusions that might be drawn as to how much, and sometimes in what direction, import prices at any particular time 'differ from normal'. Since Ho's indexes were superseded by Hou's, it would be

---

[21] Ho 30 , p.3.

[22] It will be seen in Chapter Three that a very high coverage often indicates that the commodity description is imprecise and its validity as an indicator of price change doubtful. Ho, unfortunately, does not say how many commodities were used in his sample.

Table 1-3 China's import unit values, 1867-1936:

Year	1	2	3	4	5	6
	x ($\frac{1}{2}$ years)	Yt calculated trend	Pi UVI 1913=100	'Adjusted index'	Yd derived trend ($\frac{3}{4}$. 100)	PD ($^3/_2 \cdot 100$)
1867	-69	34.4700	46.9	111.9	41.9124	136.1
1868	-67	34.7212	46.9	113.8	41.2127	135.1
1869	-65	35.0316	47.9	118.0	40.5932	136.7
1870	-63	35.4012	46.7	116.2	40.1893	131.9
1871	-61	35.8300	47.4	119.1	39.7985	132.3
1872	-59	36.3180	45.8	115.9	39.5168	126.1
1873	-57	36.8652	46.3	117.8	39.3039	125.6
1874	-55	37.4716	38.5	98.2	39.2057	102.7
1875	-53	38.1372	35.3	90.1	39.1787	92.6
1876	-51	38.8620	33.8	86.2	39.2111	87.0
1877	-49	39.6460	35.5	89.9	39.4883	89.5
1878	-47	40.4892	35.7	89.7	39.7993	88.2
1879	-45	41.3916	35.2	87.8	40.0911	85.0
1880	-43	42.3532	38.3	94.3	40.6151	90.4
1881	-41	43.3740	39.6	96.4	41.0788	91.3
1882	-39	44.4540	37.6	90.0	41.7778	84.6
1883	-37	45.5932	37.1	87.1	42.5947	81.4
1884	-35	46.7916	37.1	85.3	43.4936	79.3
1885	-33	48.0492	38.1	85.8	44.4056	79.3
1886	-31	49.3660	43.3	95.4	45.3878	87.7
1887	-29	50.7420	43.0	92.5	46.4865	84.7
1888	-27	52.1772	43.6	91.4	47.7024	83.6
1889	-25	53.6716	44.3	90.2	49.1131	82.5
1890	-23	55.2252	40.7	80.6	50.4963	73.7
1891	-21	56.8380	38.7	74.4	52.0161	68.1
1892	-19	58.5100	39.6	73.9	53.5859	67.7
1893	-17	60.2412	44.7	80.8	55.3218	74.2

Table 1-3, cont'd.

China's import unit values, 1867-1936: Index and Trends

Year	x	Yt	Pi	Adj. index	Yd	PD
1894	-15	62.0316	62.8	110.0	57.0909	101.2
1895	-13	63.8812	66.1	112.0	59.0179	103.5
1896	-11	65.7900	67.1	110.0	61.0000	102.0
1897	- 9	67.7580	71.8	114.0	62.9825	106.0
1898	- 7	69.7852	71.9	110.3	65.1859	103.0
1899	- 5	71.8716	67.2	99.7	67.4022	93.5
1900	- 3	74.0172	74.8	107.2	69.7761	101.1
1901	- 1	76.2220	75.3	104.3	72.1956	98.8
1902	+ 1	78.4860	78.0	104.1	74.9280	99.4
1903	+ 3	80.8092	88.3	113.9	77.5241	109.3
1904	+ 5	83.1916	87.2	108.7	80.2208	104.8
1905	+ 7	85.6332	81.2	97.8	83.0266	94.8
1906	+ 9	88.1340	75.4	87.8	85.8770	85.6
1907	+11	90.6940	82.3	92.6	88.8769	90.7
1908	+13	93.3132	95.4	103.6	92.0849	102.2
1909	+15	95.9916	95.1	99.8	95.2906	99.1
1910	+17	98.7292	102.5	104.0	98.5577	103.8
1911	+19	101.5260	102.2	100.2	101.9960	100.7
1912	+21	104.3820	100.0	94.8	105.4852	95.8
1913	+23	107.2972	100.0	91.7	109.0513	93.2
1914	+25	110.2716	108.9	96.5	112.8497	98.8
1915	+27	113.3052	113.0	97.0	116.4948	99.7
1916	+29	116.3980	122.4	101.7	120.3540	105.2
1917	+31	119.5500	131.0	105.4	124.2884	109.6
1918	+33	122.7612	147.0	114.5	128.3843	119.7
1919	+35	126.0316	150.2	113.4	132.4515	119.2
1920	+37	129.3612	175.7	128.4	136.8380	135.8
1921	+39	132.7500	167.4	118.6	141.1467	126.1
1922	+41	136.1980	146.8	100.8	145.6349	107.8

Table 1-3, cont'd.

China's import unit values, 1867-1936: Index and Trends

Year	x	Yt	Pi	Adj. index	Yd	PD
1923	+43	139.7052	148.7	99.1	150.0505	106.4
1924	+45	143.2716	148.8	96.2	154.6778	103.9
1925	+47	146.8972	151.0	94.7	159.4509	102.8
1926	+49	150.5820	150.8	91.8	164.2702	100.1
1927	+51	154.3260	161.7	95.6	169.1423	104.8
1928	+53	158.1292	159.1	91.3	174.2607	100.6
1929	+55	161.9916	158.1	88.2	179.2517	97.6
1930	+57	165.9132	174.7	94.7	184.4773	105.3
1931	+59	169.8940	192.9	101.7	189.6755	113.5
1932	+61	173.9340	180.1	92.3	195.1246	103.5
1933	+63	178.0332	173.2	86.3	200.6952	97.3
1934	+65	182.1916	151.9	73.7	206.1058	83.4
1935	+67	186.4092	138.1	65.2	211.8098	74.1
1936	+69	190.6860	152.3	70.0	217.5714	79.9

Notes:

x: half-year units around 1901/2

Yt: 2nd degree polynomial trend calculated from Pi.
$Yt = 77.3466 + 1.1320x + 0.0074x^2$

Pi: Ho's 1937 import unit value index (Ho, 1937, pp.346-347)

Adjusted Index: Ho's term (Ho, 1937, pp.348-349); in fact, percentage deviation around an (unstated) trend.

Yd: The trend derived from Pi and ~~un~~adjusted index. Yd for x = -69, +1, +69 yields formula:- $Yd = 73.4567 + 1.2729x + 0.0118x^2$
Calculated values from this formula give values which correspond reasonably well to derived values, confirming that this is approximately the trend that Ho used.

PD: Percentage deviation of Pi around Yt.

Fig.1-2 CHINA'S IMPORT UNIT VALUE INDEX; PERCENTAGE DEVIATION FROM TRENDS
(3-YEAR ANNUAL AVERAGE VALUE. P.D. from col.6,A from col.4 of Table 1-3)

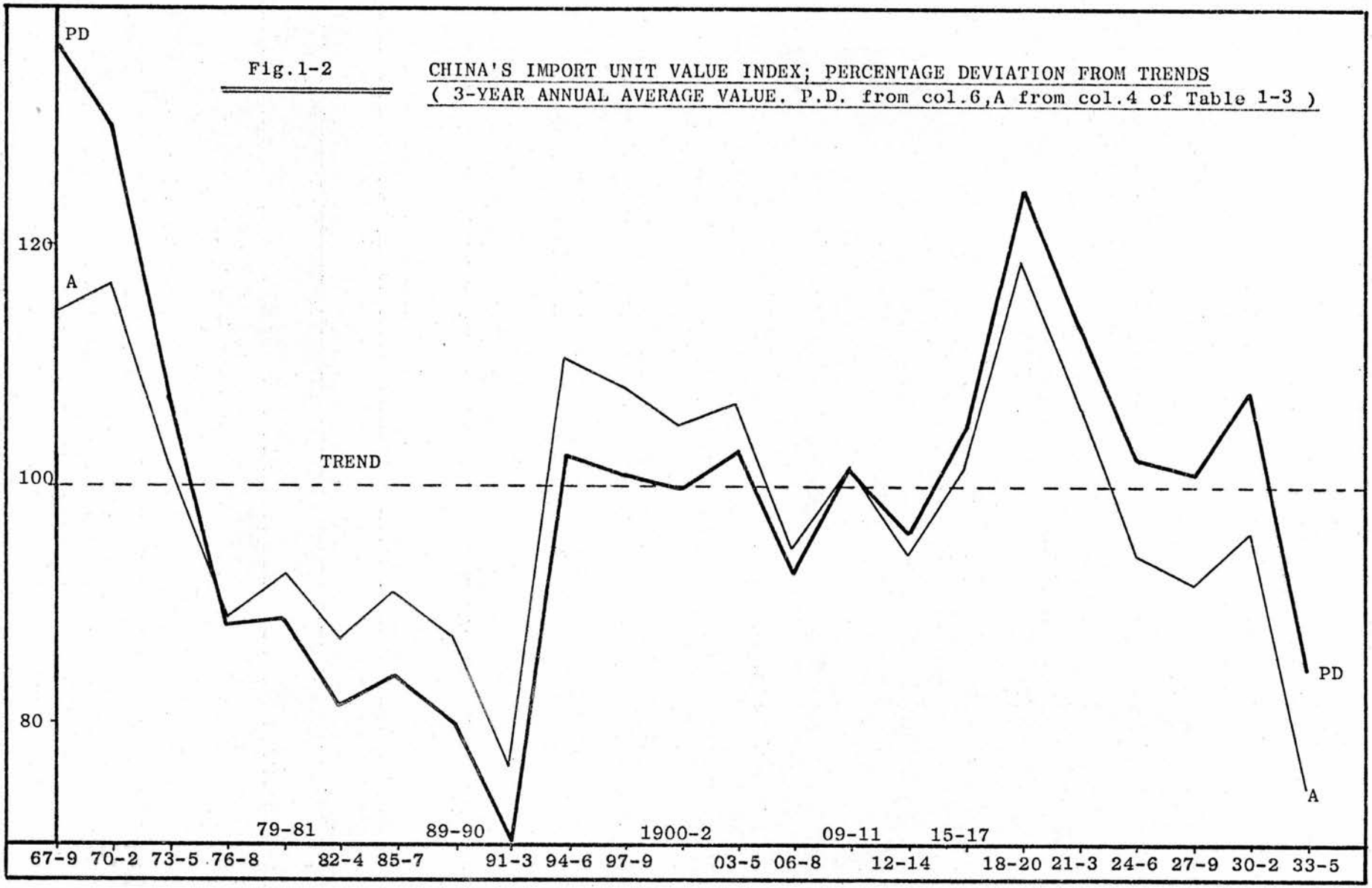


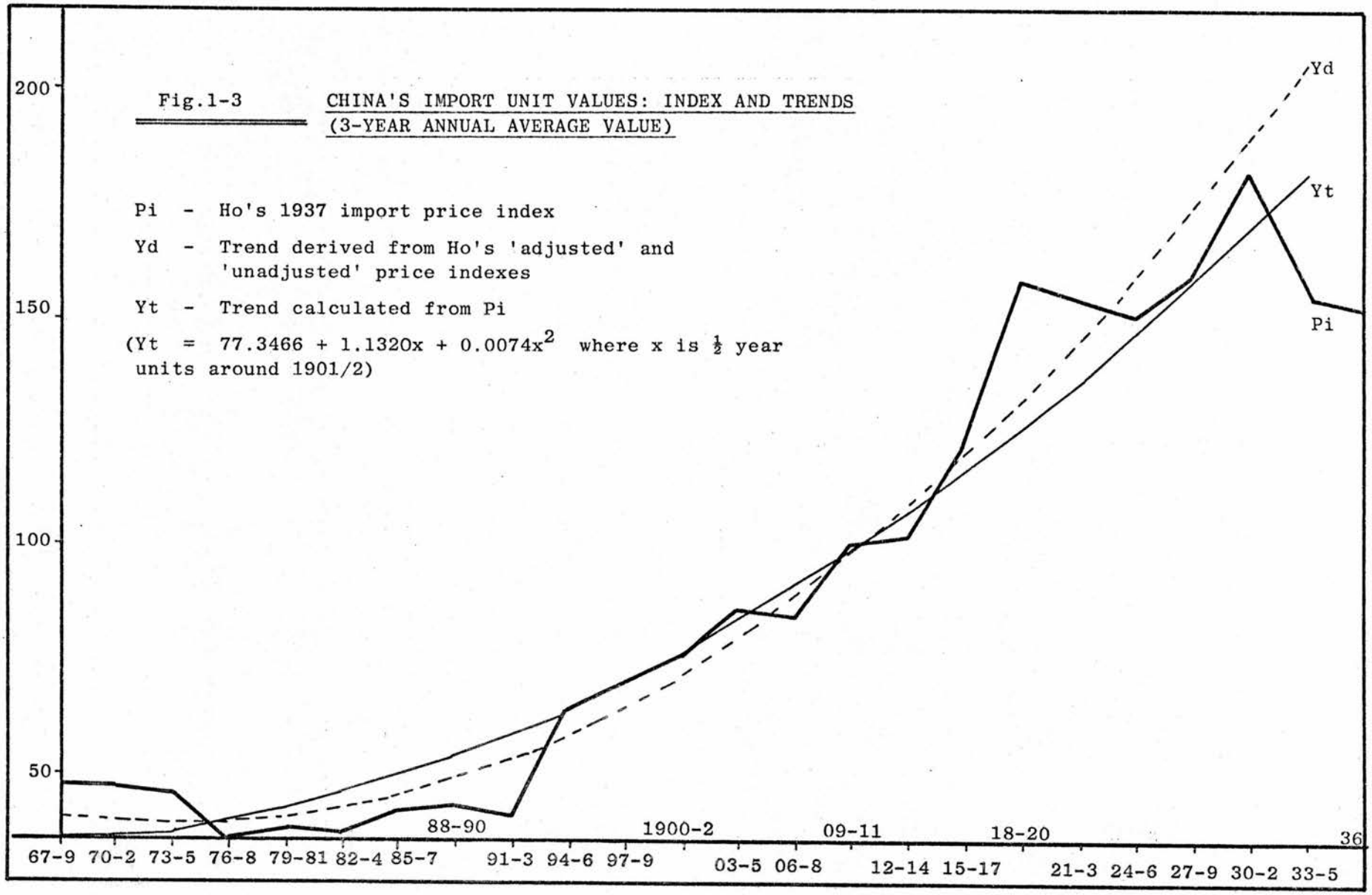
Fig.1-3 CHINA'S IMPORT UNIT VALUES: INDEX AND TRENDS
(3-YEAR ANNUAL AVERAGE VALUE)

Pi - Ho's 1937 import price index

Yd - Trend derived from Ho's 'adjusted' and 'unadjusted' price indexes

Yt - Trend calculated from Pi

(Yt = $77.3466 + 1.1320x + 0.0074x^2$ where x is ½ year units around 1901/2)



pointless to examine the others; Hou, himself, limits his trend analysis to calculation of the linear trend of the terms of trade.[23]

Ho's work has come under criticism from another quarter. Ch'en Chi-shih and Liu Po-nien argued that:

> *The Price, Quantity and Value Index of China's Imports and Exports* [i.e. Ho 30][24] was based on data in customs records. But the data of quantities were incomplete for the compilation of the price index. A lot of technical problems arose. Although there was some technical improvement in the compilation of the index by Nan Kai University, the assumption that the price movements of "commodities not directly listed" were identical with the price movements of "commodities directly listed" was too sweeping. Also, the index included only the general index, with no group index. As to the computational formula, ...Nan Kai University adopted Fisher's "ideal" formula. ...the "ideal" formula cannot freely change the base period and thus cannot be converted from the link index to the fixed base index. But they... adopted the chain index. This presented theoretical problems....the "ideal" formula, aside from the fact that the weights of two time periods could be used, did not make any practical economic sense. The price index computed from the "ideal" formula was subject to the influence of quantity movements. And the quantity index was subject to the influence of price movements. The "ideal" formula was, therefore, far from being "ideal".[25]

---

[23] Hou, *Foreign Investment*, p.269, n 33. The trend equation he gives is Y = 76.0027 + 0.4442X with origin at 1866. (It should be remembered that his terms of trade are inverted.) He claims that: "This means that at the end of the period a given quantity of exports could pay for 74 percent of the imports it could have bought at the beginning of the period. The trend line would appear slightly different if the catastrophic 1930's were disregarded." It should be added that, whilst it is true that truncating the series at the end of the twenties would produce a more favourable trend (from China's point of view), China's actual experience in the thirties was, as a corollary, even worse then the (full) trend would suggest.

[24] Ch'en and Liu mention only the earlier work by name, but they must have been aware of the revised indexes since they refer to *1936*, and indeed the phrase "some technical improvement" confirms this. They make no other references to the differences between the indexes, but presumably they must have seen at least some of the articles Hou quotes since they clearly have access to information not in the 1930 commentary.

[25] Ch'en Chi-shih and Liu Po-nien, *Tui-wai mao-i t'ung-chi-hsüeh* [*Foreign Trade Statistics*] (Peking, Finance and Economics Publishing Co., 1958) translated in *Chinese Economic Studies*, Vol.3, No.4, Summer 1970, p.324. This work is referred to hereafter as "Ch'en and Liu".

Their complaints then, are threefold. Firstly, that Ho makes an unwarranted assumption that the aggregate price movement of commodities not covered by the sample is 'identical' with the aggregate movement of the sample. Secondly, as an extension of the first point, that he did not differentiate the commodities into groups. These are problems that are tackled at some length in Chapter Three, and they are taken very much into account during the construction of the indexes in Part C. The third problem, that of the Fisher formula, is perhaps intractable. Their preference, as we shall see later, is for a fixed base Paasche price index, which is in fact the type used for the construction of my indexes. The Fisher formula is an attempt at compromise - it averages the weights, but in doing so it is open to the charge that it falls between two stools.

There is a further difficulty which must be faced by anyone using, as Ho does, Chinese Customs statistics during the thirties - the use of different accounting units for imports and exports. This is dealt with in Part D and it suffices here to mention again that the Chinese Government introduced the Customs Gold unit in 1930 for the collection of the import tariff in an effort to insulate their revenue against adverse movement in the bimetallic ratio. The foreign debt, the result of borrowing and indemnity, had to be paid in gold, as in a sense did imports, since most of her trading partners were still on the gold standard. China was at this stage on silver, and with silver at the time falling rapidly against gold, her revenue, in gold terms, was decreasing.[26]

The export tariff, a smaller source of revenue, and one that rapidly diminished in importance in comparison with the import tariff,[27] remained on silver; initially continuing in Haikwan taels and then, after 1933, in standard dollars. China moved off silver in 1935 but the export tariff, and export statistics, continued to be rendered, of course, in dollars. The export and import statistics, therefore, and their relationship, the terms of trade, were much affected by the separate fortunes of their

---

[26] Arthur N. Young, *China's Nation-Building Effort, 1927-1937* (Stanford University, Hoover Institution Press, 1971), pp.45-48. Mr.Young was a financial adviser to the Chiang Government at the time.

[27] cf. Young, *ibid.*, p.52, Table 2, which gives the import duty in 1927 as CN$54m. and export duty as CN$40m. Ten years later the figures are CN$261 for imports and CN$29 for exports.

accounting units.

After 1937, with the opening of full-scale hostilities between China and Japan,[28] the Chinese dollar began an irreversible decline, one result of which, as can be seen from Table 1-2, Fig.1-1 (the 'Fisher 13' line) is that export prices *appear* to rise much more than ~~export~~ import prices and so the terms of trade *seem* to soar upwards.[29] Had imports and exports been reckoned in the same units, then the movement of that currency against foreign currencies, or specie, would equally affect both sides, and have no effect on the terms of trade. However, the use of different units means that their relationship must be carefully scrutinised. Moreover, the increasing, and uncertain, disparity between the two towards the end

---

[28] The loss of Manchuria in 1931 had, amongst other more important consequences, had an unknown effect on Chinese trade statistics.

[29] These indexes are calculated from Customs statistics presented in synoptic form by *The China Handbook, 1937-1943*, pp.540-541. This book, which is similar to the *China Yearbook*, is subtitled "A comprehensive survey of major developments in China in six years of war" and was compiled by the Chinese Ministry of Information and published by Macmillan, New York, in 1943. Bearing in mind its provenance, sections such as that on the military situation, with its lists of Chinese victories over the Japanese, should be approached with some caution. There is no reason to suspect embellishment of the trade statistics, but the technical distortions are incalculable. It is sobering to note, for instance, when considering the 1940 statistics, that in that year between 85 and 90 per cent of "China's foreign trade" passed through Japanese-controlled ports (p.524). It is perhaps less than sobering to see that, as its part of the war effort:

> "The Ministry of Finance also forbade the importation of the following: canes containing knives, pistols, air guns, bullets for pistols and air guns, blueprints for manufacturing munitions, insectile agents, counterfeit banknotes, lotteries or other notes, prints of bogus money, prints and models of coins and machinery, pistol-like torchlight, handcuffs, propaganda material implying ideas for the recognition of bogus regimes, matches adulterated with yellow or white phosphorus, racing dogs and obscene literature." (*sic, China Handbook*, p.529)

of the decade makes Chinese trade statistics of dubious value in terms of trade analysis thereafter.[30]

OTHER PRE-WAR CHINESE INDEXES

Although the Nankai team under Ho produced the major trade indexes of the period, there had been two earlier, less ambitious, attempts.

The first was the *Shanghai Export and Import Index* compiled by the National Tariff Commission of the Ministry of Finance.[31] It was started in 1925, revised in 1931 and appears to have ended after 1936. It was a true 'price' index, rather than a unit value index. The base was the average price in 1926 and the current prices were the *wholesale prices* in Shanghai on the 15th of the month. It used as weights the arithmetic mean of the average values in 1925, 1926 and 1927. Both exports and imports grouped commodities into raw materials, means of production and means of consumption, and raw materials were further subdivided into agricultural, animal, forest and mineral products. It incorporated all commodities whose value exceeded Hk Tls 500,000 - sixty-six export commodities and eighty-two import commodities.[32]

---

[30] *The China Handbook* frankly admits: "...the depreciation of the Chinese legal tender has caused values of exported commodities to sky-rocket whereas actual quantities exported decreased." (p.524). The Chinese standard dollar, which had been worth 14.3d (sterling) as late as 1937 (*China Yearbook, 1939*, p.40), had fallen to 6.5d in June 1939 and 4d in August of that year (*China Handbook*, p.528).

[31] The description of this and the following index comes from Ch'en and Liu, pp.318-324. The actual Shanghai indexes come from Young, *China's Nation-Building*, p.172, Table 16 and labelled for brevity in Table 1-1, Fig.1-1, as 'Young'. Elsewhere in the same book, Young gives another, slightly different, version of the Shanghai series (p.499). Ch'en and Liu unfortunately do not give any of the series they discuss.

[32] cf. the indexes constructed in Appendix J. The series for 1936-41 has no (additional) entry qualification, thirteen utilisable import commodities and twenty-three utilisable exports. The series for 1925-36 is constructed from more detailed data and has an entry qualification of Hk Tls 1 million, thirty-nine import commodities and forty exports. The main indexes in this study are of quite a different order of complexity; they use a total of 637 commodities. See Table 1-10.

The next investigation was made by the Ministry of Industry and Commerce in 1928. This was done on the basis of customs records and was considerably larger in scope, running from 1912 to 1927, with 1926 as base. Like the Shanghai and Ho indexes, this was of the chained form. The links were first readjusted to fixed base 1912 and then subsequently to 1926. The formulae were:

$$\text{Price Index} = \frac{\Sigma\ PcQm}{\Sigma\ PoQm}$$

where

Pc - prices (really unit values) in current year

Po - prices in base year

Qm - weights. For the period 1912-20, the average *quantities* of 1923, 1924 and 1925. From 1921 the average *prices* of 1923, 1924 and 1925 [emphasis added]

$$\text{Quantity Index} = \frac{\Sigma\ QcPm}{\Sigma\ QoPm}$$

where Qc - quantity in current year

Qo - quantity in base year

Pm - weights. 1912-20: average prices of 1912, 1913 and 1914; from 1921: average prices of 1923, 1924 and 1925

$$\text{Value Index} = \frac{\Sigma\ PcQc}{\Sigma\ PoQo}$$

(this presumably refers to total values rather than sample values)

Ch'en and Liu do not state the entry qualification, merely saying that "Commodities selected for the index were those with high import or export values in the various years."[33] However, since the export index had seventy-six commodities and the import one seventy-two, it was probably, like the Shanghai index, of the order of Hk Tls 500,000. The average annual coverage was 76 per cent for imports and 63 per cent for exports, while, regarding composition, forty-one of the seventy-six export commodities were raw materials and thirty-six of the seventy-two imports were 'means of consumption'.

Ch'en and Liu argue that since the Shanghai index "was based on the wholesale prices in Shanghai...this could not adequately reflect the price movement of foreign trade."[34] On the other hand, Hou argues:

> There is evidence that the prices used by the customs returns in Shanghai followed closely the prices that prevailed in the wholesale market in Shanghai with regard to Chinese imports and exports. Furthermore, there is evidence to discount Condliffe's suspicion that the local divergencies of products and prices would make any index of import or export prices a less meaningful average than is usually the case. Despite serious transportation difficulties, price changes in China followed quite a similar pattern all over the country, at least in the 1930's.[35]

How far Shanghai's prices were representative of China's prices is thus a matter of dispute. Shanghai was by far the largest port. In 1929, for instance, some 43 per cent of China's foreign trade was cleared through it, while the next largest, Darien (LUDA), soon to be lost to the Japanese, accounted for only 10 per cent.[36] It would seem plausible that, whatever the uniformity or otherwise of *prices*, indexes would be affected by the local composition of the trade. Whilst it is likely that the composition of imports would be fairly standard, that of exports would vary - tea through Shanghai, soya beans through Darien, etc. - and this would make the Shanghai export index unrepresentative.

---

[33] Ch'en and Liu, p.319.

[34] Ch'en and Liu, p.324.

[35] Hou, *Foreign Investment*, p.196.

[36] *China Yearbook, 1931-2*, p.243.

Ch'en and Liu were not happy again about either of the weighting systems. They argued that the weighted arithmetic mean of the Shanghai index, like the Fisher formula that Ho used, was not able to move freely from the link index to the fixed base form. As for the Ministry of Industry and Commerce index, although it could "theoretically have its base period changed, there were changes in the fixed weights in the process of compilation. Intertemporal comparison was, therefore, equally unreliable."[37]

POST-WAR STUDIES

Ch'en and Liu are the sole source for what appears to have been the only post-war Chinese attempt at gauging the country's terms of trade. This was carried out by the Customs Administration of the recently established Chinese People's Republic in 1951. The problems they faced were undeniably formidable.

Internally, the inflation that had ravaged the Chinese economy since the late thirties (and had virtually destroyed the credibility and usefulness of foreign trade statistics) and which was, as Walt Rostow notes, "the symbol and cause of so much KMT weakness, was brought under control by March 1950."[38] Externally, the Korean War was producing a boom in world commodity prices.

---

[37] Ch'en and Liu, p.324.

[38] W.W. Rostow, *The Prospects for Communist China* (Camb.,Mass., M.I.T., 1954), p.66. Rostow quotes the following table from R. Hsia (*Price Control in Communist China*, N.Y., Institute of Pacific Relations, 1953, p.81) in support of his dating:

MONTHLY AVERAGE VALUE OF STANDARD COMMODITY UNIT* IN SHANGHAI
(IN YUAN PEOPLE'S CURRENCY) [Renminbi]

June 1949	341	June 1950	5,238
September 1949	793	September 1950	5,036
December 1949	2,861	December 1950	4,982
March 1950	6,229		

*Each commodity unit consists of 1.56 catties of medium grade rice, 1 'chih' (0.4 yard) of cotton fabrics, 1 'liang'

The price problem was, in theory, tackled by using both the new Chinese currency, the 'Renminbi'[39] and the US$ for customs statistics from 1950[40] - a practice not without its irony under the circumstances. This seems to have led to less trouble than might have been supposed. Ch'en and Liu only mention that:

> The quantity index, the price index, and the value index of imports (and exports) were computed in the JMP and the U.S. dollar. Among them, the quantity index computed from U.S. dollar unit price was slightly different from that computed from the JMP unit price. This discrepancy was a result of the fact that the JMP unit price was rounded to the nearest 1,000 yen (*sic*) and the U.S. dollar unit price was rounded to the nearest cent. The index based on the U.S. dollar was therefore more accurate.[41]

Had 'real' US$/Renminbi values been entered in the customs documentation, the indexes would have differed (not merely because of rounding) and the divergences between them would have been indicative of a realistic US$/Renminbi rate, and the discrepancy between that and the official rate. As it is, it seems that Mah Feng-hwa's assumption is correct:

> I have assumed that in the Chinese official reports, the values of Communist China's trade with the Western countries, using Western currencies as units of account,

---

(1.33 ounces) of peanut oil, and 1 catty of coal briquettes.

Inflation is dealt with in more detail in Chapter Six, but it is interesting to note in passing that a prime component of the Communist strategy was an 'Incomes and Prices Policy' (the order is relevant).

[39] Literally, 'People's Currency'. It is abbreviated in the Wade-Giles transliteration as JMP (Jen-min-pi), and its unit, by which it is often called, is the 'Yuan' - not, as the translation of Ch'en and Liu has it, 'Yen'. That is, of course, Japanese. Both Chinese and Japanese use the same original character, although the modern simplifications are slightly different. The Japanese 'ON' (or Chinese) reading for the character is, in fact, EN; 'Yen' being presumably an Anglicisation of the Japanisation of the Chinese.

[40] Ch'en and Liu, p.326.

[41] Ch'en and Liu, p.327.

Fig.1-4 CHINESE 1951 TRADE INDEXES: COMPUTATION SHEETS

Table 22

Computation Table for the Indices of Major Imports and Exports (1) Imports

Commodities	Unit of quantity	1950 Quantity q_0 (1)	1950 Value (JMP) P_0q_0 (2)	1950 Unit price (JMP) P_0 (3)	1950 Value (US $) P_0q_0 (4)	1950 Unit price (US $) P_0 (5)	1951 Quantity q_1 (6)	1951 Value (JMP) P_1q_1 (7)	1951 Unit price (JMP) P_1 (8)	1951 Value (US $) P_1q_1 (9)	1951 Unit price (US $) P_1 (10)	P_0q_1 JMP (3)x(6)	P_0q_1 US $ (5)x(6)	Individual quantity index $\frac{q_1}{q_0}$ (6)/(1)	Individual price index $\frac{P_1}{P_0}$ JMP (8)/(3)	Individual price index $\frac{P_1}{P_0}$ US $ (10)/(5)	Individual value index $\frac{P_1q_1}{P_0q_0}$ JMP (7)/(2)	Individual value index $\frac{P_1q_1}{P_0q_0}$ US $ (9)/(4)
76																		
118 Commodities			1,000 Yen	1,000 Yen	$	$		1,000 Yen	1,000 Yen	$	$	1,000 Yen	$					
Total																		
% of total imports			81.01 79.58		80.97 79.66			76.22 73.61		76.13 73.35								

exports

figures to 1,000 Yuan

export coverage

	Import quantity index	Import price index	Import value index
JMP	$\frac{\Sigma P_0q_1}{\Sigma P_0q_0}$	$\frac{\Sigma P_1q_1}{\Sigma P_0q_1}$	$\frac{\Sigma P_1q_1}{\Sigma P_0q_0}$
US $	$\frac{\Sigma P_0q_1}{\Sigma P_0q_0}$	$\frac{\Sigma P_1q_1}{\Sigma P_0q_1}$	$\frac{\Sigma P_1q_1}{\Sigma P_0q_0}$

Source: Ch'en and Liu, p.328.

> are all converted into dollar figures by the Chinese Maritime Customs. These dollar values of China's trade with Western countries, and the ruble values of its trade with the [Soviet] bloc countries, are then translated into yuan figures at the official (and disequilibrium) yuan-dollar and "trade ruble"-yuan exchange rates respectively. A global yuan figure will then be released as the official foreign trade volume.[42]

Mah concludes that the official rate overvalues the Renminbi against the dollar.[43] So, as described by Ch'en and Liu, the dual currency computation seems to have served no useful purpose.[44]

The problems of temporal comparison were found insoluble:

> As the customs statistics of 1949 were incomplete because not all regions were liberated at the same time and there was no unified currency, 1949 could not be used as the base period. In the preliberation 1932-1948 period, customs statistics did not include the customs stations in the northeast [Manchuria] and thus were not comparable with postliberation data. Before 1931, although the northeastern region was included, customs statistics were also not suitable for comparison because it was too far back and the FOB price was calculated differently. Therefore, 1950 was finally chosen as the base period.[45]

In fact, it is unlikely that the past was quite so much a different country. Although the Manchurian (Northeastern) Custom Houses were officially closed by the Chinese Government in September 1932,[46] they must, of course, have continued to have functioned for 'The State of

---

[42] Mah Feng-hwa, *The Foreign Trade of Mainland China* (Edinburgh, 1972), pp.88-89. cf. Ch'en and Liu, p.277, on recording prices in customs statistics.

[43] Mah Feng-hwa, *Foreign Trade*, pp.89-90.

[44] The question is, perhaps, where the conversion into and out of Renminbi takes place. If it happens at commodity level (as Ch'en and Liu imply on p.277), then there should be meaningful differences between the indexes; if it takes place at the end of the process, then the indexes will, by definition, correspond to each other.

[45] Ch'en and Liu, p.326.

[46] Customs Notification no.1241, Shanghai, September 23, 1932; text in *China Yearbook*, 1939, pp.102-103.

Manchukuo', and unless the format was completely incompatible, or the records lost, it is difficult to see why they could not be re-incorporated to some degree, and with due allowance for double entry (Manchuria was, for customs purposes, considered foreign).[47] However, this means that unless the problem of temporal comparability has been solved since, any foreign trade indexes that might have been constructed in the Chinese People's Republic have no link with the past - an essential feature of the indexes calculated in this study.

Ch'en and Liu this time approve of the computational formulae which are (like mine) of the Paasche form:-

$$\text{Value Index} = \frac{\Sigma PcQc}{\Sigma PoQo}$$

$$\text{Price Index} = \frac{\Sigma PcQc}{\Sigma PoQc}$$

$$\text{Quantity Index} = \frac{\Sigma PoQc}{\Sigma PoQo}$$

where P and Q signify unit value and quantity, respectively, and the subscripts o and c, base year and current year, respectively. They claim that:

> Where these formulae were used, the following relation held among the three indices:
>
> Price Index x Quantity Index = Value Index[48]

---

[47] Chinese trade statistics are distorted by "Coastwise" trade anyway: what is 'exported' at one port is often 'imported' at another. The surprising degree of identity between import and export commodities in Appendix J illustrates this. The pre-war Chinese indexes do not seem to have faced up to this problem.

[48] Ch'en and Liu, p.326.

As the formulae stand, that is not so. The value index should express total import or export value relatives, not just sample value relatives, and the quantity index must be similarly corrected for inconsistent coverage, otherwise they are merely measuring the movements of the sample. The position of the price index is somewhat different, and this is discussed in Chapter Three under "Adjustment for Incomplete Coverage". If the coverage were the same every year its incompleteness would not, of course, affect the value and quantity indexes, but since the chances of it not fluctuating year-by-year are very slim, this must be taken into account. Fortunately, this is a simple matter since:

$$\text{Coverage} = \frac{\text{Value of sample at current prices}}{\text{Value of trade}^* \text{ at current prices}}$$

*i.e., imports or exports, as appropriate

or, in the abbreviations used in this study,

$$\text{COV} = \frac{\Sigma\ PcQc}{VAL}$$

Thus, the quantity index is corrected by dividing both numerator and denominator by the appropriate coverage. Thus, (where subscripts o and c again denote base and current year respectively):

$$QI = \frac{\Sigma\ PoQc\ .\ \frac{VALc}{\Sigma PcQc}}{\Sigma PoQo\ .\ \frac{VALo}{\Sigma PoQo}}$$

$$= \frac{\Sigma PoQc\ .\ VALc}{\Sigma PcQc\ .\ VALo}$$

When this is multiplied by the Price Index,

$$QI \times PI = \frac{\Sigma PoQc \,.\, VALc}{\Sigma PcQc \,.\, VALo} \cdot \frac{\Sigma PcQc}{\Sigma PoQc}$$

$$= \frac{VALc}{VALo}$$

which is the true Value Index. This can be re-written:-

$$VI = \frac{\frac{\Sigma PcQc}{COVc}}{\frac{\Sigma PoQo}{COVo}}$$

$$= \frac{\Sigma PcQc}{\Sigma PoQo} \cdot \frac{COVo}{COVc}$$

the first part of which (the sample VI) is Ch'en and Liu's 'Value Index'.

The data was compiled in the usual way:

> Only representative commodities were included in the index.[49] Because new tariffs were adopted in 1951, there were major changes in the classification of commodities. The selection of representative commodities for the index was based on the major imports and exports in 1951. The selection criteria were as follows: (1) commodities whose classifications were comparable over time; (2) commodities that had fixed units of quantity; (3) commodities whose values were high.
>
> In all, 67 exports and 118 imports were selected.

---

[49] Presumably this means that commodities with abnormal fluctuations in unit value were excluded.

> Those imports and exports whose units of quantity changed over the years, such as silk pongee and silk goods, were converted to the same units to facilitate comparison. If fixed units of quantity were not available or if conversions were not possible, these commodities were excluded. The selected 67 exports represented 81% of the total export value in 1950 and 76% in 1951. There were great changes in the 1951 tariff classification for imports. Frequent discrepancies in classification made commodity selections more difficult. The selected 118 imports represented 79% of the total import value in 1950, and 73% in 1951. Judging from these percentages, the index was still quite representative.[50]

Again, they do not say what the entry qualification was, but since it had virtually the same number of export commodities as the pre-war Shanghai index, it would have presumably been somewhat the same in real terms. It is interesting to note, however, the much larger number of import commodities which exceed this value - from 82 in the Shanghai index to 118. This may merely be the result of changes in classification, but it is more likely that it indicates, in some way, changes in terms of trade and composition.

Regrettably, this index construction was suspended after a year: "The Customs Administration expanded its statistical coverage from 1952 on and was too busy to compile indices."[51] Ch'en and Liu assure us that the statistical documentation continued and was getting better:

> But the customs statistical records for various years were complete. And since 1953, quantity and value data for each and every commodity in the customs statistics have been available. Thus favourable conditions exist for the compilation of a more accurate foreign trade index based on all commodities.[52]

---

[50] Ch'en and Liu, p.325. Just how representative would depend on the correspondence between the sample composition and the composition of the trade.

[51] Ch'en and Liu, p.327. To cap it all, they do not even tell us what the indexes revealed.

[52] Ch'en and Liu, pp.327-330.

That was some thirty years ago and the Customs Administration (or State Statistical Bureau) no doubt has found time since then to recommence compilation of foreign trade indexes. However, as far as one can tell, such indexes, if they exist, have not been published.[53]

STATISTICS OF THE CHINESE PEOPLE'S REPUBLIC

The paucity of consistent, compatible and comprehensive statistics published by the Chinese People's Republic has long vexed foreign students[54] and, one might surmise, many Chinese themselves. The situation was rather better in the 1950's than later, but even then, as Walter Galenson put it in the forward to Chen Nai-ruenn's authoritative compendium, *Chinese Economic Statistics*: "...apart from one fairly slender statistical handbook, *Ten Great Years*, published in 1959, the data [that Dr. Chen collected] have appeared in a great variety of books, journals and newspapers.[55] The handbook, *Ten Great Years*, itself gave few details of foreign trade: "Official statistical information on Chinese foreign trade is very scanty. *Ten Great Years* gives figures on the total combined volume of import and export trade in yuan for 1950 through 1958 without detailed breakdowns." Chen continues by describing his other sources:

---

[53] It is quite possible that a careful scrutiny of the mountains of fragmentary data that is available (see below) would reveal allusions to such indexes and even some useful shards. This sort of archaeology is, of course, the method of much quantitative research on China. However, in view of the specific alternatives open to foreign trade research, this did not seem a profitable strategy.

[54] See, for instance, Alexander Eckstein, *Communist China's Economic Growth and Trade* (N.Y., McGraw-Hill, 1966), pp.91-92. Robert Blum, in the forward to the same volume (p.viii), complains: "Statistical information is often unavailable or slanted and unsatisfactory for analytical purposes."

[55] Published by Edinburgh University Press, 1966 (p.v).

> In 1956, in the Chinese Export-Commodity Fair held at Canton, there was an exhibit of some figures on import and export trade indices[57] and on the percentage distribution of imports and exports in the total volume of Chinese foreign trade for 1950 through 1955. These figures were published in a Japanese periodical in 1957 and have become the chief source used for estimating the volume of import and export trade for those years.
>
> .....
>
> There are some other official data on foreign trade which can be found in print. Included are:
>
> 1. Figures on the percentage distribution of exports among industrial and mining products, processed products of agriculture and subsidiary occupations, and products of agriculture and subsidiary occupations for 1950-58.*
>
> 2. Figures on the percentage distribution of imports between producer and consumer goods for 1950-58.*
>
> 3. Figures on the percentage distribution of imports and exports by customs house for 1952-54.*
>
> 4. Figures on the export of food grains and soybeans in tons for 1953-57.*
>
> 5. Figures on the import of cotton in tons for 1949-56.* [58]
>
> [*references to Chen's tables omitted]

Scarcely a great haul, but the situation became even worse after 1960,[59] when there was a further severe curtailment of published statistics. A recent and authoritative comment by Professor K. Walker and Dr. C. Howe

---

[57] These are no more than value indexes.

[58] Chen Nai-ruenn, [*Ten Great Years*], p.79. All these sources together only yield seven tables, covering three pages out of some 370.

[59] Following the inflated statistics of the Great Leap Forward and the subsequent swing to the right. cf. Chen, [*Ten Great Years*], p.vii. For a balanced assessment of Chinese (agricultural) statistics, see Jack Gray's comments in Jack Gray and Patrick Cavendish, *Chinese Communism in Crisis* (London, Pall Mall, 1968), p.28. For a salutory reminder that Chinese peasants are not alone in making a mess of statistics, consider this comment by some British Government statisticians:

> "From the time when figures are first entered on a form in a local Government or business office, until the statistics are published in statistical volumes and reports, data processing is highly sensitive to many

perhaps best sums up the current (late seventies) position:

> Between 1949 and 1960, the Chinese published a vast mass of economic materials. Newspapers, for example, are full of national and local reports produced by planning and other economics agencies. (About seventy daily newspapers are available in the West for this period.) Also, the major planning agencies, Ministries, educational institutions, etc. provided their own journals and monographs. After 1960, there was a drastic reduction in the range of materials published; restrictions were placed on export; and the statistical and qualitative content of publications declined sharply. All this reflected the downturn in China's economy that occurred at this time. By the mid 1960s, publications were picking up again, but during the Cultural Revolution the last extant economics journal (*Economic Research*) disappeared.[60]

> mundane sources of error - misunderstood instructions of forms, misreading of hastily written figures, misplacing a decimal point, losing one's place in copying, accidental 'corruption' of data in computer files, or printing errors. It is quite possible for a mistake anywhere along the line to go undetected and work its way through into published figures.
>
> .....
>
> "One example was when, following the accidental omission of a zero by an Olivetti employee reporting the firm's exports, an underestimate of national exports...generated a phoney balance of payments crisis. Another was when the trade figures went haywire over a period of many months because a clerk at one point copied two lines of figures onto a coding sheet in the wrong order."

Government Statisticians' Collective, "How Official Statistics are Produced: Views from the Inside", Chapter 10 of John Irvine, Ian Miles and Jeff Evans, eds., *Demystifying Social Statistics* (London, Pluto, 1979), p.144.

[60] K.R. Walker and C.B. Howe, End of Grant Report to the Social Science Research Council, HR 2916, London, September 1977. The grant was for research for *A Documentary Analysis of the Chinese Economy, 1949-1965*, scheduled (then) to be published by Cambridge University Press, October 1980. See also Dr. Howe's comment on the Chinese statistical network in his article "Economic Trends and Policies", *The Political Quarterly*, Vol.45, No.1, January-March 1974, pp.13-14.

Since the Cultural Revolution the flow of publications has resumed, but when this study commenced there were no suitable detailed statistics available, there was no likelihood of them becoming available, and as far as I know, up to the time of writing no such statistics have appeared.[61]

The Chinese, traditionally, have not been very forthcoming about their affairs[62] - had not Sun Tzu stressed the importance of secrecy? "All warfare is based on deception. Therefore, when capable, feign incapacity; when active, inactivity. When near, make it appear that you are far away; when far away, that you are near."[63] In respect of foreign trade, the experience of the guerrilla days, and the wiles it taught, must have been reinforced by the imposition of an economic embargo by the West;[64] and embargoes, as the experience of Rhodesia showed, are meant to be broken - surreptitiously.[65] Moreover, it ill behoves an Englishman to be

---

[61] According to newspaper reports, one consequence of China joining the International Monetary Fund would be that she would be required to publish internationally-compatible trade statistics.

[62] See, for instance, Arthur Waley on the 'Han-chien', the 'Chinese traitors', who gave information to the foreigner during the Opium War (Arthur Waley, *The Opium War through Chinese Eyes*, London, Allen & Unwin, 1958, pp.222-244).

[63] Sun Tzu, *The Art of War*, translated with an introduction by Samuel B. Griffith (Oxford University, Clarendon Press, 1963), p.66. See also Stuart Schram, *Mao Tse-tung* (Harmondsworth, Penguin, 1966), pp.158-159, for Sun Tzu's influence on Mao. General Griffith's *The Chinese People's Liberation Army* (London, Weidenfeld and Nicolson, 1967) also brings out this point.

[64] Chapter Two looks at unreported British trade via Hong Kong, some of which in the early fifties may well have been in contravention of the embargo. It is interesting to note that Emile Savundra, the Sri Lankan 'financier' who gained some notoriety in Britain in the sixties, first cut his teeth on this sort of 'China Trade'.

[65] Ankie M.M. Hoogvelt and David Child have suggested that sanctions forced Rhodesia into 'self-reliance' and in so doing restructured the economy in such a way that fostered development. ("Rhodesia: Economic Blockade and Development", *Monthly Review*, Vol.25, No.5, October 1973, pp.41-50.

too complacently critical of other's secrecy.[66] Nevertheless, despite the sympathy one might have with a Chinese Revolution struggling to survive in a hostile world (this goes back to Sun Yat-sen), the unnecessary and extravagant suppression of information by the Chinese Government should be strongly criticised. Since concealment is the shield of the weak, it should be laid aside when the situation changes or else it becomes a hindrance. It is clear that the time is long since past when this should have been done.[67]

---

[66] Two recent newspaper reports bring this home. Firstly, a British publisher, utilising the American 'Freedom of Information Act', has secured a copy of a Defence Intelligence Agency manual, hitherto classified, on the Chinese armed forces. He has published it in Britain and has exported copies to the United States. Not merely is the information unavailable in China, but had it been compiled by a British intelligence agency, it would have been kept under wraps by the Official Secrets Act (*The Guardian*, 22nd March, 1980, p.3). Secondly, Frances Morrell, Political Adviser to Tony Benn for five years, recalled that she and the other PA, Francis Cripps, once wrote a paper for the Minister which, when it was re-typed as an official departmental brief, was classified too secret for her to have access to it (*The Guardian*, 25th March, 1980, p.8).

[67] A point that Mark Elvin makes, although in doing so he exaggerates the threat to 'the Chinese Communist regime':

> "The technological creativity of the Chinese people has deep historical roots, and slumbered for a while mostly for practical considerations. As it slowly re-awakens, we may expect it to astonish us. Chinese agriculture, however, can only grow fast by using a vast and ever increasing quantity of industrial outputs, and can therefore never be a leading sector. If industry is to advance rapidly enough to let agriculture, and the economy as a whole, break out once and for all from the old high-level trap, it almost certainly needs to enter the international market to a far greater extent than hitherto. It is capable of doing this with an effectiveness that will come as a shock, if the decision to do so is taken. The consequence, however, will be a disruption of the control over information and thought which is essential to the survival of the Chinese Communist regime. Whether this latent contradiction is potentially lethal or merely troublesome is perhaps the riddle of the longer-term future of the country.
>
> "*Felix qui potuit rerum cognoscere causas...*"

Mark Elvin, *The Pattern of the Chinese Past* (London, Eyre Methuen, 1973), p.319.

ALTERNATIVE STATISTICAL SOURCES

With foreign trade research the solution to the dearth of adequate Chinese statistics is obvious - one turns to the statistics (usually, but not necessarily, customs returns) of her trading partners. This was the course pursued by Mah Feng-hwa in his pioneering study, *The Foreign Trade of Mainland China*.[68] He was primarily interested in Sino-Soviet trade and so his main source of statistical information was Soviet trade returns supplemented, for comparative purposes, by data compiled by the United States Department of Commerce.[69]

Mah examined the question of price discrimination in Sino-Soviet trade and, *inter alia*, constructed unit value (and terms of trade) indexes for the period straddling the Sino-Soviet split - 1955 (when detailed Soviet data became available) to 1964. He used a sample of forty-three imports[70] and fifty-five exports which, in his base year, 1955, gave coverage of 26 per cent for imports and 77 per cent for exports.[71] His computation formula is:

---

[68] Mah Feng-hwa, *The Foreign Trade of Mainland China* (Edinburgh University Press, 1972). This is based on an earlier study for the Rand Corporation - *Communist China's Foreign Trade: Price Structure and Behavior, 1955-1959* (RM-3825-RC, Santa Monica, California, Rand Corporation, October 1963). (The change from 'Communist China' to 'Mainland China' is perhaps significant.)

[69] Mah (1972), p.viii, p.96 and Appendix G, pp.208-209. The USDC statistics (International Economic Analysis Division, *Free World Exports to (Imports from) Communist Areas in Eastern Europe and Asia by Commodity Groups. Country-by-Commodity Series*) were not available to me in Sheffield.

[70] The source is Soviet but the direction of trade is Chinese; that is, 'imports' refers to commodities imported by China from the Soviet Union. Mah uses four samples in all, A, A', B and C, but it is the main sample, A, that he uses for the unit value indexes.

[71] Mah (1972), pp.111-112.

$$\text{Price Index} = \frac{\sum_n \left[\frac{P_t^n}{P_{55}^n} \cdot V_{55}^n\right]}{\sum_n V_{55}^n}$$

where P_t^n and P_{55}^n are the unit values of commodity n for current year t and base year 1955, respectively, and V_{55}^n is the base year value of the commodity. Re-written in the simplified convention used in this study this becomes: (since value = price x quantity)

$$PI = \frac{\Sigma \left[\frac{Pc}{Po} \cdot PoQo\right]}{\Sigma PoQo}$$

$$= \frac{\Sigma PcQo}{\Sigma PoQo}$$

which is the Laspeyres formula.

LIMITATIONS OF INTERNATIONAL STATISTICS

The first place to look for statistics with which to construct unit value indexes for China's trade as a whole is clearly 'international' series compiled by various (usually supra-national) agencies. Unfortunately, these have their drawbacks. The USDC data that Mah had recourse to, apart from other considerations such as level of detail or period covered, was not practically available - it will be appreciated that data of requisite size and complexity needs to be readily and physically accessible for a long period of time. United Nations statistics are accessible but are

not given in sufficient detail. Statistics compiled by the Organisation for Economic Cooperation and Development (OECD) are presented in adequate detail from the early sixties, but they concentrate on the trade of member states, thus excluding many of China's most important trading partners: Japan does not appear in the statistics until 1964, Australia until 1972, and as late as 1977 (the most recent year published) Hong Kong was still omitted. Nevertheless, it is probable that the OECD statistics would furnish an adequate base for a reasonably comprehensive investigation of the price movement of China's foreign trade. Thus, it seemed that what was most needed was a bridge between the pre-war indexes and the appearance of suitable OECD statistics in the mid-sixties, and it was considered that British trade returns offered the most suitable source for this.

ADVANTAGES OF THE BRITISH DATA

The British trade returns offer several attractions. Firstly, there is an aptness about using them.[72] The famous Prebisch report, *Relative Prices of Exports and Imports of Underdeveloped Countries*,[73] used indexes that were based, until 1929, on British data.[74] As Theodore

---

[72]Any idea of using prices rather than unit values from Customs records was soon dismissed. Apart from the problem of continuity and coverage, they would not lead to reconciliation with the OECD statistics. cf. C.P.K. Kindleberger, *The Terms of Trade, A European Case Study* (New York, M.I.T./John Wiley, 1956), pp.317-318.

[73]New York, United Nations, 1949.

[74]Series A (1876-1929) is based on a League of Nations study, *Industrialization and Foreign Trade* (New York, 1945). This used a combination of a British wholesale price index for primary products and data compiled by Werner Schlote (*Entwicklung und Strukturwandlungen des englischen Aussenhandels von 1700 bis sur Gegenwart*, Jena, 1938, translated by W.O. Henderson and W.H. Chaloner as *British Overseas Trade from 1700 to the 1930's*, Oxford, Blackwell, 1952). See also Albert H. Imlah, "The Terms of Trade of the United Kingdom 1798-1913", *Journal of Economic History*, Vol.10, No.2, November 1950, pp.170-194. Imlah had previously covered the first part of the period in an earlier article: "Real Values in British Foreign Trade, 1798-1853", *Journal of Economic History*, Vol.8, November 1948, pp.133-152. Taussig covered the period 1880-1913 in indexes compiled by A.G. Silverman (F.W. Taussig, *International Trade*, New York, Macmillan, 1927, Appendix I, pp.411-413).

Morgan commented: "British data have considerable attractions for this purpose [he was referring to the League of Nations and U.N. studies]; they are available over a long period; Britain has had a large share of world trade; and British imports have had the convenience of being mainly primary products, its exports mainly manufactured goods."[75]

Secondly, the British statistics are reasonably accessible.[76] Thirdly, using single-country statistics avoids the problems of currency conversion and reconciling different national commodity classification systems.[77] Fourthly, although Britain has long ceased to be the power on the China coast, and in Britain itself the old expression "Not for all the tea in China" is perhaps no longer used,[78] the old relationship has left its heritage; Hong Kong, of course, but also a certain, often latent and perhaps dying, consciousness of the other. A Chinese slogan of the

---

[75] Theodore Morgan, "Long-Run Terms of Trade", pp.1-2.

[76] Not quite as widely available as one might think. Neither of the university libraries used during this study (Edinburgh and Sheffield) have complete sets. The Sheffield Central Public Library has a better collection, but much of it is stored in a warehouse on the other side of town. This frequently entailed waiting up to a week to check illegibly written figures in my notes.

[77] The advantage of using international statistics (U.N., OECD, etc.) is that the data has usually already been converted into a common currency (US$). In times of rapid fluctuations between currencies the dollar figures may not be quite so firm as they appear, although if the figures are translated on a monthly basis (as presumably they are) the distortions would not be severe. Using British data does not entirely avoid the problems of differing national classifications since serious discontinuities are introduced by British adjustments to new international classification systems (see below). There are also difficulties in reconciling Soviet and U.N. classifications; see, for example, Mah (1972), p.113.

[78] If, in fact, it ever was. I had presumed that the expression was English since I remember my mother using it, but on checking in Partridge (Eric Partridge, *A Dictionary of Slang and Unconventional English*, London, Routledge and Kegan Paul, 1961, Vol.1, p.148) I found that he ascribes its origins to Australia in the 1890's. The reference in that case may not be very apt, but I let it stand because I mean no more than to suggest that the consciousness of China baulked rather larger than actual contact and trade might seem to justify. (cf. Raymond Dawson, *The Chinese Chameleon; An Analysis of European Conceptions of Chinese Civilization*, London, OUP, 1967.)

fifties was 'to catch up with Britain' (in steel production, etc.) within fifteen years, and on the British side the prospects of the China market frequently make banner headlines.

However, the main advantage of British trade statistics is the position that Britain has occupied in the China trade over the period. As Tables 1-4 to 1-9 illustrate, no other country has had such a consistently substantial and balanced share of China's trade. Table 1-4 shows that Britain accounted for some 10 per cent on average of China's trade in the thirties, fell to around 2 per cent during the fifties, when much of China's trade was with the Soviet bloc, and was roughly double that percentage during the sixties. China, of course, occupies a much smaller part of Britain's trade, which in total is much larger than China's, and this leads to problems of visibility in the statistics, which is discussed below. Turning in Table 1-5 to Britain's share of China's trade with the West since 1950, we get a rather enhanced picture of Britain's role. Since Mah has already dealt with Sino-Soviet trade, and we need a Western source to tie in with the OECD statistics, the position of Britain in the context of China's trade with the West is very relevant. Table 1-6 compares Britain's share of China's imports, exports and total trade with that of her principal Western trading partners for seven years covering the period. It can be seen how constant is Britain's share compared with that of the others, and how the share of imports and exports are evenly matched. Finally, and most graphically, Tables 1-7, 1-8 and 1-9 plot the ranks (note, not the shares) of eleven[79] major trading partners in five years over the period. The United States and Japan are dominant before the war but fade in importance in the fifties and, for the United States, the sixties as well; Japan is number one trading partner by the end of the sixties, but it is not until the early seventies, just beyond our period, that there is a revival of United States trade. In counterpoint is the course of Sino-Soviet trade: from eleventh place in 1938 it becomes the leading trading partner through the fifties, and then, after the split, reverts to roughly its former position (tenth in 1967). Hong Kong is a leading partner throughout in terms of total trade, but this is partly due to the high level of exports;

---

[79] Counting Singapore and Malaya/Malaysia as one.

Table 1-4 Sino-British Trade: mutual shares

(1833-1969)

Year	Westwards		Eastwards		Total	
	Britain	China	Britain	China	Britain	China
1833	58.1	xx	10.5	xx	33.3	xx
1867	66.6	xx	41.3	xx	52.8	xx
1905	7.0	0.4[x]	23.5	2.8[x]	17.8	1.5[x]
1930	7.0	0.9	8.2	1.5	7.6	1.1
1931	7.1	0.9	8.3	2.0	7.8	1.2
1932	7.8	0.9	11.2	2.1	9.8	1.3
1933	8.0	xx	11.3	1.2	10.3	xx
1934	9.3	xx	12.0	0.8	10.3	xx
1935	12.5	xx	7.2		11.4	xx
1936	9.2	0.9	11.7	1.2	11.4	xx
1937	9.6	xx	11.7	xx	10.9	xx
1938	7.4	xx	7.9	xx	7.7	xx
1939	8.8	xx	5.8	xx	7.2	xx
1946	na	0.2	4.6	0.8	na	0.5
1947	6.6	0.4	6.9	1.1	6.7	0.7
1948	3.9	0.4	8.0	0.5	5.8	0.5
1949	na	0.2	na	0.1	na	0.1
1950	4.3	0.4	1.2	0.2	2.8	0.3
1951	2.6	0.2	0.7	0.1	1.5	0.2
1952	1.0	0.1	1.2	0.2	1.1	0.1
1953	2.7	0.3	1.4	0.2	2.0	0.3
1954	2.2	0.3	1.5	0.2	1.8	0.3
1955	2.5	0.3	1.4	0.3	1.9	0.3
1956	1.9	0.3	2.0	0.3	1.9	0.3
1957	2.3	0.4	2.3	0.4	2.3	0.4
1958	2.7	0.5	4.2	0.8	3.4	0.4
1959	2.5	0.5	3.4	0.7	2.9	0.6

Table 1-4 Sino-British trade: mutual shares, cont'd.

(%)

Year	Westwards		Eastwards		Total	
	Britain	China	Britain	China	Britain	China
1960	3.5	0.5	4.6	0.9	4.1	0.7
1961	5.9	0.7	2.6	0.3	4.3	0.5
1962	4.4	0.5	2.2	0.2	3.5	0.4
1963	3.4	0.4	3.3	0.3	3.3	0.4
1964	3.9	0.5	3.6	0.4	3.8	0.4
1965	4.4	0.5	4.2	0.5	4.3	0.5
1966	4.4	0.6	4.8	0.6	4.6	0.6
1967	4.4	0.5	5.8	0.7	5.1	0.6
1968	5.2	0.4	4.1	0.5	4.6	0.4
1969	4.5	0.5	7.0	0.8	5.7	0.6

x: 1913

This table merely conflates Tables 1, 5 and 17 of my *Dissertation* (Tim Beal, *A Preliminary Study of Britain's Trade with China since the War*, University of Edinburgh, 1974; hereafter referred to as *Dissertation*) which gives more details, and sources.

xx: indicates where data was not available from those tables.

x : indicates supplementary data from CY1934, p.137.

'Westwards' means trade towards Britain; that is, Britain's imports/ China's exports. The 'Britain' column then shows this trade as a percentage of China's total exports (1969: 4.5%) and the 'China' column as percentage of Britain's total imports (1969: 0.5%), and similarly for Eastwards, and Total,trade.

Table 1-5 Britain's share of China's trade with the West, 1950-69

(%)

Year	Britain's share of China's imports	Britain's share of China's exports	Britain's share of China's trade
1950	2.2	7.1	4.5
1951	1.3	6.8	3.2
1952	4.2	3.1	3.7
1953	4.8	7.7	6.2
1954	6.1	8.5	7.2
1955	6.2	8.1	7.2
1956	6.4	6.0	6.1
1957	6.1	7.5	6.8
1958	10.5	7.9	9.2
1959	10.0	9.0	9.5
1960	12.1	11.1	11.6
1961	4.7	15.4	9.2
1962	3.7	10.7	7.0
1963	4.9	6.9	5.9
1964	4.6	6.6	5.6
1965	5.4	6.0	5.7
1966	6.1	5.8	6.0
1967	6.7	5.6	5.7
1968	4.7	5.7	5.6
1969	8.6	5.9	7.2

Source: Trade with West: *JEC* (1972), p.343.
Trade with Britain: *Annual Statement*

For further details & conversion rates see *Dissertation*, Tables 9,12, 13,14

China's trade 1938-1970:

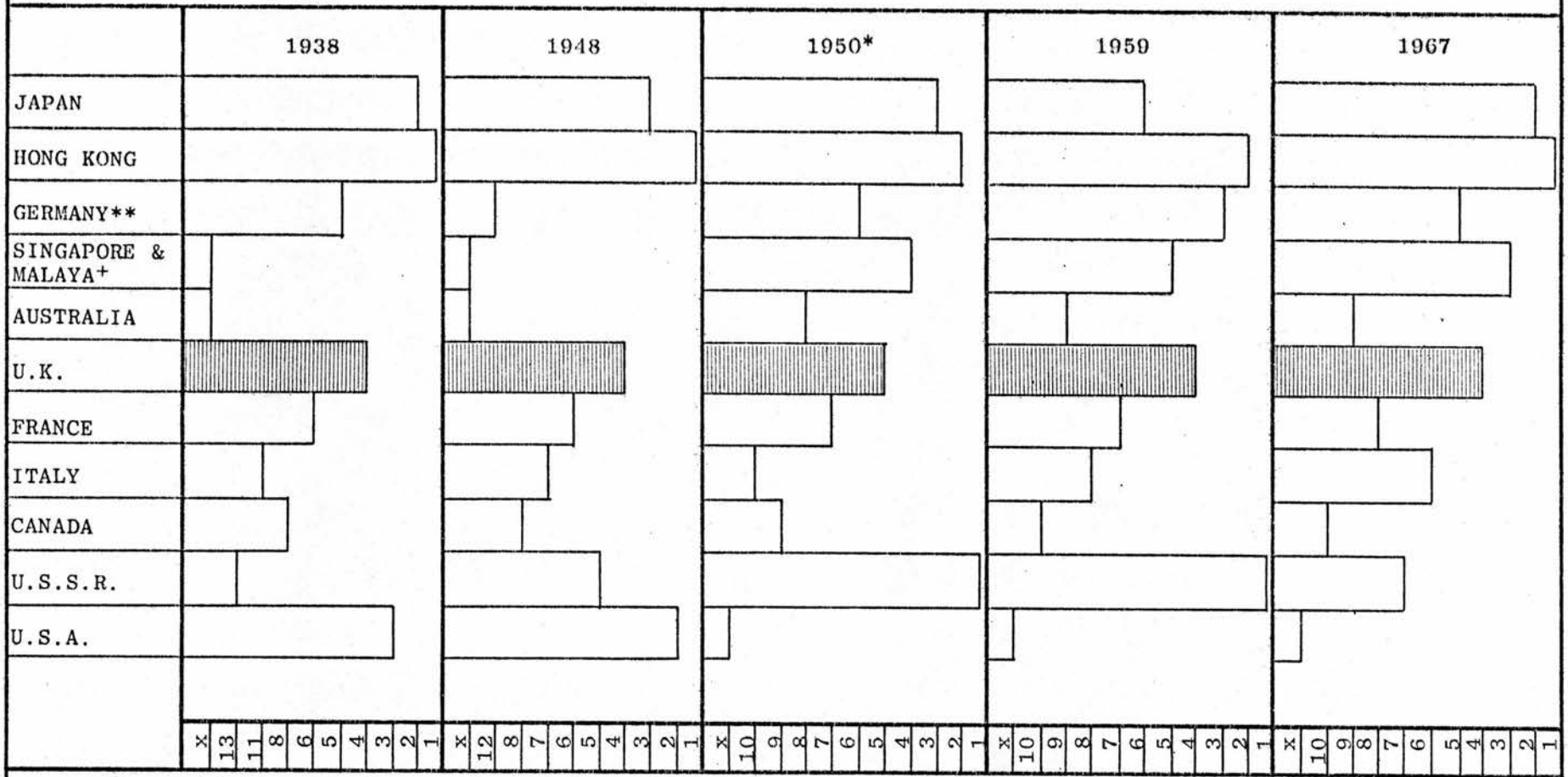
Table 1-6 Shares of principal Western trading partners

Year	BRITAIN		U.S.A.		JAPAN		HONG KONG		W.GERMANY		FRANCE		CANADA	
	M	X	M	X	M	X	M	X	M	X	M	X	M	X
1938	7.9	7.4	17.1	11.6	23.6	15.3	2.4	31.8	12.7[x]	7.4[x]	2.1	2.7	0.9	0.5
T	7.7		14.5		19.7		16.0		10.2		2.3		0.7	
1948	8.1	3.9	48.4	20.1	1.0	5.5	1.5	31.4	0.3	0.2	0.7	0.9	4.6	0.7
T	5.5		32.9		3.4		17.9		0.1		0.8		2.5	
1950	1.4	4.3	0.6	21.5	2.7	5.7	35.1	22.1	1.5	2.2	0.4	0.9	0.3	0.7
T	2.9		11.1		4.4		29.9		1.9		0.7		0.5	
1959	3.4	2.5	-	-	0.2	0.8	1.0	8.2	6.3	3.0	2.0	0.7	0.1	0.2
T	2.9		-		0.5		4.7		4.6		1.3		0.2	
1960	4.8	4.4	-	-	16.2	14.2	0.6	22.6	6.6	4.3	4.7	2.5	8.3	0.9
T	4.6		-		15.2		12.1		5.4		3.6		4.7	
1967	5.8	4.4	-	-	15.7	14.4	0.4	21.2	11.3	4.1	5.1	2.6	4.6	0.1
T	5.1		-		15.0		10.9		7.7		3.8		2.9	
1970	5.0	3.8	-	-	27.9	12.0	0.5	22.0	7.8	4.0	3.8	3.3	6.6	1.0
T	4.4		-		20.0		11.2		5.9		3.5		3.8	

x: pre-war Germany M: China's imports X: China's exports T: China's total trade

Source: *Dissertation*, Tables 2,6,23,24 and 25.

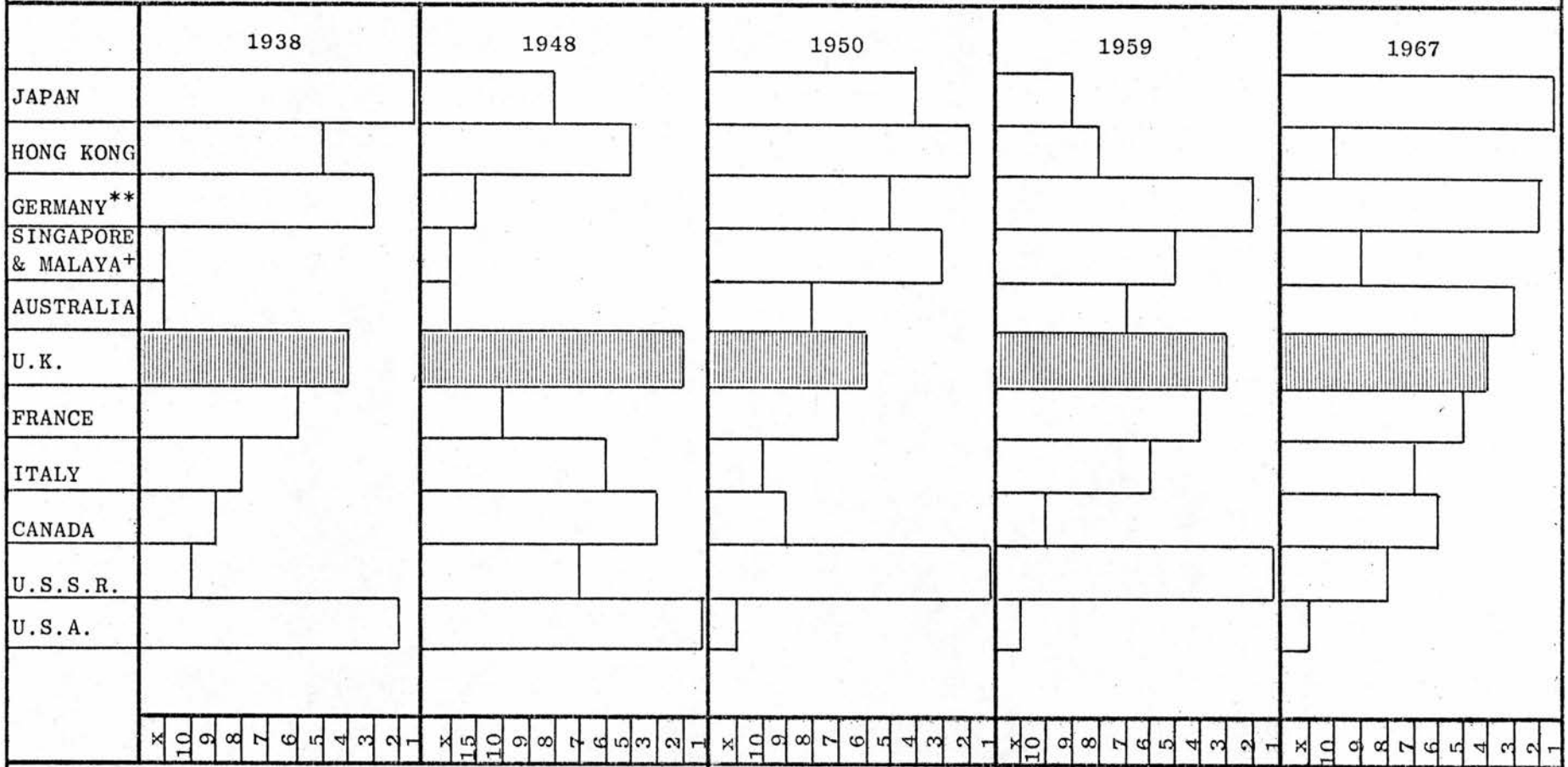
Table 1-7 China's trading partners by rank: Exports



x : Trade negligible or nil. **Apart from 1938, West Germany. +Singapore and Malaya/Malaysia
*Hsin Ying (*The Foreign Trade of Communist China*, Union Research Institute, Hong Kong, 1954) has U.S. continuing at high level into 1950 (cf. *Dissertation*, Table 19) but Mah has been followed here.

Sources: as Table 1-8.

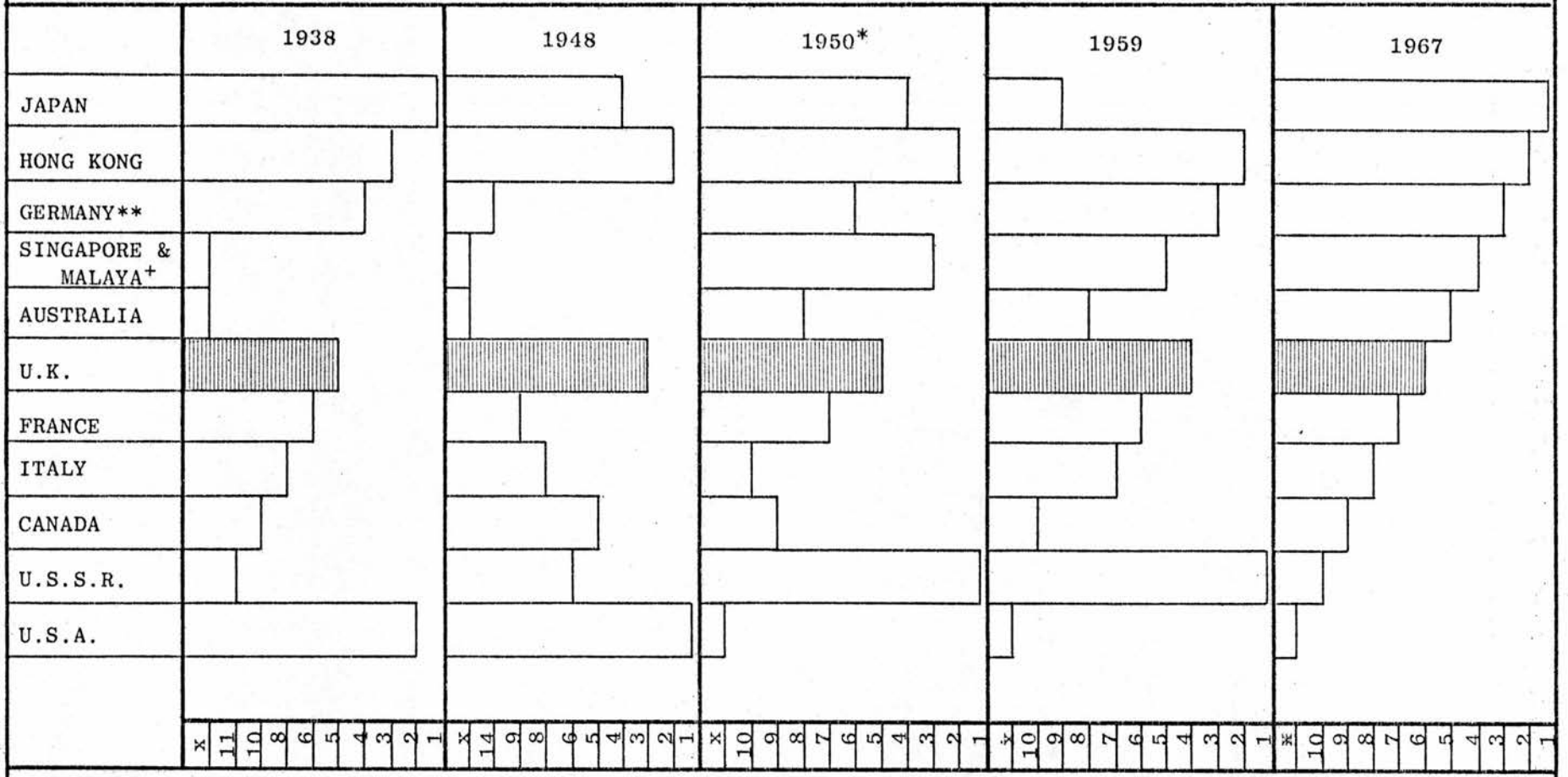
Table 1-8 China's trading partners by rank: Imports



x: trade negligible or nil **Apart from 1938, West Germany +Singapore and Malaya/Malaysia

Sources: Calculated from, 1938 & 1948: United Nations, *Yearbook of International Trade Statistics*, 1951, p.56 (see also Tables 2-9, 2-10)
1950,59,67: Mah (1942), pp.22-23.

Table 1-9 China's trading partners by rank: total trade



Notes and Sources: As Table 1-8.

*Hsin Ying (*The Foreign Trade of Communist China*, Hong Kong, Union Research Institute, 1954) has U.S. continuing at high level into 1950 (cf.*Dissertation*,Table 19) but Mah has been followed here.

by 1959 Hong Kong's trading role has changed and her exports to China have dwindled away (see Chapter Two). A similar disparity between imports and exports is evident in the trade of Canada and Australia, though this time it is exports of grain which produce the imbalance. Surprisingly, exports of grain have featured strongly in France's China trade, though that does affect the trade balance very much. Neither France nor Italy, in these years at least, have as large a share as Britain, and two countries which do at times have a larger share - Singapore/Malaya and Germany - at other times are quite insignificant. Moreover, they are, of course, not really two countries at all; by 1967 Singapore and Malaysia had split up (again), while 'Germany' refers, in the pre-war statistics, to the Third Reich whilst these post-war figures only cover West Germany. So it is clear that if any one country is going to present a picture of China's trade which, if not necessarily 'typical' or 'representative', is at least balanced and stable - a basis for cautious extrapolation - then it is Britain.

However, if the British trade is to serve as a base, it is imperative that the data be meticulously arranged and the indexes rigourously constructed in such a way that its components and internal dynamics can be identified. Thus, much trouble is taken to structure the data processing and index construction so that, as far as possible, comparability over time is achieved, both for the total trade and its constituent parts, either particular major commodities or standard commodity groups. Moreover, all commodities are clustered, not without difficulty, into the most recent international classification so they can be slotted into current statistics, be they British or international (U.N., OECD).

PERIOD EXAMINED

The actual starting and end points of the study were largely decided by the format of the data. Before 1962 British annual trade statistics were grouped in four- or five-year periods, so the thirties can be covered in two segments, 1935-9 and 1930-4. Although it was tempting to go back before the Depression, say to 1925-9, a stop had to be made somewhere and it seemed that starting in 1930 would give sufficient

Table 1-10 Indexes of China's Terms of Trade 1867-1969

AUTHOR		HO (NANKAI)		HOU	NATIONAL TARIFF COMMISSION	MINISTRY OF INDUSTRY & COMMERCE	PRC CUSTOMS ADMIN.	MAH	BEAL		
INDEX(ES)		Ho 30	Ho 37	Hou	Young	-	-	Mah	Fisher 13	Fisher 25	TTI-21
PERIOD COVERED		1867-1928	1867-1936	1867-1936	1925-1936	1912-1927	1950-51	1955-64	1936-41	1925-37	1930-69
SCOPE		Rest of World		R.of W.	R.of W.	R.of W.	R.of W.	USSR	R.of W.	R.of W.	Britain
NOC	X	?		Revision of Ho	66	76	67	55	23	40	66
	M	?			82	72	118	43	13	39	517
COVERAGE	X	91 (aav)			not applicable	63(aav)	81-76	77 (1955)	54(aav)	56(aav)	78(aav)
	M	83 (aav)				76(aav)	79-73	26 (1955)	25(aav)	37(aav)	76(aav)
Source		Chinese Customs		Chinese Customs	Shanghai prices	Chinese Customs	Chinese Customs	Soviet Customs	Chinese Customs	Chinese Customs	British Customs

R. of W. = Rest of World

linkage with the pre-war indexes. On the other end of the period there was a further, albeit slight, change in classification in 1970, so 1969 seemed a convenient and suitable year to stop. Furthermore, the seventies ushered in great changes in China's foreign trade - the American rapprochement, oil, etc.; 1969 had a very strong claim to be considered the end of an era.

Between the beginning and the end the War intervened and it was necessary to decide what to do about it. It was decided to exclude the period 1940-45 - Britain's War (not contemporaneous with China's War which started, perhaps, in 1931, certainly in 1937, and continued in a sense up to 1949). Flying silk (solely for parachutes it was claimed) and metals 'over the Hump' from Free China to India, or transporting it by road to the Soviet Union, carriage by the Northwest Transportation Office and its 1,000 rubber-tyred carts,[80] was magnificent, was indeed war, but was scarcely trade. Even the data on the edges, 1939 and 1946, can be very suspect and the indexes for those years should be treated with some scepticism.

THE CHINA TRADE IN BRITISH STATISTICS

As Table 1-4 indicated, trade with China has occupied but a small share of Britain's foreign trade over the period and it is to be expected that any attempt to compile adequate data will face serious problems of visibility. Moreover, the statistics are naturally reported from the perspective of Britain. Thus it is rather like looking at a very small, moving, object through the wrong end of a telescope, a problem exacerbated, to continue the metaphor, by the movement of the telescope itself. I have not come across any other attempt to focus on trade with any particular country in the detail needed for the construction of unit value indexes. The reason for this is obvious. Virtually all countries except China, and certainly all major ones, issue trade statistics. It

---

[80] *China Handbook*, pp.532-535.

is thus only with attempting to determine China's terms of trade that the problem is likely to rise. The obstacles tackled (I hope successfully) in this study are often specific to it, and so both the terrain and the route need to be mapped out in some detail. The rest of this chapter briefly describes the terrain, the British trade returns. Chapter Two illustrates various aspects of it (and trade data in general) in examining the question of indirect trade through Hong Kong, while the final chapter in this part returns to the other problems of methodology and ends with a detailed annual synopsis of the sample, its coverage, composition, etc.

THE ANNUAL STATEMENT

The principal source of data used in this study is *The Annual Statement of Trade of the United Kingdom.*[81] This is, of course, not the only published source of British foreign trade statistics (there are, for instance, monthly figures), but it is the most detailed and, for the present purposes, the most appropriate one. Although it is relatively detailed, it is, of course, merely a synopsis of the primary data collected and collated by the Statistical Office of Customs and Excise; that is, not all commodities are given for all countries.

The Annual Statement of Trade is published in four volumes (with an occasional supplemental volume). Volume I gives aggregate and summary tables. Volume II (for imports and re-exports) and Volume III (for exports) give figures by commodity, with details for the principal countries involved in that particular item of trade. Volume IV gives details by country, itemising or aggregating the principal commodities traded. It

---

[81] Statistical Office of Customs and Excise, *Annual Statement of the Trade of the United Kingdom.* The title of this publication varies slightly over the years, and is hereafter referred to merely as the *Annual Statement*. Similarly, there are changes in the introduction over the period. Where these changes are substantive, the year and page number is quoted (the introduction is common to all volumes). In other cases, where a change is merely one of wording, or the reference is general, the specific details are omitted.

will be obvious that, because of their different purposes, the information given in Volumes II and III does not interlock with that in Volume IV; and this is principally because Volume IV often aggregates commodities in a way that is not strictly comparable with the by-commodity tables of Volumes II and III. For example, Volume IV reports that in 1939 Britain exported to China ("exclusive of Hong Kong, Macao, Manchuria and Leased Territories"; the elasticity of the definition of 'China' is a problem which will be discussed in Chapter Two) £5,469 worth of "Brass and alloys of copper, other than nickel alloys". Table 1-11 illustrates how this appears in Volume III. Thus we have 'lost' some £4,000, and the £1,766 turns out to be not utilisable because the description "Other manufactures of brass and alloys of copper, not elsewhere specified" is not used in the base year; but that is a problem which will be covered later.

Another characteristic of the *Annual Statement*, which follows reasonably enough from its function of describing Britain's foreign trade, is the lack of continuity of recording trade with a particular country. For example, China may have imported widgets for every year during the period under consideration, but trade will only be recorded for those years in which China was an important customer. This has not been much of a problem when looking at Britain's imports from China since there the trade has been relatively stable and the 'package' of important commodities has remained fairly much the same. This is not so, however, with exports. It perhaps follows from the very nature of trade between an industrialised country and, from the viewpoint of Britain's trade at least, an agricultural country that the (British) export trade has been much more diffuse. This is in a way, of course, merely because of the manner in which commodities are classified. Manufactured goods tend to be itemised much more specifically than primary goods. Thus the *Annual Statement* may distinguish only one or two varieties of maize, but give many different types of machine tool. The farmer, on the other hand, may think that all machine tools look the same, but be able to distinguish many varieties of maize. The result of this, however, is that the export trade is spread over many more commodities and so the chances of exports to China being too small to be reported are much greater. And so there is not one single export commodity for which we have recorded figures for the whole of the period, or indeed for anything like the whole of the period. This affects not merely single commodities but also commodity

Table 1-11 Illustration of limited compatibility between 'by-country' and 'by-commodity' tables

	DESCRIPTION	EXPORTED TO CHINA
VOL. IV (by-country)	Brass and alloys of copper, other than nickel alloys	£5,469
VOL. III (by-commodity)	Brass and alloys of copper, other than nickel alloys -	
	" Ingots, blocks, slabs, billets, bars (including wire bars) not elsewhere specified	NS
	" Plates, sheets, strip, discs and circles -	NS
	" Wire, in coils -	
	" " Of Brass -	NS
	" " Of other alloys of Copper -	NS
	" Rods, sections, shapes and angles, and wire not in coils -	NS
	" Cocks and valves, other than for motor vehicles -	NS
	" Tubes -	NS
	" Other manufactures of brass and alloys of copper, not elsewhere specified -	£1,766
	LOSS OF COVERAGE	£3,703

Source: *Annual Statement*, 1939, Vols.III and IV

groups. The single exception is "Iron and Steel", which is discussed in Appendix E.

Changes in classification have been a major hindrance. These changes have been of two kinds. The first arises from Britain's attempts to conform to international procedures. Following the International Convention relating to Economic Statistics in Geneva, 1928, a 'Minimum List of Commodities for International Trade Statistics' (based on the League of Nations 'Draft Customs Nomenclature') was drawn up. In 1948 the United Nations Statistical Commission recommended that this 'Minimum List' be revised and the new 'Standard International Trade Classification' (SITC) was recommended to governments by the U.N. in 1950. The effect of the introduction of SITC on the classification of commodity classes can be seen by looking at Britain's imports from China for 1951 classified in both the old and new system (Table 1-12).

In May 1960 the United Nations Statistical Commission approved a revision of this classification - the Standard International Trade Classification, Revised. The SITC,R is also a re-arrangement into statistical order of the items of the 1955 Tariff Nomenclature (BTN) of the Brussels Customs Co-operation Council. Under SITC,R commodities are grouped into ten Sections (0 to 9), which are in turn divided into up to ten Divisions (00 to 09, etc.) which are further subdivided into commodities up to five digits.

The SITC came into effect in 1954, but since at that time every year's *Annual Statement* gave details of up to five of the previous years for comparison, the edition for 1954 covered the years from 1951 and so the data was re-classified into SITC from that year. Unfortunately, this excellent practice of including previous years ceased after 1962. The 1963 edition saw the introduction of SITC,R and further changes were made in 1967 and 1970. This last change in 1970 was an important reason for terminating this study in 1969.

However, changes in classification have been by no means confined to the overall structure. Had this been all, it would have presented no great difficulty. Individual commodities have also been re-classified, and

Table 1-12 Illustration of the effect of the introduction of the Standard International Trade Classification: British imports from China 1951

'Minimum List'		IMPORTS FROM CHINA	SITC		IMPORTS FROM CHINA
CLASS	DESCRIPTION		CLASS	DESCRIPTION	
I	Food, Drink & Tobacco	£3,464,169	A	Food, Beverages & Tobacco	£3,397,782
II	Raw Materials & Articles Mainly Unmanufactured	£3,163,109	B	Basic Materials	£3,211,888
III	Articles Wholly or Mainly Manufactured	£1,042,358	C	Mineral Fuels & Lubricants	£1
IV	Animals not for Food	nil	D	Manufactured Goods	£1,059,965
V	Parcel Post	£168	E	Miscellaneous	£168
Total		£7,669,804	Total		£7,669,804

Source: *Annual Statement*

re-classified again, as the changes in the classification of eggs (an important part of imports from China) illustrates (Table 1-13).

To anyone who might have thought that eggs came in large, medium and small, boiled, poached or fried, these changes in classification might seem to serve no great purpose; and there are other cases of this kind. However, there are obviously many occasions where changes in classification are inevitable - in machinery, in chemicals, in electronics and so on.

Whether changes in classification are occasioned by new international procedures, by new or changing commodities, or for administrative reasons, they do cause a break in continuity and a loss of comparability. Further illustrations of discontinuities and attempts to circumvent them are discussed in Chapter Three.

The *Annual Statement* deals only with merchandise trade and it excludes things like services, insurance, manufacturing licences, investment and return on investment - all the additional items that go into the construction of a balance of payments account. It will be readily appreciated what a difference this makes when we consider that in 1950, when British investments in China were expropriated, they were worth roughly £200 million; and yet, in the thirty-four years that we are looking at, Britain's total imports from China were only in the region of £280 million.[82]

There are also a number of goods which are excluded from the accounts. These cover things like personal effects, goods imported by ambassadors accredited to the United Kingdom, military and naval stores, and so on; but these exclusions have little effect on this study.

---

[82]"The Under-Secretary of State for Foreign Affairs, in a written answer to a Parliamentary Question on 24 October 1949, stated: 'The value in 1941 of the direct British business investment in China represented by physical properties, excluding ships, was estimated in 1947 at about £124 million. To this must be added the capital represented by Chinese Government and railway bonds quoted in London. This amounts to £53 million. I would add that unofficial estimates that have been made exceed these figures.'" Allen and Donnithorne, *Western Enterprise in Far Eastern Economic Development, China and Japan* (London, Allen and Unwin, 1954).

Table 1-13 Changes in the classification of eggs in the Annual Statement

	DESCRIPTION	Years Obtaining
1	Eggs, in Shell	30-33, 35-9
	Eggs, in Shell - " Poultry -	
2	" " Not exceeding 14 lbs in weight per 120	34, 46-56
3	" " Over 14 lbs but less than 17 lbs in weight per 120	34, 46-56
4	" " Over 17 lbs in weight per 120	34, 46-56
5	" Other sorts	34, 46-56
	Eggs, in Shell -	
6	" Not exceeding 14 lbs in weight per 120	57-69
7	" Over 14 lbs but less than 17 lbs per 120	57-69
8	" Over 17 lbs in weight per 120	57-69
	Eggs, not in Shell -	
9	" Liquid or Frozen (Whole, Yolk or White)	30-34
10	" Albumen	30-34
11	" Dried (except Albumen)	30-39
12	" Liquid or Frozen, including Glycerinated (Whole, Yolk or White)	35-39, 46-47
13	" Dried Albumen	35-39
14	" Dried, Whole	46-47
	" Dried - " " Whole -	
15	" " " Spray dried, containing sugar	48-54
16	" " " Other	48-54
17	" " Yolk	48-54
18	" " White (Albumen)	46-50
19	" Frozen (Whole, Yolk or White)	48-49
	For notes see final page of table.	

Table 1-13 Changes in the classification of eggs in the Annual Statement, cont'd.

	DESCRIPTION	Years Obtaining
	Eggs, not in Shell - " Frozen -	
20	" " Whole	50-54
21	" " Yolk	50-54
22	" " White (Albumen)	1950
23	" Liquid, including glycerinated (Whole, Yolk or White)	48-54
	" Whole -	
24	" " Dried	55-69
25	" " Frozen	55-67
26	" " Liquid*	55-67
27	" " Frozen and liquid	68-69
28	" Yolks	55-69
	Chemicals - " Albumen -	
29	" " Dried	51-8
30	" " Frozen and Liquid*	51-8
	" Albumin -	
31	" " Dried	59-62
32	" " Frozen and Liquid	59-62
	" Chemical materials and products, not elsewhere specified - " " Albumins, albuminates and other albumin derivatives - " " " Albumins -	
33	" " " " Dried	63-69
34	" " " " Frozen and Liquid	63-69
35	" " " Other	63-69

for notes see over

Table 1-13 Changes in the classification of eggs in the Annual Statement, cont'd.

NOTES

*Note in the *Annual Statement*: "...prior to 1957 the figures are not completely comparable."

This table has been kept in rough chronological order in an attempt to make it more comprehensible, but this has led to virtual duplications where the change has been due to layout rather than definition. Thus, for example, "Whole, Dried" (no.24; 1955-69) follows on from "Dried, Whole" (no.14; 1946-47). The rearranging and linking of these classifications will be discussed later. After 1963 Eggs are further defined as: "Birds eggs and egg yolks, fresh, dried or otherwise preserved, sweetened or not".

It will be noticed that egg white is transferred from "Eggs" to "Chemicals" with the introduction of SITC in the 50's, and that the spelling changed from 'albumen' to 'albumin'. *Webster's Dictionary* (1958 edition) gives the following definitions:

ALBUMEN n. (L. albumen, from albus, white)
1. the white of an egg.
2. in botany, the nutritive matter in seeds of plants between the skin and embryo; the endosperm, or perisperm.
3. albumin (Rare).

ALBUMIN n. a protein substance found in animal tissue, blood, milk, egg, muscle, and in plant tissue. Heat coagulates it; water dissolves it. Nitrogen, hydrogen, carbon, oxygen, and sulfur are its component elements. It was formerly called albumen.

Although egg white is only one form of 'albumin' it is assumed for our purposes (under the 'assumption of continuity' which will be discussed later) that imports from China of 'egg white', 'albumen' and 'albumin' are the same thing.

In the import sample, albumin, in its variations, has been kept with eggs; that is, in terms of the SITC classification, it has been retained under Section 0.

Gold bullion and coin are not included in the general schedule of imports and exports but are shown separately. This was true of silver bullion and coin, but in later years silver bullion and coin not of legal tender in the U.K. has been included as commodities. There has been a considerable movement (in relation to the level of trade) of gold and silver bullion and coin between Britain and China during this period, and care must be taken in noting whether a particular item is included or excluded from the general schedule of trade.[83] To clarify the ambiguous role of silver bullion and coin for the purposes of this study, they have been isolated from the main body of imports throughout the period. It has thus been possible to clearly distinguish between 'imports including bullion' and 'imports excluding bullion'. Identifying the effect of bullion is especially important for the mid-thirties and 1959-63 when, at times, bullion amounts to nearly half of total imports from China.

Diamonds and other precious stones are included, but as the *Annual Statement* rather coyly puts it: "...so far as they are declared on entries, but the great bulk of such goods is not so declared and the figures shown in the tables represent, therefore, only a small proportion of the actual Imports and Exports."[84] Some £15 million's worth of (presumably industrial) diamonds are in fact shown in the accounts as having been exported to China between 1967 and 1969, but unfortunately for our purposes, no quantities are given.

---

[83] cf. A. Maizels, "Coverage", Chapter 3 of *International Trade Statistics*, edited by R.G.D. Allen and J. Edward Ely (New York, John Wiley and Sons, 1953), p.31: "Separate statistics of the movement of silver bullion and specie are usually available, but the importance of such movements is nowadays relatively very small, though before the war there were some big movements from China to the United States, partly via the United Kingdom."

[84] "The United Kingdom, for example, included diamonds and other precious and semi-precious stones in its import statistics up to 1949, insofar as they were declared on Customs entries, but no record was kept of their export. Since this record of imports covered only a small part of the trade, diamonds and other precious stones have been excluded altogether since the beginning of 1949." *ibid.*, p.41.

Britain values imports c.i.f. (cost, insurance and freight) and exports f.o.b. (free on board) unlike, for instance, the United States which reports both imports and exports f.o.b.[85] In the words of the *Annual Statement*:

> The value of the Imports represents the open market value as defined by Section 10 of the Finance Act, 1935. Briefly stated, this value is the price which the goods would fetch on a sale in the open market at the time of importation, if the goods were delivered to the buyer at the port or place of importation, freight, insurance, commission and all other costs, charges and expenses incidental to the making of the contract of sale and the delivery of goods at that port or place (except any duties of Customs) having been paid by the seller.
>
> The value of the Exports represents the cost of the goods to the purchaser abroad, including packing, inland and coastal transport in the United Kingdom, dock dues, loading charges, and all other costs, profits, charges and expenses (e.g. insurance and commission) accruing up to the point where the goods are deposited on the exporting vessel....and is known as the "free on board" value.

The difference between c.i.f. and f.o.b. values is generally considered to be roughly 10 to 12 per cent, but clearly freight and insurance charges vary very much with the type of cargo. Kindleberger suggests that freight costs vary from one or two per cent for high value commodities up to 40 to 50 per cent on bulky commodities such as coal.[86] This problem of the difference between c.i.f. and f.o.b. values is something to which we will return in the next chapter.

We should, of course, not forget that the declared values in the accounts are subject to error, conscious or otherwise. *Relative Prices of Exports and Imports of Underdeveloped Countries*[87] issues the caveat

---

[85] See J. Edward Ely and Nicholas M. Petruzzelli, "Valuation", Chapter Five of *International Trade Statistics*.

[86] Charles P. Kindleberger, *The Terms of Trade, A European Case Study* (New York, M.I.T./John Wiley and Sons, 1956), p.337.

[87] United Nations, Department of Economic Affairs, *Relative Prices of Exports and Imports of Under-developed Countries* (Lake Success, New York, 1949), p.136.

that when there is an *ad valorem* tariff there is an inducement to understate values, and that "...where foreign exchange controls exists, exporters may understate the prices obtained in order to avoid the surrender of foreign exchange earned." On the other hand, where no tariff exists, there is no inducement to check figures. Import and export controls and licences introduce further inducements for misstatements. It would be useless to speculate to what degree factors like these might have affected reported values of British trade over forty-odd years, but it is always salutary to remember that figures are never quite as precise as they appear.

However good or bad the British trade statistics are, they are necessarily limited to recording trade with what is defined as 'China'. What this definition encompasses and, more important, what it leaves out, and the changes in it over this long period, are the subject of the next chapter.

CHAPTER TWO

Determining Britain's China Trade

THE DEFINITION OF CHINA

As Table 2-1 (Fig.2-1) shows, the definition of China in the British trade statistics has been very elastic; so much so that even up to the late sixties the *Annual Statement* hastened to tell its readers every year that "China includes Manchuria but excludes Hong Kong", even though Manchuria had been returned to China in 1945 and Hong Kong ceded by China a hundred years previously. Curiously, the Mongolian People's Republic was included under China up until 1963 even though it had been separated from China some fifty years before.

It should also be remembered that China suffered other, *de facto*, if not *de jure*, contractions during the period. Sinkiang, for instance, whilst officially under Chinese jurisdiction, was in fact virtually independent of the Central Government until 1949 and the region's trade went principally to the Soviet Union:

> Trade between the two regions (Soviet Central Asia and Sinkiang) was encouraged by Sino-Soviet treaties of 1920 and 1924. Consulates were reopened on either side. Completion of the Turk-Sib Railway in 1930, another trade agreement, and reduced customs duties further facilitated the drainage of Sinkiang's commerce to the USSR.[1]

In the thirties, Aitchen K. Wu described a Chinese trader in Sinkiang telling him:

> Our products were limited to cotton, wool and some furs, and the Soviet Trading Company was fast securing a monopoly which must result in lower prices as time went on. Our gold production must be increased; for the Chinese

---

[1] John K. Fairbank, Edwin O. Reischauer, and Albert M. Craig, *East Asia, the Modern Transformation* (London, George Allen & Unwin, 1965), p.794.

Table 2-1

The Definition of China in this Study

'China' excludes:-	Years affected
Hong Kong and Macao	throughout
Weihaiwei	prior to Oct.1st 1930
Leased Territories[1]	1930-1939
Manchuria[2] (Dongbei)	1934-1939
Kwantung Peninsula[2] (Liaodong)	1933-1939
Formosa (Taiwan)[3]	throughout

'China' includes:-	Years affected
Mongolian People's Republic	prior to 1964

Notes:

1. Leased Territories: It is not clear what this covers. The most important leased area was (and is) the "New Territories", the islands and mainland adjacent to Kowloon which were leased to Britain in June 1898 for 99 years but these, being administratively part of Hong Kong, would presumably be included in the Hong Kong returns. In practice, the category "Leased Territories" appears to have no effect on the trade returns as Table 2-2 shows.

2. The import index uses soya beans from Manchuria for 1934-1939 and from Kwantung Peninsula 1933-1939.

3. Taiwan is included with Japan until 1947 and shown separately thereafter. It is called by its Portuguese name 'Formosa' until the late sixties in the *Annual Statement*.

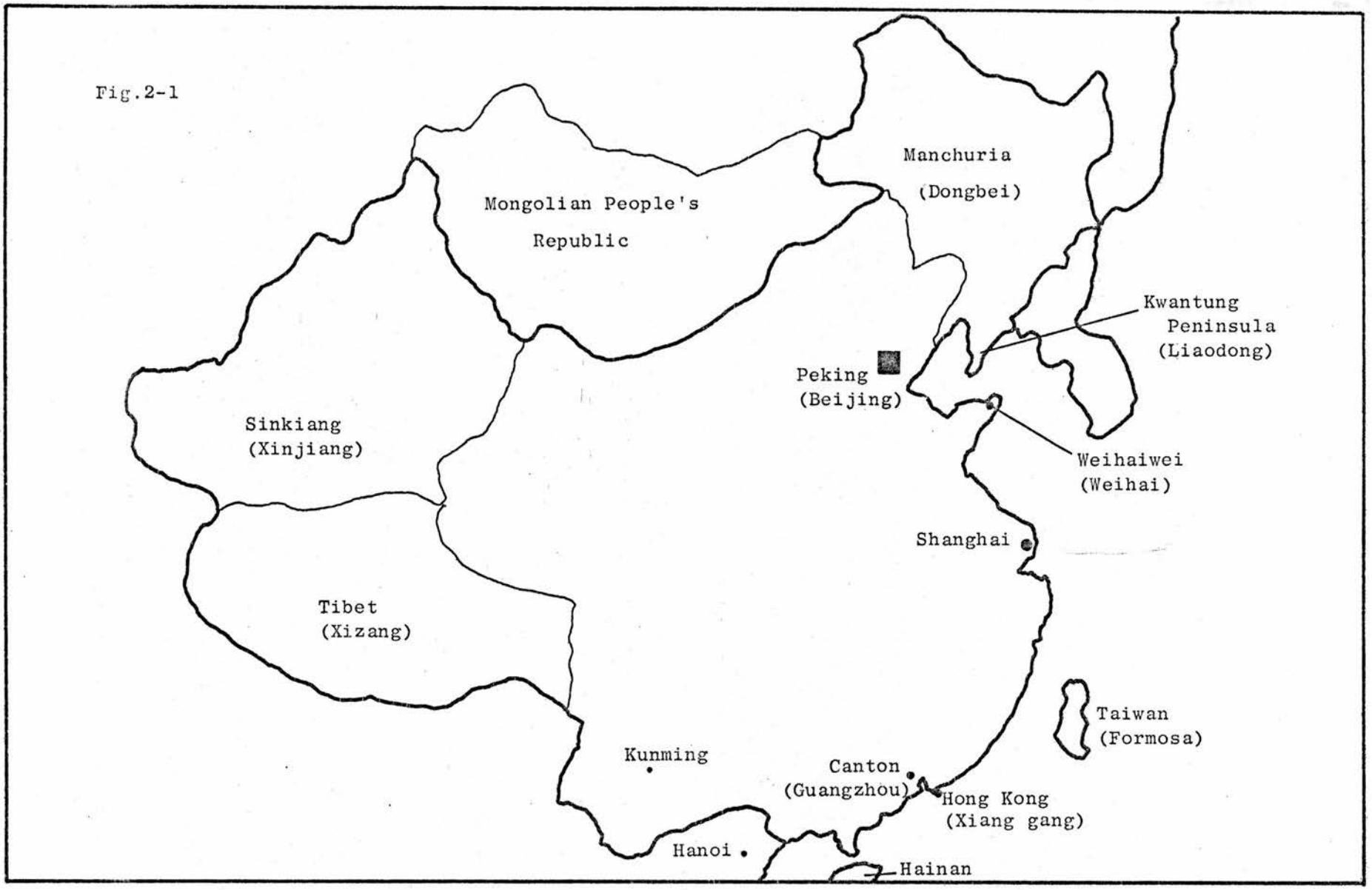
In accordance with current Chinese practice, when Chinese words are given they are usually written in PINYIN transcription without tone marks.

Table 2-2

Britain's imports from 'Greater China' 1935-1939

	Description in *Annual Statement*	1935 £	1936 £	1937 £	1938 £	1939 £
1	"China, including Hong Kong, Macao, Manchuria and Leased Territories".....	7,148,832	8,479,967	9,387,328	7,708,593	6,252,703
2	"China, exclusive of Hong Kong, Macao, Manchuria and Leased Territories".....	6,259,494	7,618,426	8,248,983	6,409,284	5,147,293
3	Difference	0,889,338	0,861,541	1,138,345	1,299,309	1,105,293
4	Hong Kong	0,704,017	0,754,021	0,935,361	1,002,350	0,944,278
5	Macao	0,000,353	0,000,342	0,000,051	0,000,063	0,000,288
6	Manchuria	0,184,968	0,107,178	0,202,933	0,296,896	0,160,844
7	sub-total of above three (4 + 5 + 6)..	0,889,338	0,861,541	1,138,345	1,299,309	1,105,293
8	imports due to 'Leased Territories' (3 - 7)	nil	nil	nil	nil	nil

Fig.2-1


Manchuria
(Dongbei)
Mongolian People's
Republic
Kwantung
Peninsula
(Liaodong)
Peking
(Beijing)
Sinkiang
(Xinjiang)
Weihaiwei
(Weihai)
Shanghai
Tibet
(Xizang)
Taiwan
(Formosa)
Kunming
Canton
(Guangzhou)
Hong Kong
(Xiang gang)
Hanoi
Hainan

> trade was dwindling owing to transport difficulties and the insecurity of the interior, while even at its best it had consisted only in sheep-gut export, fine furs, and a little gold.[2]

Similarly, virtually all of Tibet's trade, small though it might have been,[3] was with (British) India, and it was not until Chinese control was re-imposed in 1950, and more practically with the construction of highways since then, that Tibet would have been brought into the Chinese economy. Also during the thirties it is likely that much of the trade of Yunnan and Kwangsi would have been drawn down into French Indo-China.

However, it was of course the Japanese invasion which had by far the greatest effect on the definition of the 'China trade'. The loss of Manchuria and the Kwantung Peninsula is explicitly shown in the *Annual Statement* (Table 2-1); the rapid erosion of Chinese territory by the Japanese, especially from 1937 onwards, is reflected by the plummeting of her trade and currency, shown in Tables 2-3 and 2-4. The slump in exports from £73 million in 1937 to £2 million in 1943 is clearly a better measure of the deterioration of the Chinese economy than imports.

British trade with what, for convenience, is called here 'Core China' and 'Greater China' is shown in Table 2-5 (Fig.2-2). 'Core China' is the fluctuating China of the *Annual Statement* and hence the China on which this study is based. 'Greater China' includes in addition those areas which are separately identified in the British trade returns and which for part or whole of the period have been out of the control of the Chinese Central Government, but which we can properly think of as being in some sense part of China. Mongolia is slightly different in that, although China had acquiesced in its independence in 1946 (its *de facto* independence dated from the Revolution of 1911), British Customs and Excise did not give its benediction until 1964. We could, of course, construct an even larger 'Sinica Irredenta' by including Korea, parts of the Soviet Far East, Vietnam, etc. - Chinese territory and tributaries

---

[2] Aitchen K. Wu, *Turkistan Tumult* (London, Methuen, 1940), p.125.

[3] Fairbank, *et al*, *East Asia*, p.797.

Table 2-3

China's Imports of Merchandise* 1930-1948

Year	CN$millions	1CN$=x$ x	1$=x£ x	Value in $m	Value in £m
1930	1,878	.4999	8.2401	938.81	113.93
1931	2,114	.3676	7.6134	777.11	102.07
1932	1,602	.3573	5.9221	572.40	096.65
1933	1,426	.3473	5.6002	495.25	088.43
1934	1,040	.3403	5.0887	353.91	069.55
1935	0,930	.3675	4.9275	341.78	069.36
1936	0,946	.2979	4.9766	281.81	056.63
1937	0,954	.2933	4.9470	279.81	056.56
1938	0,886	.2108	4.8904	186.77	038.19 053.74***
1939	1,334	.1187	4.4590	158.35	035.51 094.24***
1940	2,027	.0600	4.0250	121.62	030.22
1941	2,400	.0531	4.0250	127.44	031.66
1942**			4.0250	161.70	040.17
1943			4.0250	169.20	042.04
1944			4.0250	220.90	054.88
1945			4.0250	710.00	176.40
1946			4.0250	560.60	139.28
1947			4.0274	451.10	112.01
1948 (January to July)			4.0300	140.30	034.81

*Gross imports less re-exports. Silver excluded.
**From 1942, values are also given in US$; CN$ values are omitted.
***U.N. *Yearbook* note: "The import values, shown in CN dollars for 1938 and 1939 were obtained by converting values recorded in Customs Gold Units at official rates of exchange. For balance of trade purposes, these values should be increased 44% for 1938 and 166% for 1939." (No information is available relating to other years.)
Source: U.N., *Yearbook of International Trade Statistics, 1950* (New York, 1951), p.53. The conversion rates used are those given by the *Yearbook*.

(*Dissertation*, Vol.I, Table 3, p.45)
cf. Table 2-39.

Table 2-4

China's Exports of Merchandise* f.o.b. 1930-1948

Year	CN$m.	Conversion rates 1CN$=x$ x	1$=x£ x	Value in $m	Value in £m
1930	1,000	.4999	8.2401	499.90	60.67
1931	0,962	.3540	7.6865	340.55	44.31
1932	0,676	.3542	5.9350	239.44	40.34
1933	0,707	.3463	5.6017	244.83	43.71
1934	0,803	.3398	5.0857	272.86	53.65
1935	0,646	.3584	4.9267	231.53	46.99
1936	0,960	.2975	4.9780	285.60	57.37
1937	1,237	.2931	4.9453	362.56	73.32
1938	0,843	.2012	4.8865	169.61	34.71
1939	1,029	.1187	4.4590	122.14	27.39
1940	1,987	.0600	4.0350	119.22	29.55
1941	2,905	.0531	4.0350	154.26	38.23
1942**			4.0350	021.50	05.33
1943			4.0350	008.20	02.03
1944			4.0350	049.80	12.34
1945			4.0350	224.20	55.56
1946			4.0350	148.20	36.73
1947			4.0326	215.70	53.49
1948 (January to July)			4.0300	103.90	25.78

*Gross exports less re-imports. Silver excluded.

**From 1942, values are also given in US$; therefore, CN$ values have been omitted.

Source: United Nations, *Yearbook of International Trade Statistics, 1950* (New York, 1951), p.53. (*Dissertation*, Vol.I, Table 7, p.54)

cf. Table 2-39.

Table 2-5

Britain's Trade with 'Core China' and 'Greater China', 1930-1939, 1946-1969

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1946	1947	1948	1949	1950	1951	1952
Mongolian People's Republic	18.6	15.8	14.1	11.5	12.7	11.4	13.4	14.3	10.6	8.9	10.6	20.0	16.9	6.0	13.9	10.4	7.6
'Core China'																	
Weihaiwei	.02																
Kwantung Peninsula				1.2	1.5	1.6	1.0	1.3	.7	.4							
Manchuria					.2	.2	.2	.3	.3	.2							
Formosa (Taiwan)	..... included with Japan											.02	.1	.2	.5	.9	3.4
Macao	.003	.0008	.003	.003	.004	.003	.002	.001	.002	.002	.001	.01	.005	.003	.02	.01	.02
Hong Kong	4.9	4.9	5.2	3.6	3.1	3.2	3.0	4.4	5.0	3.7	6.5	14.9	26.2	38.3	40.2	50.6	35.4

INCLUDED WITH CHINA

Table 2-5

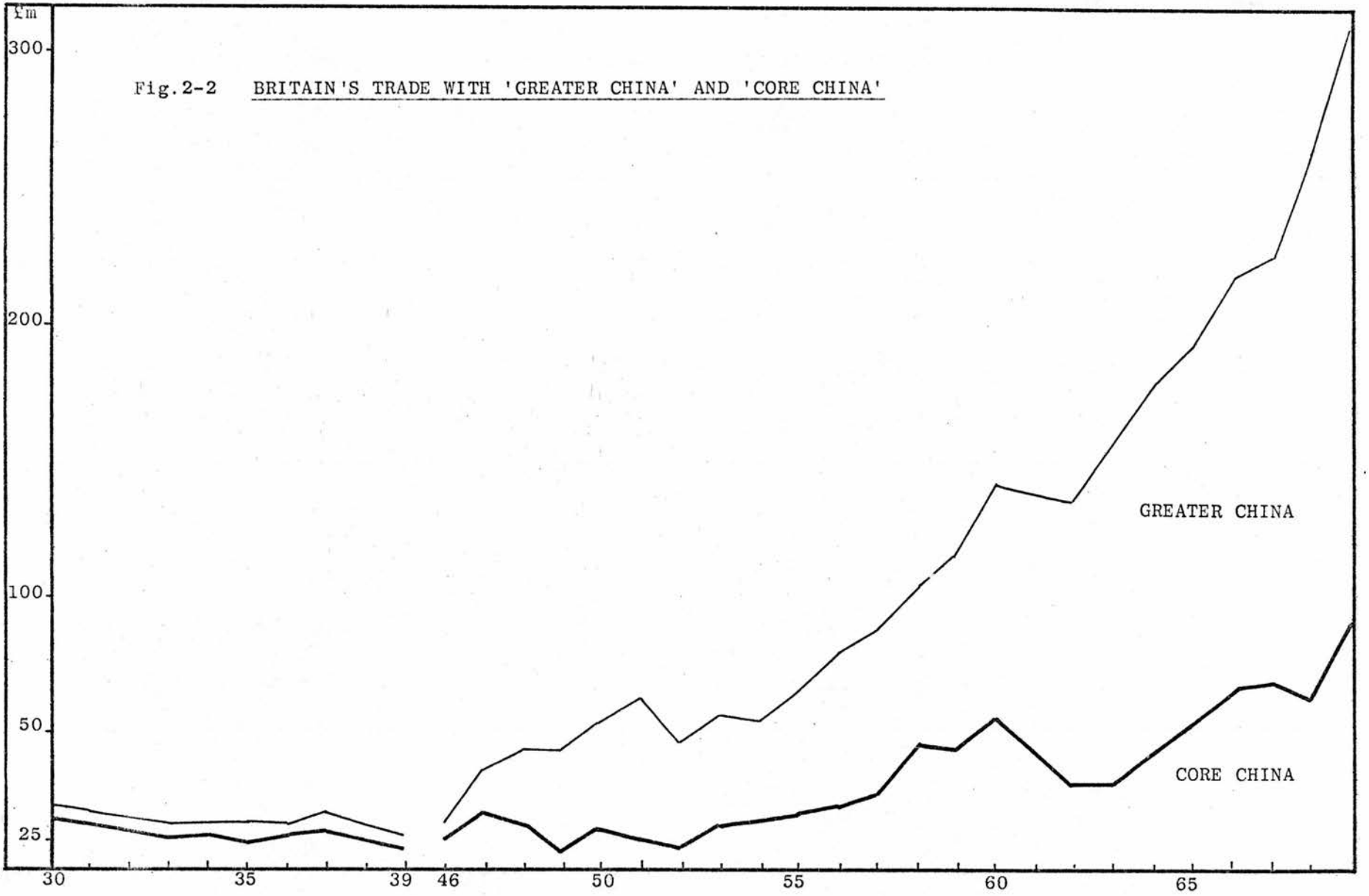
Britain's Trade with 'Core China' and 'Greater China', 1930-1939, 1946-1969 ...cont'd.

	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Mongolian People's Republic												.2	.4	.03	.2	.004	.01
Weihaiwei																	
'Core China'	16.5	15.9	20.3	23.4	26.4	45.7	44.5	56.9	44.0	31.8	31.8	42.4	55.5	67.3	68.4	63.4	92.4
Kwantung Peninsula																	
Manchuria																	
Formosa (Taiwan)	3.9	2.4	2.5	2.4	1.7	1.3	1.7	2.3	3.4	1.7	1.9	3.0	3.1	3.8	4.2	6.6	8.7
Macao	.08	.04	.01	.01	.01	.01	.01	.02	.02	.03	.55*	.68*	.04	.13	.16	.06	.14
Hong Kong	35.6	35.1	42.5	53.3	60.2	58.1	69.1	83.2	89.7	101.8	121.3	133.8	135.8	146.3	151.9	193.2	214.0

INCLUDED WITH CHINA

*Mainly imports of clothing, probably of H.K. origin.

Fig.2-2 BRITAIN'S TRADE WITH 'GREATER CHINA' AND 'CORE CHINA'



at the apogee - but that would serve little purpose. Nor can we lump together the trade of 'Greater China' and say that that is the 'real' China trade. The size, direction and composition of the foreign trade of these areas has been determined by their very separation from the core Chinese economy and connection with other economies. If Hong Kong had not been ceded to Britain it would probably still be a fishing village; Canton might be larger but, in economic impact, not enough to compensate for the non-existence of Hong Kong. Similarly, Hong Kong's rapid growth after the war and the transformation of its economy from entrepôt trade to manufacturing centre was mainly due to the revolution in China and the ensuing enmity of the United States. Hong Kong was drawn into the vacuum caused by the American embargo on trade with China; instead of Chinese raw materials being made up in Shanghai for the American market, they were made up in Hong Kong.[4] Less dramatically, if Taiwan had remained part of the Chinese economy, rather than being integrated into the Japanese economy (1895-1945) and subsequently the U.S.-Japanese-Western economic system, its exterior trade would no doubt have been very much smaller, whatever the complexion of the Chinese government.

INDIRECT TRADE VIA HONG KONG

So far we have dealt with trade that is separately distinguished in the trade returns and so is easily quantified. However, the British system of accrediting trade to the country of consignment adds a further definite limitation to the Sino-British trade we are considering; that is, the actual trade without doubt has been to varying degrees greater than that which has been recorded, the difference being accredited to other countries.

Devons[5] identifies four main systems in use for classifying trade by country:-

---

[4]Hong Kong Government, *Hong Kong Annual Report, 1968*, p.49.

[5]E. Devons, *An Introduction to British Economic Statistics* (Cambridge University Press, 1956), p.144.

	Import	Export
1.	Original production	Ultimate consumption
2.	Purchase	Sale
3.	Shipment	Shipment
4.	Consignment	Consignment

The British system is described in the *Annual Statement* as follows:

> Imports are classified as received from the place or country of consignment; that is, the place or country from which the goods were originally despatched to the United Kingdom, with or without breaking bulk in the course of transport, but without any commercial transaction in any intermediate country. The place or country of consignment is not necessarily the place or country of shipment, origin or manufacture. Exports are classified as despatched to the place or country of consignment; that is, the last place or country to which the goods are consigned, with or without breaking bulk in the course of transport, but without any commercial transaction in any intermediate country. The place or country of consignment is therefore not necessarily the place or country of unshipment or consumption.

Hong Kong is the main and most obvious source of distortion. The colony was, after all, specifically created as an entrepôt for the China trade and there can be no doubt that (for earlier years at least), as Devons says, "...an appreciable amount of our (Britain's) exports to China will be shown as exports to Hong Kong".[6] Unfortunately, it is only since 1959 that Hong Kong has distinguished re-exports from domestic exports[7] and only since 1967/8 has the Census and Statistics Department published detailed accounts showing re-exports by country of origin and destination.[8] By this time, as Tables 2-6 and 2-7 show, Hong Kong's role as entrepôt in Sino-British trade was very small. In 1969 Hong Kong's re-exports of goods of China origin to Britain is reported at only HK$ 5.4 million, a mere 0.04 per cent of Hong Kong's total

---

[6] *Ibid.*, p.145.

[7] Hong Kong Government, *Hong Kong Annual Report, 1959*, p.69.

[8] Hong Kong Government, Census and Statistics Department, *Hong Kong External Trade* (published annually since 1968).

Table 2-6

Hong Kong's Re-Exports of Commodities of China Origin, 1967-1969

	1	2		3	4	5	6	7
	Re-exports of China origin to all countries	Re-exports of China origin to Britain		2 as % of 1	Hong Kong's total exports & re-exports	1 as % of 4	Britain's imports from Hong Kong	2 as % of 6
	HK$m	HK$m	£m*		HK$m		£m	
1967	613.26	none reported		-	8,781	7	89.5	-
1968	549.91	none reported		-	10,570	5	115.3	-
1969	723.50	5.40	0.37	0.8	13,197	6	125.3	0.3

Table 2-7

Hong Kong's Re-Exports of Commodities of U.K. Origin

	1	2		3	4	5	6	7
	Re-exports of U.K. origin to all countries	Re-exports of U.K. origin to China		2 as % of 1	Hong Kong's total exports & re-exports	1 as % of 4	Britain's exports to Hong Kong	2 as % of 6
	HK$m	HK$m	£m*		HK$m		£m	
1968	37.48	.65	.04	2	10,570	0.4	77.9	.05
1969	98.60	1.30	.09	1	13,197	0.8	88.6	.10

*Converted at HK$14.85 = £

Sources: Hong Kong figures - Hong Kong Government, Census and Statistics Dept., *Hong Kong External Trade*, published annually since 1968. British figures - *Annual Statement*.

Note: The British and Hong Kong 'year' do not coincide because of leads and lags in recording trade. cf. *The People's Republic of China:an Economic Assessment*.Papers submitted to Jt.Economic Cttee.,US Congress,1972,p.363

exports and re-exports ('general exports') and less than 1 per cent of Britain's imports from China. But if the amount of extra Sino-British trade that flowed through Hong Kong (and was accredited to Anglo-Hong Kong trade in the *Annual Statement*) was virtually negligible by the late sixties, there is every indication that it had been quite substantial during certain earlier periods.

Before 1909 the British trade returns credited exports to "country of ultimate destination" (as later) but imports "were generally classified as received from the countries whence they were shipped direct to the United Kingdom". In 1909 this was changed to the present system of accreditation by country of consignment, but classification by the two systems was given in supplementary volumes from 1904 to 1915. The data for 1906 for imports from China and Hong Kong (imports from Macao and Weihaiwei are nil) are given in Table 2-8. It will be seen that, under the old system, £151,859, or some 5 per cent of British imports from China, were mis-accredited to other countries. (Consignments from China did, on the other hand, pick up £727 of Philippines trade.) Hong Kong, during the same year, was over-credited by £64,244, of which £45,747 had come from China, some 7 per cent of British consignments from the colony.

Apart from such curiosities as Austria-Hungary, scarcely a great maritime trading power, re-exporting twice as much Chinese produce to Britain as Japan, and ten times as much as Russia, this table undoubtedly still does not reveal the true extent of Hong Kong's entrepôt role. For instance, the imports initially consigned from Hong Kong, half a million pounds, are at the same level as during the middle thirties; at that time, however, imports from China are around six million, twice the 1906 level. It would seem likely that the explanation for the fluctuation in the ratio of imports from Hong Kong as against those from China, 1:6 in 1906 to 1:12 in the mid-30's, was due more to the varying proportion of Chinese re-exports through Hong Kong rather than to changes in the level of Hong Kong's domestic exports.

Table 2-8

British imports, from & via, China & Hong Kong, 1906

CHINA			
Consigned direct from China	3,313,726	Imported direct from China	3,313,726
Consigned via China from:-		Consigned via:-	
		Russia	11
Philippine Islands and Guam	727	Germany	23,316
		Netherlands	1,017
		Belgium	361
		France	24,870
		Portugal	18
		Austria-Hungary	940
		Japan (including Formosa)	470
		U.S.A.	20,416
		British India	30,770
		Straits Settlements and dependencies	3,685
		Hong Kong	45,747
		Canada	965
Total	3,314,453	Total	3,466,312

HONG KONG			
Consigned direct from Hong Kong	573,276	Imported direct from Hong Kong	573,276
Consigned via Hong Kong from:-		Consigned via:-	
		Germany	427
China (excluding Hong Kong & Macao)	45,747	Netherlands	41
		Belgium	33
Philippines & Guam	18,135	Japan (including Formosa)	24
		U.S.A.	390
Cuba	10	British India	43
Australia	1,339	Straits Settlements and dependencies	6
		Ceylon & Dependencies	13
		Australia	10
Total	638,507	Total	574,263

Source: *Annual Statement, Supplement, 1906.*

The Origins and Development of Hong Kong

Hong Kong appears to have been inhabited since prehistoric times but the area was not brought under Chinese suzerainty until 221-214 B.C.; Chinese migration to the surrounding region did not start until the Tang dynasty (620-907 A.D.) and it was not until the Song dynasty (960-1279) that this happened on a large scale.[9] In 1278 the penultimate Song emperor, Di Bing, retreating before the Mongols, made his capital in Kowloon and died there. Apart from this Hong Kong was of no great importance until it was occupied by the British during the Opium War of 1840-42. Hong Kong island was ceded to Britain by the Convention of Chuenpi on January 20, 1841, and proclaimed a British colony by Captain Charles Elliot, the British plenipotentiary, shortly afterwards. Palmerston, the Foreign Secretary, scathingly dismissed it as "a barren island with hardly a house upon it", but Elliot's successor, Sir Henry Pottinger, "found so much evidence of its progress since its occupation that he determined to retain it despite Palmerston's strictures".[10] The Treaty of Nanking reaffirmed the secession and in June 1843, after ratification in both countries, the island was again declared a British colony and the settlement called "Victoria".

Hong Kong was declared a free port and Chinese traders welcomed. Partly because of the problems caused by typhoons and disease, but mainly because of the rapid progress of Shanghai, which was situated strategically at the mouth of the Yangtze, Hong Kong failed to fulfill the early hopes of its becoming a booming emporium for the China trade. "In 1847 a Parliamentary committee of enquiry into the China trade went so far as to express doubts that Hong Kong would ever develop into an important commercial centre..."[11] Hong Kong did grow, however, especially when (as during the Taiping Rebellion) there was unrest in China.

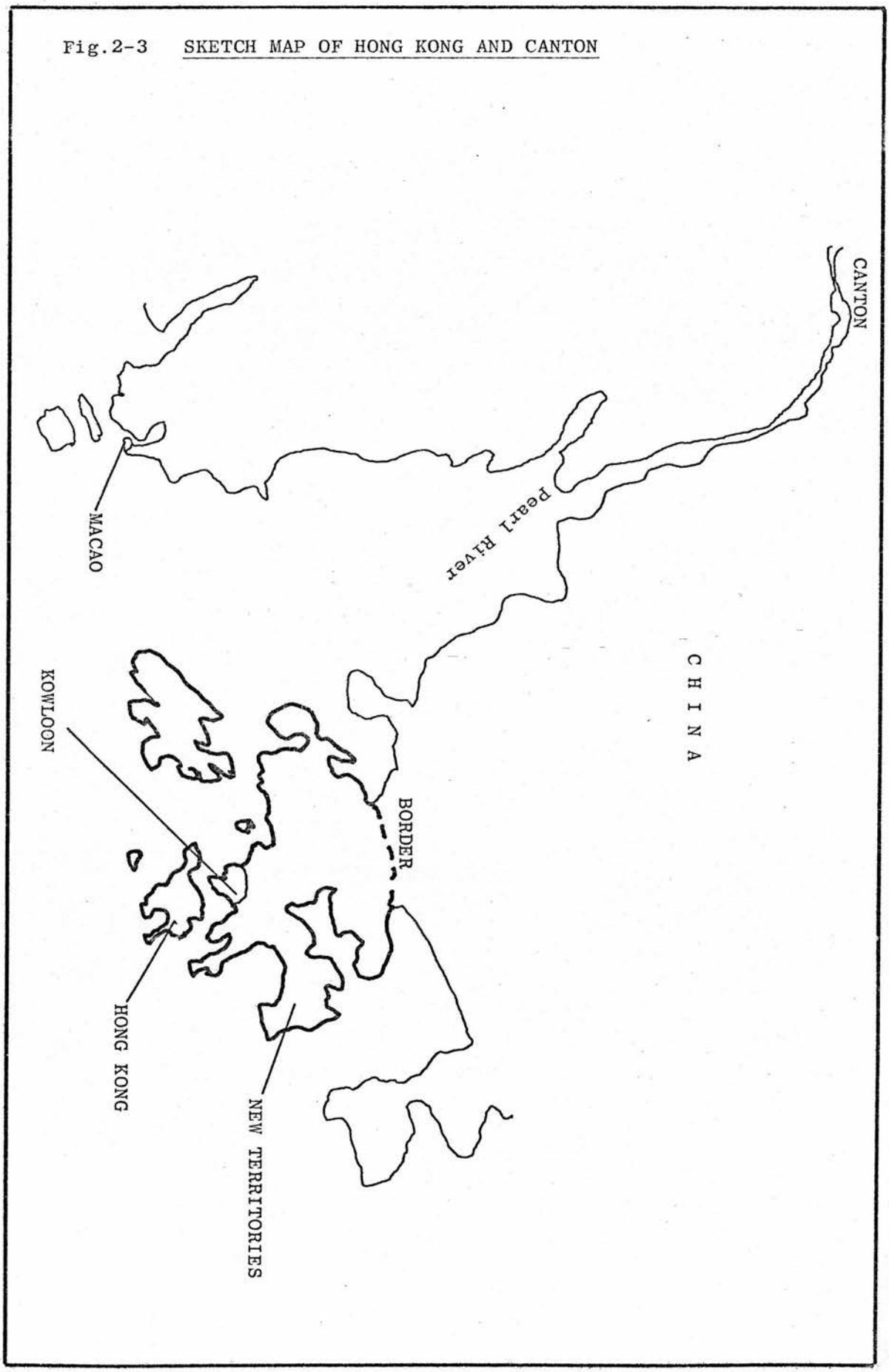
---

[9] The *Hong Kong Annual Report* has a chapter on the history of Hong Kong every year.

[10] Hong Kong Government, *Hong Kong Annual Report, 1968*, p.272.

[11] *Ibid*, p.273.

Fig.2-3 SKETCH MAP OF HONG KONG AND CANTON



The Convention of Peking, 1860, following the second Anglo-Chinese war, ceded Kowloon peninsula, and the Convention of Peking in 1898 gave Britain a 99-year lease on a relatively large area of the mainland north of Kowloon and some 235 islands in the vicinity, this new acquisition soon being known as the "New Territories". The population also expanded; from a few thousand in the 1840's it became 72,000 in 1855 and 120,000 in 1861.

By 1871 some 24 per cent of China's foreign trade was with Hong Kong and this had increased to 34 per cent by 1884.[12] Significantly, as Remer points out, this rapid increase in Sino-Hong Kong trade was accompanied by a decline in direct Sino-British trade (and an increase in Chinese trade with the continent of Europe and with Japan). Hong Kong's percentage of the China trade was 47 per cent in 1887, 48 per cent in 1893 and 42 per cent in 1898. Again, as Remer notes:

> As the proportion of China's direct trade with Hong Kong increased, the percentage of the trade with Great Britain and with India fell. The decrease was from 29.7 per cent to 12.1 per cent in the case of Great Britain and from 10.9 per cent to 5.4 per cent in the case of India. Since it is certain that British and Indian trade with China did not actually decrease, it is plain that these percentages taken together show merely that Great Britain and India made increasing use of the warehouses and piers of Hong Kong.[13]

From the turn of the century until the First World War Hong Kong's share of China's trade declined to 29 per cent, due primarily, suggests Remer, to the growth of the northern and central ports; Britain's share stayed steady at 11 per cent. During the period 1914 to 1921 Hong Kong's share declined even further due, says Remer, to "the decreasing importance of Hong Kong as a distributing centre".[14] Britain's direct trade, which had fallen to below 8 per cent in 1918 was nearly 12 per cent by 1921. By 1938, according to Chinese figures, Hong Kong accounted for 32 per cent of China's exports (as against 7 per cent for Britain) and 2 per cent of her imports (8 per cent from Britain) (Tables 2-9, 2-10). This figure for

---

[12] cf. Remer, *The Foreign Trade of China* (Shanghai, 1926), p.57. The periodization that follows (1871-1884/1885-1898/1899-1913/1914-1921) is Remer's.

[13] *Ibid.*, p.97.

[14] *Ibid.*, p.198.

Table 2-9

China's Net Exports f.o.b.* 1938, 1947, 1948

	1938		1947		1948	
	CN$ '000,000	%	CN$'000,000,000	%	'000,000 gold Yuan	%
Total exports	762.64		6,377		1,398.4	
of which:-						
Belgium	002.55	00.33	0,105	01.65	007.7	00.55
Canada	003.68	00.48	0,023	00.36	009.5	00.68
Denmark	001.64	00.22	0,018	00.28	004.4	00.32
Finland	000.02	00.003	0	-	000.1	00.01
France	020.40	02.68	0,114	01.79	011.9	00.85
Germany	056.40	07.40	0,003	00.05	003.0	00.22
Hong Kong	242.50	31.80	2,179	34.17	439.7	31.44
Italy	001.27	00.17	0,081	01.27	010.0	00.72
Japan	116.54	15.28	0,123	01.93	077.2	05.52
Netherlands	008.17	01.07	0,107	01.68	004.5	00.32
Norway	000.41	00.05	0,008	00.13	002.4	00.17
Sweden	000.59	00.08	0,042	00.66	002.7	00.19
U.K.	056.63	07.43	0,418	06.56	054.5	03.90
U.S.A.	088.12	11.56	0,486	07.62	280.6	20.07
U.S.S.R.	000.55	00.07	0,095	01.49	045.3	03.24

*Net exports: Gross exports less re-imports. Silver bullion and specie are excluded.

Source: United Nations, *Yearbook of International Trade Statistics, 1950* (New York, 1951), p.56.

Table 2-10

China's Net Imports c.i.f.* 1938, 1947, 1948

	1938		1947		1948	
	CN$ '000,000	%	CN$'000,000,000	%	'000,000 gold Yuan	%
Total imports	886.20		10,681		1,159.6	
of which:-						
Belgium	018.12	02.05	0,214	02.00	024.2	02.09
Canada	007.87	00.89	0,406	03.80	053.7	04.63
Denmark	000.27	00.03	0,001	00.01	000.6	00.05
Germany	112.35	12.68	0,002	00.02	000.3	00.03
Finland	001.04	00.12	0,021	00.20	001.4	00.12
Hong Kong	021.50	02.43	0,196	01.84	017.1	01.48
France	018.28	02.06	0,132	01.24	008.4	00.72
Italy	017.35	01.96	0,051	00.48	012.8	01.10
Japan	208.67	23.55	0,179	01.68	010.9	00.94
Netherlands	004.63	00.52	0,032	00.30	002.6	00.22
Norway	003.57	00.40	0,080	00.75	010.2	00.88
Sweden	003.95	00.45	0,068	00.64	010.7	00.92
U.K.	070.35	07.94	0,732	06.85	093.3	08.05
U.S.A.	151.13	17.05	5,357	50.15	561.5	48.42
U.S.S.R.	005.48	00.62	0,033	00.31	011.3	00.97

*Net imports: gross imports less re-exports. Silver bullion and specie are excluded.

Source: United Nations, *Yearbook of International Trade Statistics, 1950* (New York, 1951), p.56

Hong Kong's share of China's imports is misleading since it clearly only takes account of Hong Kong's domestic exports and not her re-exports. According to Hong Kong statistics, her imports from China in 1938, £14.4 million, were virtually exactly balanced by her general exports (that is, domestic exports plus re-exports) of £14.3 million.[15] It is likely that Hong Kong's share of China's trade had risen to slightly over 30 per cent. A quick comparison of British, Hong Kong and Chinese figures for 1938 indicates the difficulty of reconciling different trade statistics, but it suggests that such a comparison may indicate the level of indirect trade (Table 2-11).

Discrepancies between Trade Returns

There would seem to be five main reasons for these discrepancies:-

1. Compilation errors
2. Fluctuations in currency conversion rates
3. Recording leads and lags
4. Problems of valuation
5. Problems of accreditation (that is, indirect trade)

There are other minor reasons for the differences between recorded exports and imports. Coverage and exclusions could be important, for instance, especially if the variable commodity was something like silver. Moreover, despite nearly a century of attempts at international standardization and comparability, import and export figures are seldom, if ever, fully reconcilable: "In many cases discrepancies between the statistics of pairs of countries remain inexplicable even after allowance is made for all known differences in definitions and practices between the countries."[16]

---

[15] *Statistical Abstract for the British Commonwealth*, No.70, 1950.

[16] L.A. Kane and Irving Weiss, "Compilation", chapter two of *International Trade Statistics*, p.24. See also William R. Leonard, "International Comparisons and Standardization", chapter twelve of the same compendium.

Table 2-11

Reporting discrepancies:1938

	£m
Britain's imports from China	6.4
China's exports to Britain	2.4
Britain's exports to China	4.2
China's imports from Britain	2.9
Britain's imports from Hong Kong	1.0
Hong Kong's exports to Britain	1.3
Britain's exports to Hong Kong	4.0
Hong Kong's imports from Britain	3.5
China's imports from Hong Kong	0.9
Hong Kong's exports to China	14.3
China's exports to Hong Kong	10.0
Hong Kong's imports from China	14.4

Sources: U.K. - *Annual Statement.*
H.K. - *Annual Abstract for British Commonwealth*, No.70.
China - calculated from Tables 2-3, 2-4, 2-9, 2-10.

Table 2-12

Lead/lag conversion for U.K. - Hong Kong trade

EXPORTS	$^5/_6$ of current year plus $^1/_6$ of preceding year
IMPORTS	$^5/_6$ of current year plus $^1/_6$ of following year

Compilation errors

Errors of commission (smuggling,[17] declaration of false values, etc.) and errors of omission occasioned by the Japanese invasion would presumably have seriously affected the reliability of Chinese statistics in 1938. Hong Kong, having a frontier with China, was no doubt far more susceptible to smuggling than Britain - smuggling probably being a function of differential price, proximity and accessibility. It should also be noted that smuggling would only cause a discrepancy if the commodity is reported at one country's customs but not at the other. For 1938 then,it would seem fair to place the statistics in ascending order of reliability: China, Hong Kong, Britain.[18]

---

[17]"...there are difficulties arising from the fact that smuggled goods are, of course, not included in the trade statistics. The pre-war Chinese statistics were notoriously subject to this omission, and the Chinese Government from 1903 on attempted estimates of the amount of unrecorded smuggled goods. The estimates were based on the amount of trade with China recorded in the statistics of other countries." *International Trade Statistics*, pp.409-410. Also:

"Contraband trade can now be assumed to be negligible in most - though not all - of the economically developed countries, but a thriving trade in smuggled goods is carried on in some of the more backward countries. The recorded trade statistics for 1948 of China, Iraq, Uruguay,and Bolivia, for example, should be increased by approximately the following percentages to allow for smuggled goods escaping Customs record.

	Exports per cent	Imports per cent
China	40	15
Iraq	16	3
Uruguay	9	7
Bolivia	-	5

The figures for China also include an allowance for the under-valuation of trade in the official statistics." *International Trade Statistics*, p.40.

[18]It should perhaps be remembered that Britain introduced smuggling into Sino-British trade with the opium trade, the import of which was banned by China. On the other hand, before the Commutation Act of 1784, which cut the tax on tea, there was a profitable (European) trade of smuggling China tea into Britain.

Conversion rates

Currency conversion is a problem at the best of times[19] but at times of rapid currency deterioration the difficulties become intractable. The United Nations *Yearbook of International Trade Statistics* (1950, Note to Table 2-3) gives correction factors for converting from official to market rates of exchange of 44 per cent for 1938 and 166 per cent for 1939. Its predecessor, the League of Nations *International Statistical Yearbook*, whilst giving the same basic figures for China's imports in those years (1938: 886 million Chinese National Dollars; 1939: CN$ 1,334 million), suggests correction factors of 48 per cent and 197 per cent. Moreover, even if the official exchange rates were realistic, using the mean rate for the year will only give an accurate conversion if both the change in exchange rate and the flow of trade have been constant or moving in unison. If, for instance, the exchange rate had been CN$ .2900 to US$ for the first eleven months of 1938 but had slumped to .1316 in December, the mean rate would be .2108, but if, as would be likely, the bulk of the trade had taken place at the old rate, then the quoted imports from Britain, CN$ 70.35 converted at CN$ 1 - US$ .29, £1 - US$ 4.9, would be worth £4.2 million, which corresponds with the British figure for exports to China. With such uncertainties in the exchange rates, the Chinese figures must clearly be treated with great caution.

Recording leads and lags

Exports are recorded at time of exit and imports at time of entry. If between these two recordings there is, as in the case of Sino-British trade, a sea journey of up to two months[20] then the same commodity appears in the exporting country's customs statistics some two months earlier

---

[19] See Earl Hicks, "Exchange Conversion", chapter six of *International Trade Statistics*.

[20] This is the lead/lag time for China/Western Europe given by *The People's Republic of China: an Economic Assessment*, a compendium of papers submitted to the Congress of the United States, Joint Economic Committee, 18th May, 1972 (Washington, Government Printing Office, 1972), p.363. The pre-war times would presumably be about the same.

(hence perhaps in the previous 'year') than in the importing country's records. There is, in addition, a further complication if the date of import/export is entered as the date when the customs papers reach the central statistical compilation point rather than the date of customs processing at the port.[21] This problem is obviously exacerbated in the case of a large country like China, especially if the documents are not sent to the compiling centre until all formalities have been completed. It may be, then, that there is a further substantial delay before imports are registered, thus increasing the lag time by a variable and unquantifiable amount.[22] (The sea journey time would presumably be fairly constant, and calculable, after differences in ships' speed and number of ports of call had been averaged out, unless there were specific events, such as dock strikes, which delayed loading or unloading.) On the other hand, this delay between actual recording date and registering date would, in the case of exports, cut down the lead time.

---

[21] See Devons, *Introduction to British Economic Statistics*, p.142. Cf. The position in post-Liberation China:

> "The timing of the statistical report on commodity imports and exports is specified as the time when the commodities are released from customs. In China, to facilitate a speedy supply of imported commodities for domestic needs, commodities are released as soon as they are imported, so that material resources are never piled up. Therefore, the choice of the time when commodities are released from customs as the time that the statistics are recorded reflects the actual conditions of commodity imports.
>
> "For export commodities, the timing of the statistics-recording is the date when the carrier vehicles are released by customs for departure. For example, in ocean transport, the date when the vessel is permitted by customs to leave the port is the time that the statistics are recorded. Export commodities should be loaded by this time. Under normal circumstances, once a vessel is released by customs, it must leave the port within 24 hours, without delay. Therefore, the choice of the departure date as the time the statistics are to be recorded also reflects the actual conditions of commodity exports."

Ch'en Chi-shih and Liu Po-nien, *Tui-wai mao-i t'ung-chi-hsüeh* [*Foreign Trade Statistics*] (Peking, Finance and Economics Publishing Co., 1958), translated in *Chinese Economic Studies*, Vol.3, No.4 (Summer 1970), p.275. This translation, which covers chapters nine to thirteen of the book, is referred to hereafter as Ch'en and Liu.

[22] *International Trade Statistics*, pp.23-24.

Thus, here again, the Chinese statistics are subject to more uncertainty than the British and Hong Kong ones. It would seem safe to assume that, because of their size and level of bureaucratic efficiency, the registered dates of British and Hong Kong imports/exports virtually correspond with the actual entry/exit dates and we need only consider a constant lead/lag time of two months in either direction. It should be remembered, however, that this two months is doubled when we look at total trade; that is, British exports are two months 'ahead' of Hong Kong's imports, but her imports are two months behind. This means, of course, that we must adjust imports separately from exports, and in the opposite direction (Table 2-12).

Problems of valuation

Valuation involves two different but related problems. The first arises if the countries concerned use different methods of valuation. Ely and Petruzzelli give four principal methods of valuation:-[23]

1. F.O.B. (Free on board carrier) value in exporting country.
2. Market value in exporting country.
3. C.I.F. (Cost, insurance and freight) in importing country.
4. Market value in importing country.

Britain, as noted in chapter one, values imports c.i.f. and exports f.o.b.; the Chinese figures are also valued on this basis. Although the Hong Kong figures do not state the basis of valuation, it is presumed that they follow the usual practice of imports c.i.f., exports f.o.b.. The essential difference between c.i.f. values and f.o.b. values is the transportation cost - freight, insurance, loading, etc.. The usual practice is to allow approximately 10 per cent for this transportation cost but, as mentioned in chapter one, Kindleberger has pointed out that "freight rates as a percentage of landed costs vary from 1 or 2 per cent on normal manufactures and primary products of great value per pound

---

[23] *International Trade Statistics*, p.85.

(like tin and nickel), to 20 per cent on bulky commodities such as grain, and 40 to 50 per cent on cheap bulky commodities like coal."[24] It is not clear whether Kindleberger is including insurance here; if he is not, it is likely that insurance, being sensitive to other factors such as risk of spoilage or damage, fire risk, spillage risk, etc., would act as a dampener to the sensitivity of freight and loading costs to the bulk/value ratio. Even so, it would seem likely that the difference between c.i.f. and f.o.b. will be greater for China's exports to Britain than for Britain's exports to China, and in the case of (land) trade between China and Hong Kong, c.i.f. and f.o.b. values are virtually the same.

With such a wide variation in the contribution of freight rates to landed costs it is necessary to see if it is possible or practicable to establish a differential bulk/value ratio between Britain's imports from Hong Kong and China and her exports to those countries. Firstly, it should be remembered that bulk is but one aspect, albeit probably on balance the main one, of freight costs. Secondly, Customs records do not give us the bulk of commodities but a simpler measure of quantity, usually weight. Thirdly, we must be able to use commodity groups (classes up to 1962, sections from 1963) rather than individual commodities, partly because commodity groups will give coverage, but mainly because using separate commodities would be inordinately complicated.

Thus, if we are going to be able practically to estimate the different contribution of freight costs to imports and exports, we shall need two things:-

1. A clear (and, hopefully, consistent) difference in distribution of commodity groups between imports and exports.
2. A clear (and, hopefully, consistent) difference in weight/value ratio between commodity groups.

It is usual to divide trade into two dichotomies: food and raw materials on the one hand and manufactured goods on the other. This has been done for trade with Hong Kong (Fig.2-4) and China (Fig.2-5) for selected years

---

[24] Kindleberger, *Terms of Trade*, p.337.

Table 2-13

The composition balance of Britain's trade with Hong Kong and China - selected years

	HONG KONG								CHINA							
	Imports				Exports				Imports				Exports			
	Food & Raw Materials		Manufactured Goods		Food & Raw Materials		Manufactured Goods		Food & Raw Materials		Manufactured Goods		Food & Raw Materials		Manufactured Goods	
Year	£'0,000	%	£'0,000	%	£'0,000	%	£'0,000	%	£'0,000	%	£'0,000	%	£'0,000	%	£'0,000	%
1930	31	82	7	18	45	11	385	89	869	88	115	12	119	14	728	86
1935	28	40	42	60	26	11	210	89	512	82	114	18	25	5	472	95
1939	24	26	70	74	32	12	239	88	398	72	116	23	19	5	334	95
1955	175	11	1,467	89	374	15	2,136	85	954	78	275	22	[a]528	69	238	31
1962	132	2	5,328	98	390	9	4,148	91	822	36	[b]1,479	64	[a]249	30	572	70
1968	329	3	10,977	97	729	10	6,767	90	2,059	60	1,365	40	180	7	2,405	93
1969	249	2	12,093	98	901	11	7,648	89	2,174	58	1,595	42	408	8	4,756	92

Source: *Annual Statement of Trade of the U.K.*

Notes:- a: includes large amounts of wool b: includes large amount of silver
- Food & Raw Materials: 1930,35,39: Classes I & II; 1955,62: Classes A,B,C/ 1968,69: Sections 0,1,2,3,4.
- Manufactured Goods: 1930,35,39: Class III; 1955,62: Class D/ 1968,69: Sections 5,6,7,8.

Note: The rough coupling of commodity groups used here and the arbitrary selection of years gives a more rudimentary, but adequate, picture than the fuller treatment used in Chapter 3. See especially Figs.3-23 to 3-25.

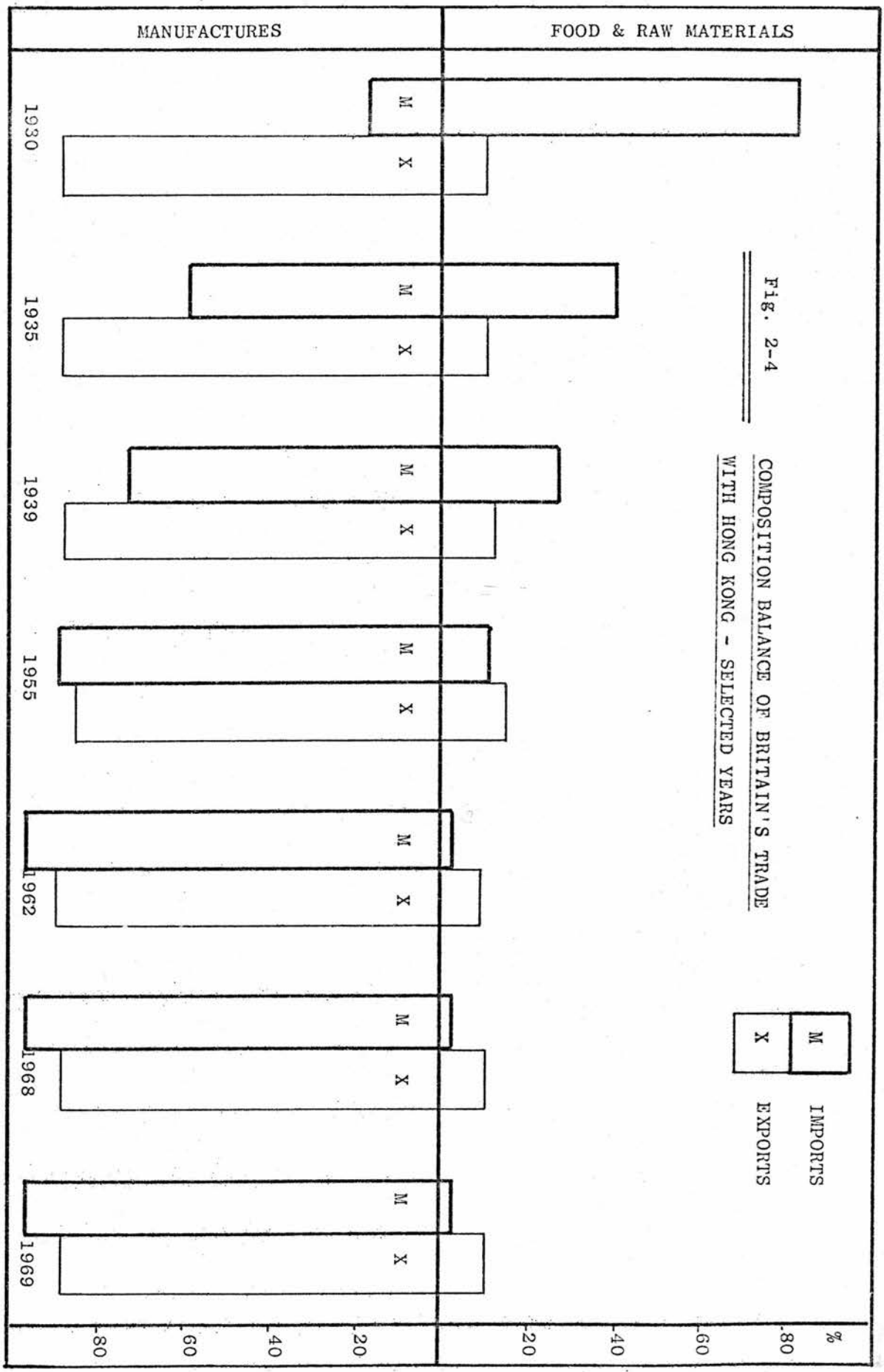


Fig. 2-4

COMPOSITION BALANCE OF BRITAIN'S TRADE WITH HONG KONG - SELECTED YEARS

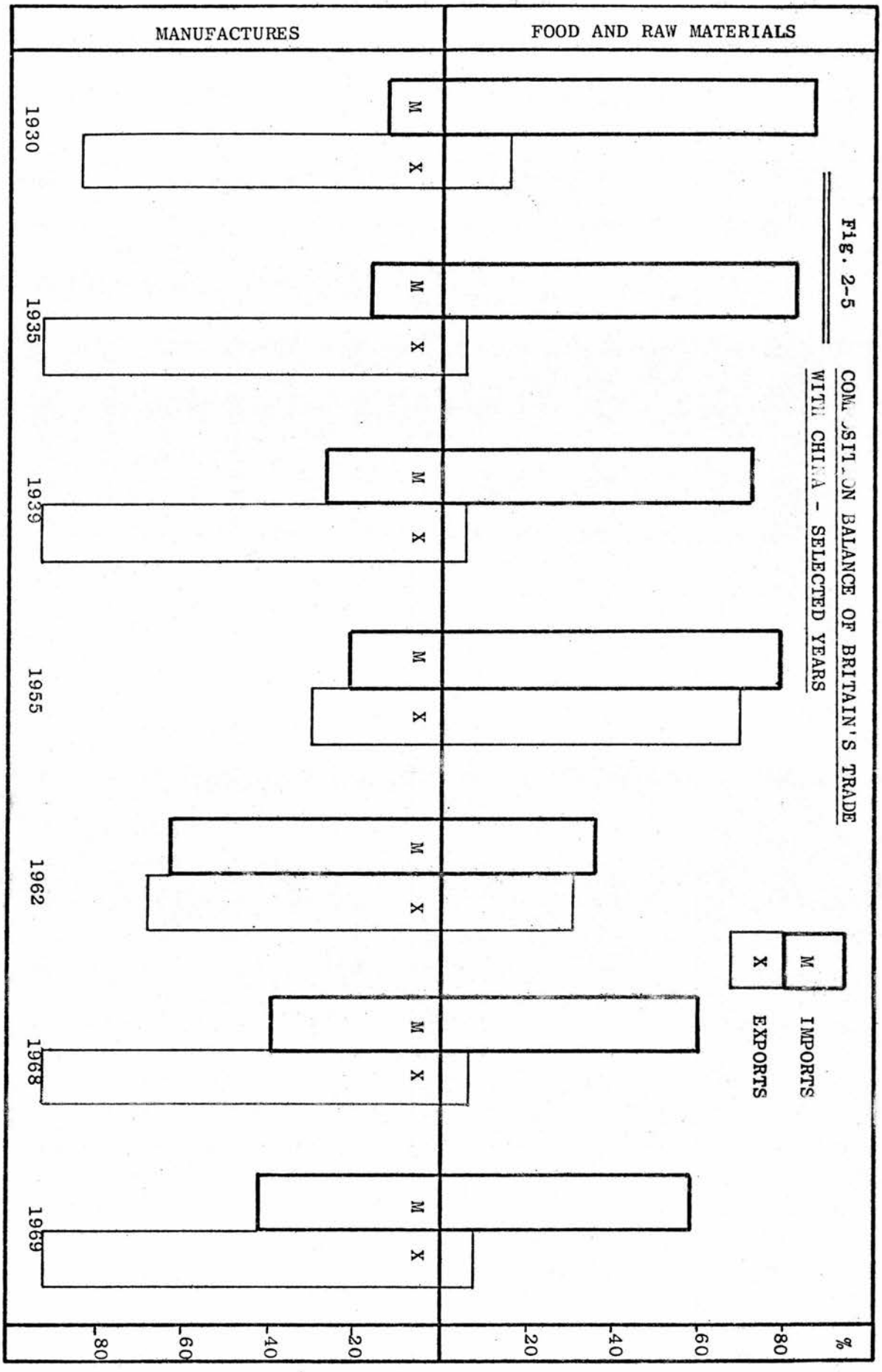


Fig. 2-5 COMPOSITION BALANCE OF BRITAIN'S TRADE WITH CHINA - SELECTED YEARS

over the period (Table 2-13). For both imports and exports the group 'miscellaneous' has been omitted, and exports do not include 'imported merchandise' (that is, re-exports) because class totals are not always given.

The change in the composition balance of Britain's trade with Hong Kong over the years is quite unequivocal. Britain's exports have consistently remained approximately 10 per cent food and raw materials and 90 per cent manufactured goods. Imports, on the other hand, have shown a complete reversal. In 1930 food and raw materials accounted for about 82 per cent of Britain's imports from Hong Kong. Even in the thirties this proportion dropped substantially, and by the sixties it is only a miniscule 2 to 3 per cent. Manufactured goods, of course, have an inverse movement. Thus, by the sixties, virtually all of British trade with Hong Kong is in manufactures.

The composition movement in Sino-British trade is rather less clear-cut. The position is clear enough in the thirties. Britain's imports from China are principally food and raw materials, whilst a similar proportion of exports are manufactured goods. After the war, however, the balance shifts. In 1955 the balance of imports, 78 per cent food and raw materials to 22 per cent manufactures, is roughly that of the pre-war years. But in 1962, largely due to Chinese sales of silver (£9.9 million, 43 per cent of Britain's imports from China in that year), the proportion changes to 36:64. Incidentally, had Britain continued the pre-SITC usage and excluded silver from the general schedule of commodity trade, this apparent change in composition would not have taken place. By the late sixties food and raw materials return to being the major part of imports, but their preponderance is far less marked than in the thirties. Exports display the same cyclical movement, but to an enhanced degree. Here again, both at the beginning of the period and at the end, the balance is definitely to one side, with some 90 per cent of Britain's exports to China being manufactured goods. In the middle years, however, this balance seems to be reversed. Again, the reason for this in these particular years is easily discernible - large British exports of wool to China (wool tops alone are £5 million in 1955).

This fluctuation in composition balance would be a nuisance, but not an insurmountable one, if the second condition held. We might have to calculate the balance for every year, or for small groups of years, but if this balance were then a good measure of the weight/value ratio (which we might then assume approximates the bulk/value ratio, which in turn indicates the freight cost contribution to landed cost), then all would be well. We would still have a reasonably simple method of estimating the freight element. However, as Table 2-14 indicates, the difference in prices between food and raw materials on the one hand and manufactured goods on the other is not marked, at least in the late thirties. Indeed, some of the highest prices recorded are raw materials such as fur skins, silk and bristles; the first two are not so important, but bristles accounted for over 8 per cent of Britain's imports from China in 1935 and over 7 per cent in 1939. It does not seem worthwhile to do a detailed weighting by the ninety-odd commodities given in Table 2-14 so a rough weighting by commodity groups is shown in Table 2-15.

In conclusion, it seems best to settle for a straight 10 per cent differential between c.i.f. and f.o.b. values when considering the four trade flows between Britain on the one hand and China and Hong Kong on the other; and to assume there is no c.i.f./f.o.b. difference in China's trade with Hong Kong.

There still remains a further problem with valuation: how 'realistic' are the reported values? It was pointed out in chapter one that where there is no duty payable,[25] or where the duty is levied by quantity, there is little inducement either for traders to be careful to report accurate figures or for Customs officials to check them. If there is no export duty in one country, but an import duty in the other, the exporter may have an understanding with the importer to understate the value of the commodity to alleviate the latter's payment of duty. Indeed, in the case of multi-national companies the importer may be the exporter, which raises the complication of transfer pricing.

---

[25] In Hong Kong, duties are only levied on imports of liquor, tobacco, hydrocarbon oils, table waters and methyl alcohol, while exports do not attract duty. (*Hong Kong Annual Report, 1959*, p.54; *1968*, p.40.) The same position holds for Britain, although, of course, the coverage of import duties is much wider.

Table 2-14

Relative prices of commodity groups and imports/exports
(Trade with Hong Kong and China, 1935 and 1939)
(unit value per cwt)

IMPORTS			
HONG KONG	1935	1939	average
Class I: Food, drink & tobacco	£	£	£
lard	2.04	1.40	1.72
ginger	1.28	1.82	1.55
Class II: Raw materials, etc.			
hides	3.10	3.45	3.28
tungsten ores	5.94	10.9	8.42
vegetable oils	2.92	5.58	4.25
bristles	26.57	30.05	28.31
feathers	4.49	4.19	4.34
Average (I, II)			7.41
Class III: Manufactures			
tin	11.14	10.60	10.87
essential oils	11.70	15.77	13.74
mats & matting	1.32	1.72	1.52
Average (III)			8.71
CHINA	1935	1939	average
Class I: Food, drink & tobacco			
tea	6.17	7.05	6.61
eggs,n.i.shell	2.37	3.06	2.72
feeding stuffs for animals	0.30	0.46	0.38
nuts u/a fruit	0.75	0.85	0.80
beans,nt.fresh	0.29	0.30	0.30
peas,nt.fresh	0.55	0.50	0.53
poult/game,dead	3.53	3.11	3.32
bladders,casings etc.	14.77	15.68	15.23
ginger	1.48	1.78	1.63
other preps.made with sugar	0.80	0.52	0.66
Class II: Raw materials, etc.			
ctn/raw&linters	2.90	2.55	2.73
cotton waste	1.43	1.20	1.32
fur skins, und.	52.66	52.29	52.48
hides	3.18	3.40	3.29
tungsten ores	5.40	8.50	6.95

EXPORTS			
HONG KONG	1935	1939	average
Class I: Food, drink & tobacco	£	£	£
cocoa preps.	5.99	6.83	6.41
meat	9.83	6.07	7.95
biscuits	8.45	8.79	8.62
confectionery	5.57	4.61	5.09
other food	8.86	9.15	9.00
tobacco	24.08	19.89	21.99
Class II: Raw materials, etc.			
coal	0.05	0.06	0.06
iron&stl.scrap	0.20	0.34	0.27
linseed oil	1.38	1.66	1.52
Average (I, II)			6.77
Class III: Manufactures			
ammonium sulp.	0.25	0.28	0.27
dyes&dye-stuffs	8.56	12.18	10.37
cotton yarns	13.31	12.16	12.74
machinery	6.18	6.59	6.39
iron & steel	0.93	0.80	0.87
brass, etc.	5.85	5.09	5.47
paper	2.51	2.51	2.51
pottery	1.12	0.75	0.94
artf.silk yarn	31.67	value only	31.67
ships & boats	1.14	-	1.14
wlln.&wrstd.yns	15.94	26.72	21.33
Average (III)			8.52
CHINA	1935	1939	average
Class I: Food, drink & tobacco			
biscuits	8.09	8.49	8.29
sugar	1.65	1.14	1.40
confectionery	4.17	4.49	4.33
other preps. made with sugar	7.53	5.63	6.58
other sorts	9.27	7.77	8.52
tobacco	24.78	2.91[a]	13.85

Table 2-14

Relative prices of commodity groups and imports/exports ...cont'd

IMPORTS	1935	1939	aver-age
nuts & kernals for oil	0.92	1.55	1.24
ground nut oil	1.22	1.19	1.21
tung oil	2.98	4.54	3.76
other vgt.oils	1.98	2.12	2.05
silk cocoons,etc	4.26	11.87	8.07
silk, raw	38.08	50.00	44.04
hemp & hemp tow	1.95	-	1.95
shp.&lambs wool	5.42	4.87	5.15
camels hair	5.42	13.59	9.51
mohair	4.29	-	4.29
bristles	15.66	24.27	19.97
feathers	5.24	4.63	4.94
raw hair	3.15	7.50	5.33
Average (I, II)			7.52
Class III: Manufactures			
antimony	2.35	2.39	2.37
tin	11.09	10.95	11.02
essential oils	10.89	15.05	12.97
fur skins,other than rabbit	16.13	34.75	25.44
plaitg.of straw	12.84	8.63	10.74
mats & matting	1.19	1.36	1.28
Average (III)			10.64

EXPORTS	1935	1939	aver-age
Class II: Raw materials, etc.			
iron ore&scrap	0.16	0.21	0.19
linseed oil	1.56	2.22	1.89
shps&lambs wool	7.00	7.70	7.35
wool waste	4.22	4.39	4.31
wool noils	7.25	7.41	7.33
woollen rags	3.64	4.85	4.25
Average (I, II)			5.69
Class III: Manufactures			
sodium compounds	0.25	0.17	0.21
dyes&dye-stuffs	6.99	13.28	10.14
cotton yarns	11.86	12.69	12.28
machinery	4.04	5.50	4.77
iron & steel	0.71	1.06	0.89
brass	6.14	8.29	7.22
soap	3.01	3.92	3.47
paper	2.85	2.04	2.46
pottery	1.62	1.39	1.51
artf.silk yarn	41.77	value only	41.77
wool tops	7.20	9.39	8.30
wlln.&wrstd.yns	10.16	16.26	13.21
books	11.99	10.42	11.21
Average (III)			9.03

SUMMARY

		CLASS I & II	CLASS III	AVERAGE	AVERAGE
IMPORTS	HONG KONG	7.41	8.71	7.80	
	AVERAGE				8.01
	CHINA	7.52	10.64	8.07	
EXPORTS	HONG KONG	6.77	8.52	7.73	
	AVERAGE				7.56
	CHINA	5.69	9.03	7.43	

a:The low figure for tobacco in 1939 is presumably due to inclusion of a large amount of unmanufactured tobacco;1935 is mainly cigarettes.

Notes:-The commodities shown in this table are all the commodities reported in Vol.IV of the *Annual Statement* (ie,the principal commodities traded) for which the weight is given. The 'averages' given here are the unweighted arithmetical means;that is,no account is taken of the quantities traded.

-A Z test on these import & export averages gives the following:

	·Imports	·Exports
$\bar{x}$:	8.0064	7.5631
σ:	11.0086	8.2764
n:	44	45

·critical value of Z at 1% significance level: 2.57

·Z (calc): 0.21

Source: *Annual Statement*

Table 2-15

Relative prices: weighted by commodity groups

	1 unweighted mean u.v.	2 weight	3 weighted mean u.v.
Imports from Hong Kong			
Classes I & II	7.41	33	
Class III	8.71	67	8.28
Exports to Hong Kong			
Classes I & II	6.77	12	
Class III	8.52	88	8.32
Imports from China			
Classes I & II	7.52	77	
Class III	10.64	23	8.24
Exports to China			
Classes I & II	5.69	5	
Class III	9.03	95	8.86

Sources:
Column 1 - Table 2-14
Column 2 - mean of 1935 & 1939 percentages from Table 2-13

Table 2-16

Hong Kong's imports from China & re-exports of Chinese goods, 1967-9

HK$m

	Imports from China	Re-exports of Chinese goods	Proportions of re-exports %
1967	2,282	613	27
1968	2,429	550	23
1969	2,700	724	27
Total	 7,411	1,887 Average	 25

Source: *Hong Kong External Trade*

In general,

> Most countries impose Customs duties of imports and many impose duties of one sort or another on exports. While a specific rate of duty (a specified amount of duty for each physical unit of weight, volume, etc.) has obvious advantages in administration, it also has obvious weaknesses during periods of price changes. Duties are therefore frequently (an increasing frequency since World War II) related directly to the value of the merchandise by means of ad valorem rates calling for a certain percentage of the value of the goods to be paid as duty. In addition, tariffs sometimes provide that the rate of duty at either specific or ad valorem rates is to be higher for merchandise falling in higher value brackets.[26] Since the government wishes to maximize its revenue, or at least to prevent evasion of duties through undervaluation, and since the trader wishes to keep his duty payments at a minimum, the valuation assumes major fiscal importance and statistical significance is sometimes quite lost sight of.[27] Since, in addition, international trade is carried out by traders who are subject to the laws of each other's country only to a limited extent, *and since the value of an article is frequently a difficult thing to determine*, there is obviously a wide area for undervaluation by traders, or indeed, overvaluation by government.[28] [emphasis added]

One way in which governments have attempted to solve this problem is to set arbitrary 'official price' on the commodity:

> Under this procedure the valuation is determined without reference to cost, invoice, or other value information pertaining to the individual transaction. Changes in the official values in the pre-determined price lists may in

---

[26] For instance during 1955-58, apart from a proportion of Commonwealth goods entering free of duty, Chemicals attracted differing ad valorem rates of 5, 7½, 10, 12½, 15, 16 2/3, 17½, 20, 25, 30, 33 1/3 per cent. (*Annual Statement*, 1958, Vol.II, Supplement, p.29).

[27] cf. Ch'en and Liu, p.272: "Every capitalist firm wants to hide its business secrets. Importers and exporters try their best to compete for excessive profit. Customs personnel artfully engage in corruption for personal benefit. All these tend to reduce the accuracy of the raw data of customs statistics." [in capitalist countries]

[28] Ely and Petruzzelli, *International Trade Statistics*, pp.88-89.

> fact actually represent changes in rates of duty rather than changes in the market or other prices for the product. The valuation assigned to a particular shipment then becomes an administrative tool for duty collection purposes, and statistical needs are given little or no attention.[29]

It will be recalled that in Britain the reported value is supposed to be the 'open market' value, and the same is no doubt true for Hong Kong. It is uncertain what the procedure was in pre-war China but under the People's Republic:

> The value of imports and exports in customs statistics is determined on the basis of the *actual prices* of commodities when they cross national boundaries - that is, import prices are calculated c.i.f. and export prices f.o.b.
>
> The c.i.f. and f.o.b. commodity prices are based on the *actual figures* in related documents such as contracts, invoices, exchange settlement statements, bills of freight, bills of lading, and insurance policies.[30] [emphasis added]

So here again we have an 'actual' or 'market' rather than an 'official' value.

However, as Ely and Petruzzelli suggest:

> Even in these nations [i.e., U.K. and U.S.A.], where import values are not officially determined, there may be an element of official valuation. The value as determined by Customs may contain such an element to the extent that the United Kingdom values imports subject to ad valorem duties at open market values,.....and to the extent that the imported articles do not have a well-organized domestic market.[31]

To this situation, where there is no established market price for the commodity, we can probably add the case of transfer pricing between divisions of multinational companies. Thus, where there is no 'open market

---

[29] *Ibid.*, p.29.

[30] Ch'en and Liu, p.277. Sample contracts with the foreign trade corporations of the People's Republic are given in John E. Metcalf and Vembar K. Ranganathan, *China Trade Guide* (First National City Bank, 1972).

[31] Ely and Petruzzelli, *International Trade Statistics*, p.93.

price' it is Customs and Excise which in fact determines *de facto* official price. In the words of the *Annual Statement*: "...the value is normally... for goods imported otherwise (than 'under a commercial contract of sale negotiated in fully open market conditions') - the price that would have been made under such a contract..."[32]

Problems of accreditation

The fifth main reason for discrepancies between reported imports and exports is mis-accreditation. The clearest example of this is the discrepancy between 'China's imports from Hong Kong' in 1938, £0.9 million, and 'Hong Kong's exports to China' of £14.3 million. We have assumed that the c.i.f./f.o.b. differential and lead/lag distortion are negligible, and although Chinese trade statistics in 1938 must be considered very dubious (Canton fell to the Japanese in October of that year), if they have any credibility at all, the difference between them and the Hong Kong records must be largely due to the entrepôt nature of Sino-Hong Kong trade in that period. It will be recalled that Hong Kong did not distinguish between domestic exports and re-exports until 1959: it used the 'general' system of recording trade. The 1938 figures, then, are a combination of domestic exports and re-exports shown together as general exports. The Chinese Customs, on the other hand, do seem to distinguish between imports of Hong Kong products and imports from other countries that have come via Hong Kong. The difference between China's imports from Hong Kong and Hong Kong's general exports to China thus gives a rough (alas, very rough) measure of Hong Kong's re-exports to China. The difference between 'China's exports to Hong Kong' (£10m) and 'Hong Kong's imports from China' (£14.4m), £4.4 million, however, is only 30 per cent of the colony's imports from the mainland; and while this corresponds with the proportion obtaining in the late sixties, when we have official Hong Kong figures (Table 2-16), it seems, in the light of a Hong Kong estimate of the thirties which we will discuss later, and in view of the trend in the change in Hong Kong's pattern of trade, to understate the level of re-exports of Chinese origin in 1938. Clearly there is a lag between imports and re-exports so the

---

[32] *Annual Statement*, 1958, Vol.III, p.iv.

proportions shown are not exact; however, the lag distortion will be negligible over the three-year period. Unfortunately we do not have figures for re-exports of Chinese goods before 1967, but we do have data for total re-exports back to 1959, and these show a fairly constant 18 per cent of Hong Kong's imports being re-exported (Table 2-17). Moreover, during the same period, the proportion of Hong Kong's general exports (that is, the sum of domestic exports and re-exports) accounted for by re-exports fell from 30 per cent to 20 per cent (Table 2-18).

This decline in the importance of the re-export trade, and the corresponding growth in importance of domestic exports is, of course, the prime characteristic of Hong Kong's post-war economy. It was no coincidence that by 1959 re-exports were distinguished from domestic exports for, "In the last decade there has been a fundamental change in the pattern of Hong Kong's economy. Industry, which prior to the Second World War was of minor importance, has now assumed a predominant role."[33] We will return to the reasons for this transformation in a moment; here, we need only consider its effect on Hong Kong's use of imports from China. As Hong Kong's entrepôt function declines, the proportion of imports from China that is re-exported will drop and the proportion that is used for domestic industry will increase. From Table 2-19 it will be seen that China's share of Hong Kong's imports reached a peak in the late thirties, when it was nearly twice the level of the late sixties. At first sight it might seem that this high level of imports was occasioned by the surge of refugees that flooded the colony during these years but, as Table 2-20, Fig. 2-6, show, that whereas the population of Hong Kong increased considerably in 1938, it was in the previous year that imports, both total and from China, leapt upwards. Imports from China grew by nearly £1.5 million during 1938 while general imports stayed relatively static, and no doubt much of this increase of 12 per cent in Chinese imports was due to the refugee influx, and therefore not re-exported. Moreover, since the population increased by over a half during that year, no doubt the proportion of Chinese imports re-exported did drop, but not in inverse ratio to the population growth.

---

[33] *Hong Kong Annual Report, 1959*, p.62.

Table 2-17

Hong Kong's re-exports as proportion of total imports

1959 - 1969

HK$m

Year	Imports	Re-exports	Proportion (%)
1959	4,949	995	20
1960	5,864	1,071	18
1961	5,970	991	17
1962	6,657	1,071	16
1963	7,417	1,160	16
1964	8,551	1,356	16
1965	8,965	1,503	17
1966	10,097	1,833	18
1967	10,449	2,081	20
1968	12,472	2,142	17
1969	14,893	2,679	18
	96,279 ...Total....	16,881	Average 18

Source: *Hong Kong Annual Report.*

Table 2-18

Hong Kong's re-exports as proportion of General Exports

1959 - 1969 HK$m

Year	General Exports	Re-exports	Proportion (%)
1959	3,277	995	30
1960	3,938	1,071	27
1961	3,930	991	25
1962	4,387	1,070	24
1963	4,991	1,160	23
1964	5,784	1,356	23
1965	6,530	1,503	23
1966	7,563	1,833	24
1967	8,781	2,081	24
1968	10,570	2,142	20
1969	13,197	2,679	20
	72,948 ...Total...	16,881	Average 23

Source: *Hong Kong Annual Report*

Table 2-19

Hong Kong's Total Imports and Imports from China

1933 - 1969

Year	Imports from China		Total Imports		% from China
	HK$m	£m	HK$m	£m	
1933		10.5		33.8	31
1934		11.0		31.3	35
1935		12.1		35.7	34
1936		9.6		28.6	34
1937		13.0		38.1	34
1938		14.4		38.2	38
1939		13.8		36.6	38
1946		20.2		57.7	35
1947		23.3		95.8	25
1948	431	26.9	2,078	129.9	21
1949	593	37.1	2,750	171.9	22
1950	783	48.9	3,788	236.8	21
1951	863	53.9	4,870	304.4	18
1952	830	51.9	3,780	236.3	22
1953	857	53.6	3,873	242.1	22
1954	692	43.3	3,435	214.7	20
1955	898	56.1	3,719	232.4	24
1956	1,038	64.9	4,566	285.4	23
1957	1,131	70.7	5,150	321.9	22
1958	1,397	87.3	4,594	287.1	30
1959	1,034	64.6	4,949	309.3	21
1960	1,186	74.1	5,864	366.5	20
1961	1,028	64.3	5,970	373.0	17
1962	1,213	75.8	6,657	416.1	18
1963	1,487	92.9	7,412	463.3	20
1964	1,970	123.1	8,551	534.4	23
1965	2,322	145.1	8,965	560.3	26
1966	2,769	173.1	10,097	631.1	27
1967	2,282	142.6	10,449	653.1	22
1968	2,429	153.1	12,472	786.0	20
1969	2,700	185.6	14,893	1,023.8	18

Sources:
1933-47: *Statistical Abst.of the British Commonwealth*,No.70;1948-67: *H.K. Statistics,1947-67*;1967-68: *H.K. Annual Report*.

Conversion rates:*
1948-67: HK$16 - £1
1968: $^{11}/_{12}$ @ HK$16 - £1;
$^{1}/_{12}$ @ HKS14.55 - £1
1969: HK$14.55 - £1

*Source: *H.K. Annual Report*. Note: U.N. *Yearbook of International Trade Statistics,1951* gives imports from China in 1950 as HK$m858(£53.6m). Presumably the figure given in *H.K.Stats.1947-67* is a revised,and more accurate,figure.

Table 2-20

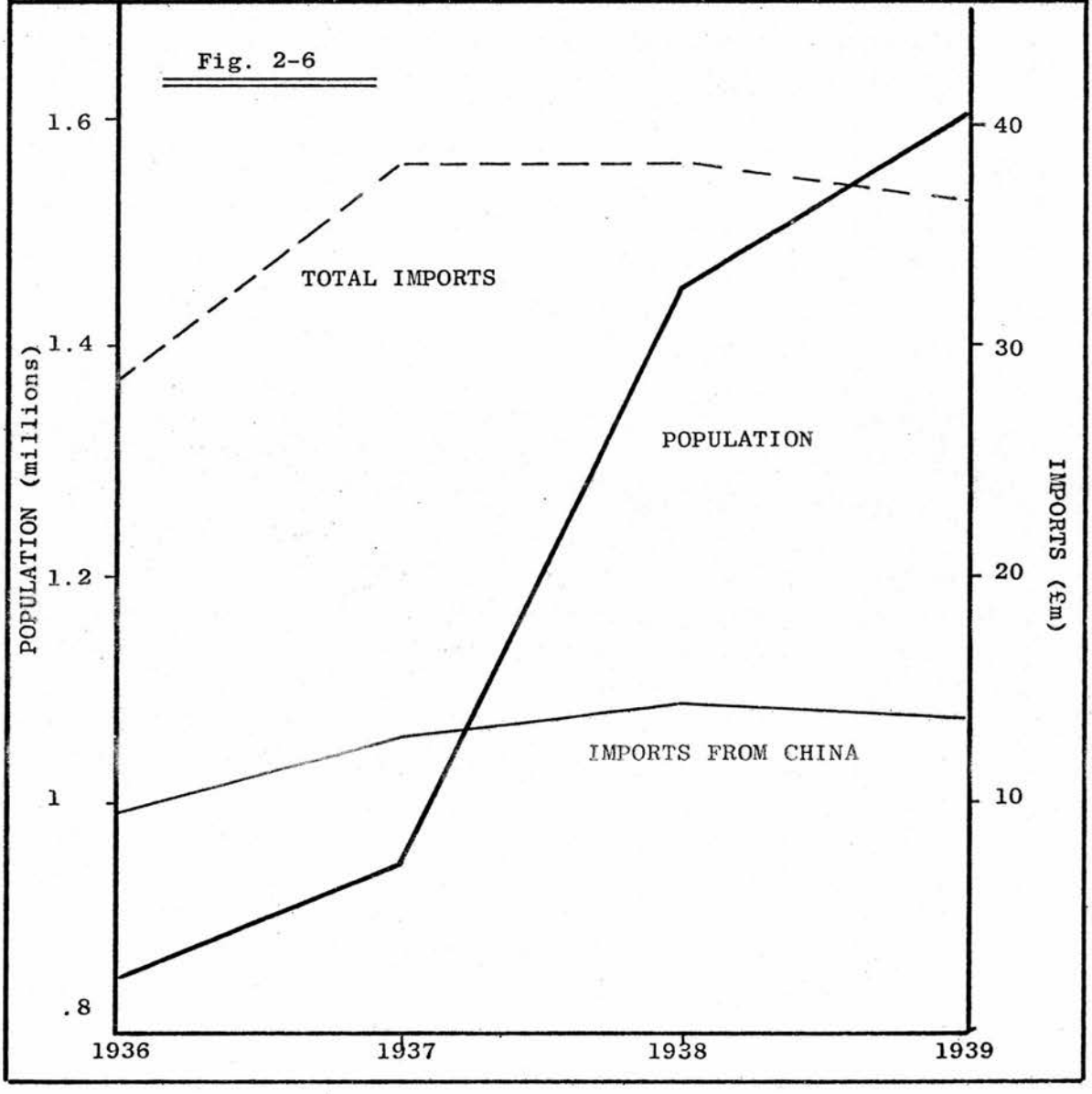
Hong Kong's Population & Imports, 1936-9

Year	Population '000	Total Imports £m	Imports from China £m
1936	850	28.6	9.6
1937	950	38.1	13.0
1938	1,450	38.2	14.4
1939	1,600	36.6	13.8

Sources: Population - *Hong Kong Annual Report*, 1959, p.337.

Imports - *Statistical Abstract of the British Commonwealth*, No.70.

Fig. 2-6



To recapitulate:-

1. During the late sixties, Hong Kong re-exported 25 per cent of its imports from China.

2. By this time the proportion of re-exports to imports had declined considerably.

3. More of Hong Kong's imports came from China in the late thirties, and only part of this increase was due to population growth.

It seems likely, therefore, that at least 30 per cent of Hong Kong's imports from China in 1938 were re-exported, but that the actual proportion was probably much higher.

A comparison of Chinese and Hong Kong figures for 1938, then, does seem to give a rough measure, at least in the case of trade into China. The question arises, can a similar comparison of Hong Kong and British statistics indicate how much of U.K.-Hong Kong trade is unrecorded (entrepôt) trade with third countries, more particularly, China?

Unfortunately, as Tables 2-21 to 2-25 indicate, there does not seem to be any connection between the discrepancy between Hong Kong and British figures and any probable movement of re-exports.

Table 2-21 deals with trade in the direction of Hong Kong; that is, Hong Kong's imports from the United Kingdom, or, British exports to Hong Kong. Hong Kong imports are given c.i.f. and accredited to "the country of production"; British exports are f.o.b. by "country of consignment". Since the Hong Kong figures classify by country of production only, the exports of produce and manufactures of the United Kingdom are included; that is, British re-exports of imported merchandise are excluded. 10 per cent is deducted from the Hong Kong figures to allow for freight, etc., and the U.K. figures are adjusted on the assumption that there is a two-month lag between the recording of exports at the U.K. port and their arrival in Hong Kong. The formula used for this lag adjustment, taking five-sixths of the current year and one-sixth of the previous year, is based, of course, on an unrealistic assumption that the level of trade is

Table 2-21

Hong Kong's Imports from U.K./U.K. Exports to Hong Kong

Year	1	2	3	4	5	6	7
	HONG KONG IMPORTS FROM UK			UK EXPORTS TO HK		Difference (5-3)	% (6/3).100
	Reported	Converted	Adjusted	Reported	Adjusted		
	HK$m	£m	£m	£m	£m	£m	%
1930	n.a.	n.a.	n.a.	4.4	n.a.	n.a.	n.a.
1931	-	4.1	3.7	4.4	4.4	0.7	19
1932	-	5.1	4.6	4.8	4.7	0.1	2
1933	-	3.5	3.2	3.2	3.5	0.3	9
1934	-	2.5	2.3	2.5	2.6	0.3	13
1935	-	2.3	2.1	2.4	2.4	0.3	14
1936	-	1.8	1.6	2.1	2.2	0.6	38
1937	-	2.9	2.6	3.4	3.2	0.6	23
1938	-	3.5	3.2	3.9	3.8	0.6	19
1939	-	2.5	2.3	2.8	3.0	0.7	30
1946	-	2.7	2.4	6.0	n.a.	n.a.	n.a.
1947	-	10.2	9.2	12.7	11.6	2.4	26
1948	301	18.8	16.9	20.6	19.3	2.4	14
1949	388	24.2	21.8	27.9	26.7	4.9	23
1950	405	25.3	22.8	27.8	27.8	5.0	22
1951	619	38.7	24.8	35.4	34.1	-0.7	- 2
1952	470	29.4	26.5	28.8	29.9	3.4	13
1953	474	29.6	26.6	27.0	27.3	0.7	3
1954	369	23.1	20.8	23.8	24.3	3.5	17
1955	441	27.6	24.8	25.5	25.2	0.4	2
1956	513	32.1	28.9	32.8	31.6	2.7	9
1957	667	41.7	37.5	36.3	35.7	-1.8	- 5
1958	531	33.2	29.9	30.6	31.6	1.7	6
1959	574	35.9	32.3	35.2	34.4	2.1	7
1960	664	41.5	37.4	39.8	39.0	1.6	4
1961	757	47.3	42.6	43.7	43.1	0.5	1
1962	760	47.5	42.8	46.4	45.9	3.1	7
1963	860	53.8	48.4	52.5	51.5	3.1	6
1964	838	52.4	47.2	55.1	54.7	7.5	16
1965	962	60.1	54.1	65.0	63.3	9.2	17
1966	1,011	63.2	56.9	64.9	64.9	8.0	14
1967	984	61.5	55.4	61.0	61.6	6.2	11
1968	1,083	68.3	61.5	76.3	73.7	12.2	20
1969	1,201	82.5	74.3	87.1	85.3	11.0	15

Sources: Hong Kong - 1931-32 *Statistical Abstract of British Empire**; 1933-47 *Statistical Abstract of the British Commonwealth*, No.70, 1948-69 *U.N. Yearbook of International Trade Statistics*; U.K. - *Annual Statement*.

*Note - Hong Kong Custom's statistics were suspended between 1925& 30

For conversion rates see Table 2-19.

Adjustments: H.K. imports - less 10% c.i.f.
U.K. exports - $^5/_6$ current year plus $^1/_6$ preceding year.

steady throughout the year. It might have been more satisfactory (but disproportionately time consuming) to use the monthly figures: January to October of the current year with November and December of the preceding year.

The two sets of adjusted figures are compared and the differences, both absolute and relative, computed. If the British figures include goods which the Hong Kong Customs distinguish as entering for transit of transshipment to third countries, then ideally the difference between the two will display a plausible variation over time (that is, rising in the late thirties and forties during times of disturbance in China) and finally correspond with the figures for Hong Kong re-exports of goods of U.K. origin in the late sixties, when these statistics begin to be published.

At first the differences are promising. They rise during the thirties both absolutely and, to some extent, relatively (the percentage difference is not very accurate since the absolute figures are only taken to the first decimal place), as might be expected. After the war the difference rises again, in line with expectations, reaching a peak in 1950; but then during the fifties it displays a bewildering fluctuation (Fig. 2-7) followed, in the sixties, by an undulating rise which ends up considerably above the Hong Kong figures for re-exports of goods of U.K. origin (Table 2-22). Since two years is not much to go on, Table 2-23 goes beyond the chosen period up to 1973, but here again the difference does not correspond with known re-exports.[34]

Trade in the direction of the United Kingdom, that is Hong Kong exports/U.K. imports, is slightly different, since Hong Kong distinguished re-exports by country of destination from 1959, which gives a spread of eleven years to test correspondence between the difference and re-exports. Again, as Table 2-24 shows, there is no correlation. Finally Table 2-25, using this time a three-year moving average instead of an arbitrary lag

---

[34]Because of conversion from US$ this table produces slightly different results for 1968 and 1969.

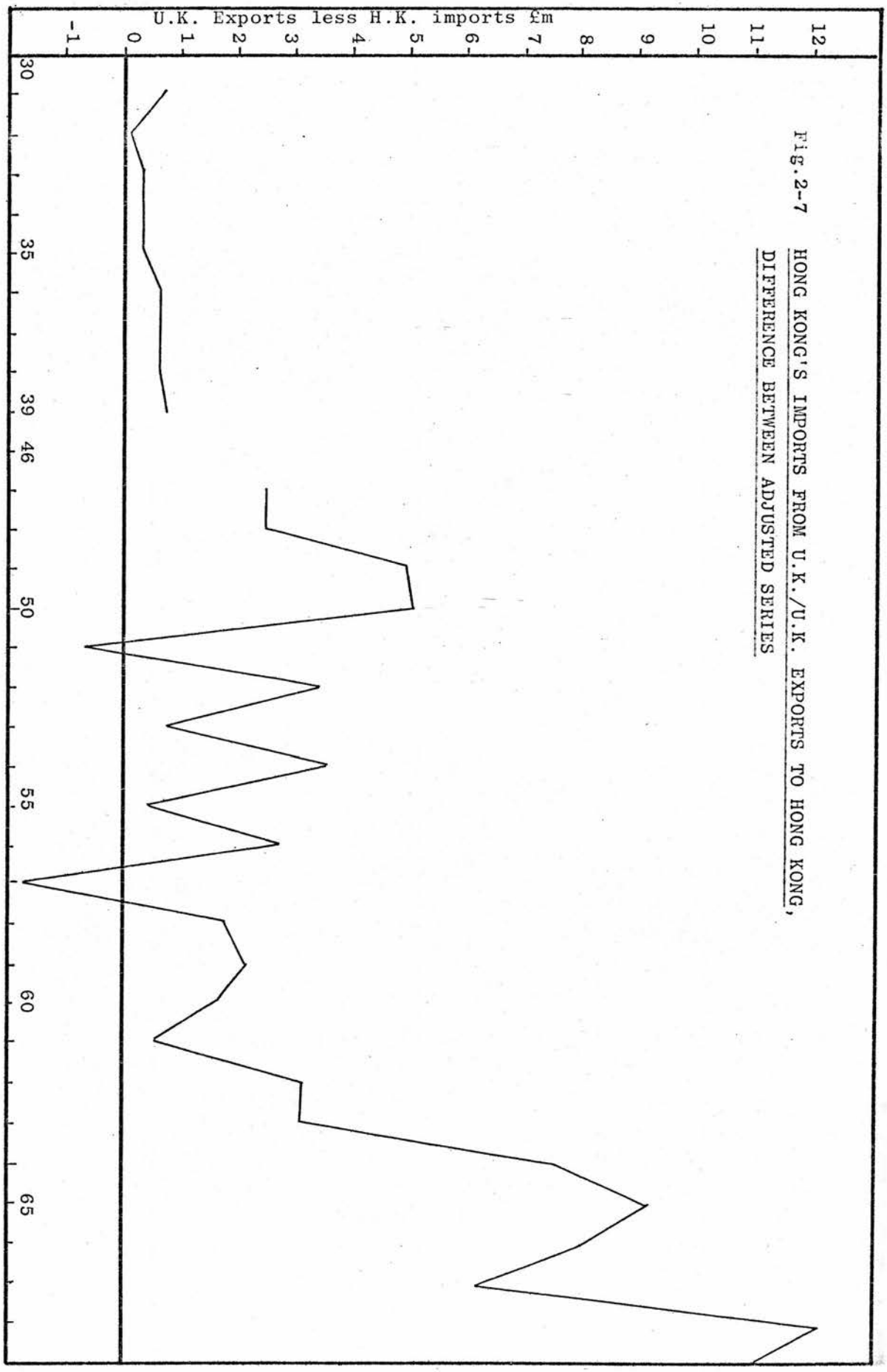


Fig.2-7 HONG KONG'S IMPORTS FROM U.K./U.K. EXPORTS TO HONG KONG, DIFFERENCE BETWEEN ADJUSTED SERIES

Table 2-22

Year	Hong Kong Re-exports of goods of U.K. origin	Difference between H.K. imports from U.K. & U.K. exports to H.K.
	£m	£m
1968	2.36	12.2
1969	6.78	11.0

Source: Hong Kong figures - Table 2-7; U.K. figures - Table 2-21.

Table 2-23

Comparison of reporting difference & stated re-exports

Year	1	2	3	4	5	6	7	8	9
	Hong Kong imports from U.K.	Less 10% c.i.f.	U.K. general exports to H.K.	Less 2% re-exports	Difference (4 - 2)	Conversion rate (U.S. cents to H.K.$)	Column 5 in HK$m	H.K. re-exports of goods of U.K. origin	Discrepancy (7 - 8)
	US$m						HK$m		
1968	179	161	187	183	22	16.5	133	38	95
1969	198	178	213	209	31	16.5	188	99	89
1970	250	225	232	227	2	16.5	12	142	-130
1971	266	239	248	243	4	16.72	24	156	-132
1972	257	231	247	242	11	17.9268	61	176	-115
1973	333	300	304	298	- 2	19.4132	-10	223	-233

Sources: Columns 1,3 and 6 - *United Nations Handbook of International Trade Statistics*; Column 8 - *Hong Kong External Trade*.

Fig.2-8

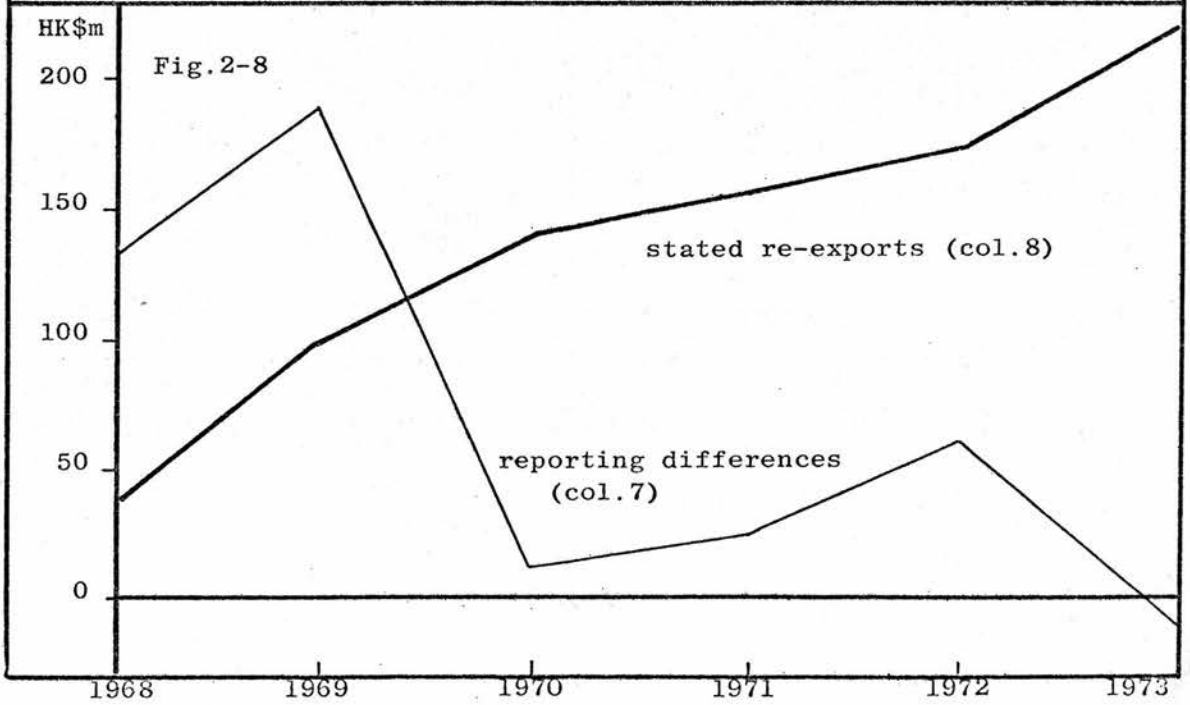


Table 2-24

Hong Kong's exports to U.K./U.K.'s imports from Hong Kong, 1956-1969

Year	1 Hong Kong's general exports to U.K.	2	3 Lag adjustment	4 Retained U.K. Imports*	5 Less 10% c.i.f.	6 Difference (5-3)	7 H.K. re-exports to U.K.+	8 Difference (6-7)	9 Difference as % of UK imports ($^{8}/_{5}$)
	HK$m	£m							
1959	462	28.9	n.a.	33.4	30.1	1.2++	1.4	-0.2	- 1
1960	608	38.0	36.5	42.8	38.5	2.0	1.4	0.6	2
1961	608	38.0	38.0	45.1	40.6	2.6	1.2	1.4	4
1962	737	46.1	44.7	54.6	49.1	4.4	1.4	3.0	7
1963	907	56.7	54.9	67.9	61.1	6.2	2.5	3.7	7
1964	1024	64.0	62.8	77.9	70.1	7.3	3.3	4.0	6
1965	908	56.8	58.0	69.9	62.9	4.9	3.0	1.9	3
1966	1017	63.6	62.5	80.3	72.3	9.8	2.1	7.7	11
1967	1178	73.6	72.0	89.1	80.2	8.2	1.9	6.3	8
1968	1407	88.7	86.2	114.8	103.3	17.1	3.7	13.4	13
1969	1537	105.6	102.8	124.8	112.3	9.5	4.8	4.7	4

Sources: As Table 2-21.

Notes:- Lag adjustment: $^{5}/_{6}$ of current year plus $^{1}/_{6}$ of preceding year. -*From 1964 British statistics do not distinguish retained imports. The average of the difference between total imports and retained imports 1959-63, 0.4%, has been applied to total imports from 1964 to give an estimate of retained imports. -+Converted from HK$ at rates shown in Table 2-19. -++Using unadjusted H.K. figure of £28.9.

Table 2-25

Hong Kong Exports to U.K./U.K. Imports from Hong Kong
Comparison of Three-Year Moving Averages, 1932-68

Year	1	2	3	4	5
	Hong Kong Exports to U.K. 3 yr. m.a.	U.K. Imports from H.K.		Difference (3 - 1)	
		3 yr. m.a.	less 12% c.i.f.	absolute	% of 3
	£m				%
1932	.272	.302	.266	- .006	- 2
1933	.340	.309	.272	- .068	-25
1934	.510	.413	.363	- .147	-41
1935	.686	.572	.503	- .183	-36
1936	.956	.741	.652	- .304	-47
1937	1.147	.884	.778	- .369	-47
1938	1.327	.935	.823	- .504	-61
1947	2.7	2.6	2.3	- .4	-17
1948	5.3	5.9	5.2	- .1	- 2
1949	8.0	9.2	8.1	.1	1
1950	10.9	12.1	10.7	- .2	- 2
1951	9.7	10.7	9.4	- .3	- 3
1952	8.7	9.5	8.4	- .3	- 4
1953	7.6	8.4	7.4	- .2	- 3
1954	10.9	11.9	10.5	- .4	- 4
1955	14.6	15.8	13.9	- .7	- 5
1956	18.3	20.0	17.6	- .7	- 4
1957	21.4	23.5	20.7	- .7	- 3
1958	24.9	27.9	24.6	- .3	- 1
1959	30.5	34.4	30.3	- .2	- 1
1960	35.0	40.4	35.6	.6	2
1961	40.7	47.5	41.8	1.1	3
1962	46.9	55.9	49.2	2.3	5
1963	55.6	66.8	58.8	3.2	5
1964	59.2	71.9	63.3	4.1	7
1965	61.5	76.0	66.9	5.4	8
1966	64.7	79.7	70.1	5.4	8
1967	75.3	94.7	83.3	8.0	10
1968	89.3	109.5	96.4	7.1	7

Sources: As Table 2-21.

Note: Column 2 retained imports up to 1964.

adjustment, and deducting 12 per cent for c.i.f. instead of 10 per cent, looks at the whole period from 1932 to 1968. As with Table 2-21, there is considerable difference between the decades. In the thirties the British figures are considerably, and increasingly, below the Hong Kong ones, even without allowing for c.i.f.. After the war, the balance changes (the c.i.f. adjustment delays this in column 4 until the end of the fifties) and the U.K. figures become larger than the Hong Kong ones. We seem to have come to a dead end.

China and Hong Kong: Comparison of Trends

There are many reasons for discrepancy between different country's accounting of the same trade, so the failure of a comparison to reveal one particular cause, concealed re-exports, is not unexpected, although regrettable.[35] An alternative approach is to compare Britain's trade with Hong Kong with her trade with China, bearing in mind Hong Kong's trade with China, her trade in general and Britain's total trade, and making use of a Hong Kong estimate of the pattern of trade of the thirties.

Periodisation

Table 2-26 (Fig.2-9 for imports and Fig. 2-10 for exports, both on the same scale for ease of comparison) presents a simple comparison of trade with Hong Kong and China over the whole of the period. The most obvious thing about both sets of figures is the change in relative importance to British trade of the two countries. This change is most marked in the case of imports where, in 1930, British imports from China were some twenty times her imports from Hong Kong but, by the end of the sixties, imports from Hong Kong are three times imports from China. Apart from this dramatic reversal, it can be seen that (a) Hong Kong rises in importance through the thirties (imports from China falling from 2475 per cent of Hong Kong's in 1930 to 578 per cent in 1939); (b) after the war China initially takes the lead but slumps at the time of Liberation,

---

[35] cf. A. Maizels, "Coverage", chapter three of *International Trade Statistics*.

Table 2-26

Britain's trade with China & Hong Kong

1930 - 1969

	Imports			Exports		
	from Hong Kong	from China	Ratio China/HK	to Hong Kong	to China	Ratio China/HK
	£m		%	£m		%
1930	0.4	9.9	2475	4.5	8.7	193
1931	0.4	7.8	1950	4.5	8.0	178
1932	0.3	6.2	2067	4.9	7.9	161
1933	0.3	5.1	1700	3.3	6.4	194
1934	0.5	6.1	1220	2.6	6.6	254
1935	0.7	6.3	900	2.5	5.1	204
1936	0.8	7.6	950	2.2	5.8	264
1937	0.9	8.3	922	3.5	6.0	171
1938	1.0	6.4	640	4.0	4.2	105
1939	0.9	5.2	578	2.8	3.7	132
1946	0.4	2.7	675	6.1	7.9	130
1947	2.1	7.2	343	12.8	12.8	100
1948	5.5	8.2	149	20.7	8.7	42
1949	10.3	3.6	35	28.0	2.4	9
1950	12.1	10.3	85	28.1	3.6	13
1951	14.5	7.7	53	36.1	2.7	8
1952	6.4	3.0	47	29.0	4.6	16
1953	8.3	10.2	123	27.3	6.3	23
1954	11.1	9.0	81	24.1	6.9	29
1955	16.6	12.3	74	25.9	8.0	31
1956	20.2	12.6	62	33.1	10.8	33
1957	23.6	14.2	60	36.6	12.2	33
1958	27.1	18.5	68	31.0	27.2	88
1959	33.5	19.7	59	35.6	24.8	70
1960	43.0	24.8	58	40.2	32.1	80
1961	45.3	30.9	68	44.4	13.1	30
1962	54.8	23.2	42	47.0	8.6	18
1963	68.2	18.5	27	53.1	13.3	25
1964	78.2	24.6	32	55.6	17.8	32
1965	70.2	29.7	42	65.6	25.8	39
1966	80.6	33.8	42	65.7	33.5	51
1967	89.5	29.6	33	62.4	38.8	62
1968	115.3	34.3	30	77.9	29.1	37
1969	125.4	37.7	30	88.6	54.7	62

Source: *Annual Statement of Trade of the U.K.*

Exports include re-exports.

Fig.2-9 BRITAIN'S IMPORTS FROM CHINA & HONG KONG 1930-1969

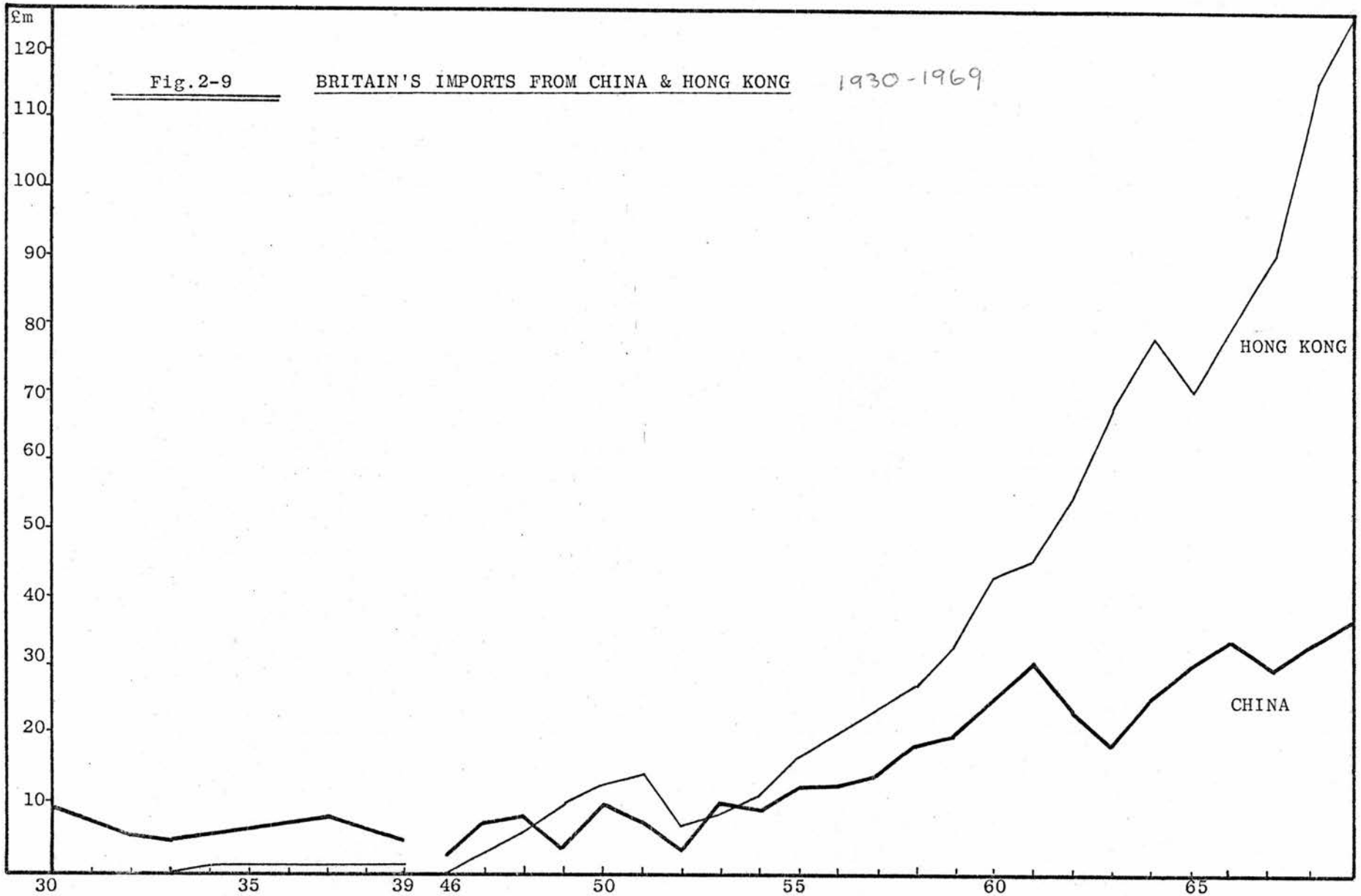
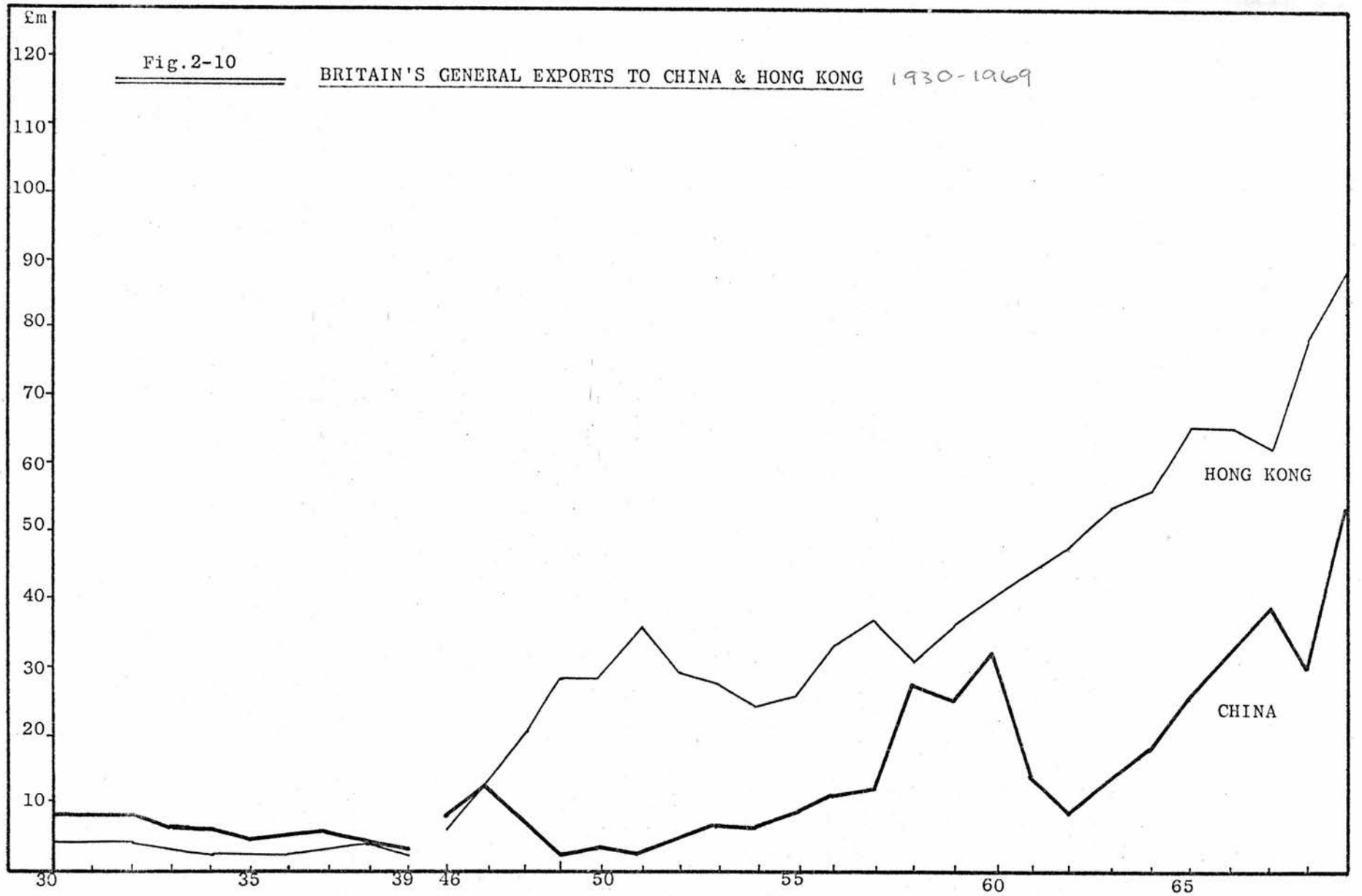


Fig.2-10 BRITAIN'S GENERAL EXPORTS TO CHINA & HONG KONG 1930-1969



whereas Hong Kong continues rising rapidly; (c) both countries are affected by the mid-fifties depression (of prices) but Hong Kong's recovery and growth soon outstrips China's.

In the case of exports the difference in importance to Britain of the two markets is far less pronounced. After the war, exports to Hong Kong catch up with those to China by 1947 and surpass them every year thereafter. The difference between the two is boosted by the drop in exports to China occasioned by the Civil War and the Korean embargo and again, in the early sixties, during China's 'Bad Years'. It is clear that both imports and exports can be divided into three periods:-

1. The thirties.
2. Civil War, Korean War and aftermath, 1946-58.
3. Late-fifties onwards.

Final period

The last period can be disposed of first because it does not concern us here; by then Hong Kong's growth is secular and not dependent on the China trade in the sense that it was previously. In 1952-53 it could still be written: "The prosperity of Hong Kong depends on its entrepôt trade. Though no separate records of its value can be kept, it probably represents the bulk of the total imports and total exports of the colony."[36]

By 1959, as we have already noted, Hong Kong had discovered it could keep separate records and re-exports were distinguished for the first time from domestic exports, to reveal that the latter were already twice the value of re-exports (Table 2-18). For convenience (despite some duplication), Hong Kong's trade with China, the United Kingdom, and her total trade, is shown in sterling for the period 1933-69 in Tables 2-27 and 2-28. Estimates of China's total exports and imports are given in Tables 2-29 and 2-30, and estimate of her trade with the West in Table 2-31. This distinction between total trade and trade with the West is

---

[36] *International Trade Statistics*, p.348.

Table 2-27

Hong Kong's Imports fr. 1933-1969

Year	Imports from U.K.		Imports from China		Total Imports
	£m	%	£m	%	£m
1933	3.5	10	10.5	31	33.8
1934	2.5	8	11.0	35	31.3
1935	2.3	7	12.1	34	35.7
1936	1.8	6	9.6	34	28.6
1937	2.9	8	13.0	34	38.1
1938	3.5	9	14.4	38	38.2
1939	2.5	7	13.8	38	36.6
1946	2.7	5	20.2	35	57.7
1947	10.1	11	23.3	24	95.8
1948	18.8	15	26.9	21	129.9
1949	24.2	14	37.1	22	171.9
1950	25.3	11	48.9	21	236.8
1951	38.7	13	53.9	18	304.4
1952	29.4	12	51.9	22	236.3
1953	29.6	12	53.6	22	242.1
1954	23.1	11	43.3	20	214.7
1955	27.6	12	56.1	24	232.4
1956	32.1	11	64.9	23	285.4
1957	41.7	13	70.7	22	321.9
1958	33.2	12	87.3	30	287.1
1959	35.9	12	64.6	21	309.3
1960	41.5	11	74.1	20	366.5
1961	47.3	13	64.3	17	373.1
1962	47.5	11	75.8	18	416.1
1963	53.8	12	92.9	20	463.3
1964	52.4	10	123.1	23	534.4
1965	60.1	11	145.1	26	560.3
1966	63.2	10	173.1	27	631.1
1967	61.5	9	142.6	22	653.1
1968	68.3	9	153.1	20	786.0
1969	82.5	9	185.6	18	1023.8

Sources: As Table 2-19.

Table 2-28

Hong Kong's Exports 1933-1969

(General exports, f.o.b.)

Year	Exports to U.K.		Exports to China		Total Exports
	£m	%	£m	%	£m
1933	.3	1	15.3	56	27.2
1934	.5	2	11.8	48	24.5
1935	.7	3	13.0	49	26.6
1936	.8	4	9.5	43	22.2
1937	1.3	5	11.8	41	28.9
1938	1.3	4	14.3	45	31.7
1939	1.4	4	5.6	17	32.9
1946	1.0	2	18.6	39	47.4
1947	2.4	3	16.4	22	75.3
1948	4.7	5	17.5	18	98.9
1949	8.7	6	36.5	25	144.9
1950	10.5	5	78.8	34	232.2
1951	13.4	5	100.3	36	277.1
1952	5.2	3	32.5	20	181.2
1953	7.4	4	33.8	20	170.9
1954	10.1	7	24.4	16	151.1
1955	15.7	10	11.4	7	158.4
1956	18.6	9	8.5	4	200.6
1957	21.1	11	7.7	4	188.5
1958	24.6	13	9.8	5	186.8
1959	28.9	14	7.1	4	204.9
1960	38.0	15	7.5	3	246.1
1961	38.0	16	6.2	3	245.6
1962	46.1	17	5.3	2	274.2
1963	56.7	18	4.4	1	311.9
1964	64.0	18	3.8	1	361.5
1965	56.8	14	4.5	1	408.1
1966	63.6	14	4.3	1	472.7
1967	73.6	13	3.0	1	548.8
1968	88.7	13	2.8	.4	666.1
1969	105.6	12	2.5	.3	907.0

Sources: As Table 2-19.

Table 2-29

Estimates of China's exports, 1950-69

Year	Estimate		Average		Year	Estimate		Average	
	Source	$m	$m	£m		Source	$m	$m	£m
1950	JEC	620			1961	JEC	1,530		
	MA	699				MA	1,531		
	SBTC	720	680	243		SBTC	1,320		
1951	JEC	780				U	1,525	1,477	527
	MA	932			1962	JEC	1,525		
	SBTC	740	817	292		MA	1,534		
1952	JEC	875				SBTC	1,262		
	MA	940				U	1,525	1,462	522
	SBTC	810	875	313	1963	JEC	1,570		
1953	JEC	1,040				MA	1,557		
	MA	1,099				SBTC	1,464		
	SBTC	997	1,045	373		U	1,560	1,538	549
1954	JEC	1,060			1964	JEC	1,750		
	MA	1,197				MA	1,812		
	SBTC	1,140	1,132	404		SBTC	1,672		
1955	JEC	1,375				U	1,770	1,751	625
	MA	1,425			1965	JEC	2,035		
	SBTC	1,378	1,393	497		MA	1,809		
1956	JEC	1,635				SBTC	1,854		
	MA	1,691				U	1,955		
	SBTC	1,883				CA	1,853	1,901	679
	C	2,350	1,890	675	1966	JEC	2,210		
1957	JEC	1,615				MA	2,105		
	MA	1,651				SBTC	2,170		
	SBTC	1,584				U	2,245		
	U	1,595				CA	2,016	2,149	768
	C	2,280	1,745	623	1967	JEC	1,945		
1958	JEC	1,940				MA	1,863		
	MA	1,973				SBTC	1,915		
	SBTC	1,890				U	1,890		
	U	1,910	1,928	689		CA	1,739	1,870	680
1959	JEC	2,230			1968	JEC	1,945		
	MA	2,253				SBTC	1,890		
	SBTC	2,150				U	1,860		
	U	2,205	2,210	789		CA	1,752	1,862	665
1960	JEC	1,960			1969	JEC	2,030		
	MA	2,009				SBTC	2,020		
	SBTC	1,930				U	2,060		
	U	1,945				FETD	2,000	2,028	845
	K	1,980	1,965	702					

Sources: See list of Abbreviations
Conversion rates: 1950-66 $2.80=£1; 1967 $2.75; 1968-9 $2.40

Table 2-30

Estimates of China's Imports, 1950-69

Year	Estimate		Average		Year	Estimate		Average	
		$m	$m	£m			$m	$m	£m
1950	JEC	590			1961	JEC	1,495		
	MA	854				MA	1,370		
	SBTC	742	729	260		SBTC	1,230		
1951	JEC	1,120				U	1,495	1,398	499
	MA	1,035			1962	JEC	1,150		
	SBTC	1,055	1,070	382		MA	1,075		
1952	JEC	1,015				SBTC	940		
	MA	989				U	1,150	1,079	385
	SBTC	1,100	1,035	370	1963	JEC	1,200		
1953	JEC	1,255				MA	1,139		
	MA	1,188				SBTC	1,046		
	SBTC	1,304	1,249	446		U	1,200	1,146	409
1954	JEC	1,290			1964	JEC	1,470		
	MA	1,301				MA	1,392		
	SBTC	1,250	1,280	457		SBTC	1,243		
1955	JEC	1,660				U	1,475	1,395	498
	MA	1,307			1965	JEC	1,845		
	SBTC	1,724	1,564	559		MA	1,756		
1956	JEC	1,485				SBTC	1,690		
	MA	1,446				U	1,740		
	SBTC	1,520	1,484	530		CA	1,690	1,744	623
1957	JEC	1,440			1966	JEC	2,035		
	MA	1,407				MA	1,902		
	SBTC	1,450				SBTC	2,035		
	U	1,730	1,507	538		U	2,045		
1958	JEC	1,825				CA	1,717	1,947	695
	MA	1,861			1967	JEC	1,950		
	SBTC	1,800				MA	1,774		
	U	1,825	1,828	653		SBTC	1,945		
1959	JEC	2,060				U	1,920		
	MA	2,036				CA	1,586	1,835	667
	SBTC	2,050			1968	JEC	1,820		
	U	2,060	2,052	733		SBTC	1,820		
1960	JEC	2,030				U	1,760		
	MA	1,926				CA	1,499	1,725	719
	SBTC	1,840			1969	JEC	1,830		
	U	2,030				SBTC	1,835		
	K	1,980	1,961	700		U	1,825		
						FETD	1,880	1,843	768

Sources and conversion rates as Table 2-29.

Table 2-31

China's trade with the West, 1950-69

Year	Exports to West		Imports from West	
	US$m	£m	US$m	£m
1950	410	146	450	161
1951	315	113	605	216
1952	270	96	305	109
1953	370	132	370	132
1954	295	105	320	114
1955	425	152	360	129
1956	590	211	475	170
1957	530	189	560	200
1958	660	236	725	259
1959	615	220	695	248
1960	625	223	745	266
1961	560	200	775	277
1962	605	216	660	236
1963	755	270	770	275
1964	1,040	371	1,080	386
1965	1,385	495	1,330	475
1966	1,625	580	1,530	546
1967	1,460	530	1,605	584
1968	1,445	602	1,480	617
1969	1,540	642	1,535	640

Source: *JEC*, p.343, converted at rates shown in Table 2-29.

most important because of the dramatic changes in the direction of China's trade over the period (Fig.2-11, JEC estimate). It must be stressed that these estimates of China's trade are subject to a fair degree of uncertainty since they are all constructed from the returns of trade partners, and we have already seen in the case of Hong Kong-British trade how hazardous that can be.

Finally, Table 2-32 (Figs. 2-12, 2-13) shows Hong Kong's share of China's trade with the world, and with the West. The general pattern over the period is for Hong Kong's share of both imports and exports to rise as China suffers invasion and civil war, and then to fall back as peace is restored. In the case of exports, the reversion is to the mid-thirties level, which is due to the large proportion of foodstuffs. Most of Hong Kong's foodstuffs have to be imported and in 1968, for instance, this accounted for 20 per cent of all imports, and 49 per cent of these foodstuffs came from China.[37] A rough breakdown of Hong Kong's imports from China in 1968 shows this predominance of foodstuffs (Table 2-33). The percentage of Hong Kong's imports of foodstuffs coming from China increased from 41 per cent in 1959 to 49 per cent in 1968 (Table 2-34), while these foodstuffs remained a constant proportion of imports from China (49 per cent in 1959 against 50 per cent in 1968), although their actual growth in value was 138 per cent. Population, on the other hand, only increased 35 per cent during the decade; that is, Hong Kong's demand for foodstuffs, whether for consumption or for processing, was considerably greater than population growth but matched total growth in imports.

During the period 1959-69 Hong Kong's share of China's exports to the West stayed relatively steady, around 30 per cent, while her share of total exports roughly doubled. The picture is somewhat complicated by the surge of exports to Hong Kong in 1957 and 1958 caused by good harvests, followed by slump after 1959. This seems to suggest that exports to Hong Kong were more sensitive to the harvest and economy than the average. This is probably true in view of the importance of foodstuffs, much of which

---

[37] *Hong Kong Annual Report, 1968*, pp.56-57.

Fig. 2-11

CHINA'S DIRECTION OF TRADE, 1950-1969

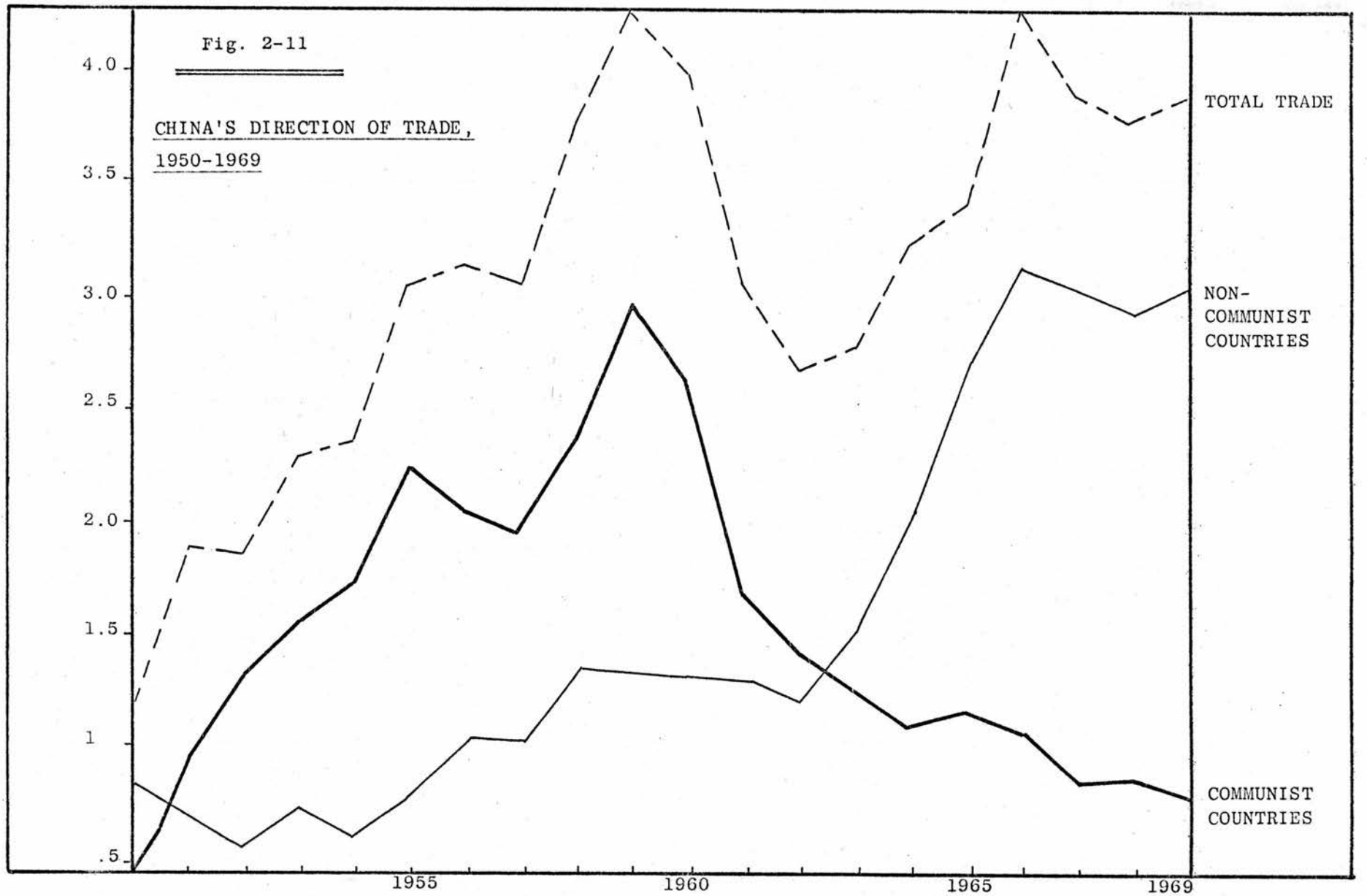


Table 2-32

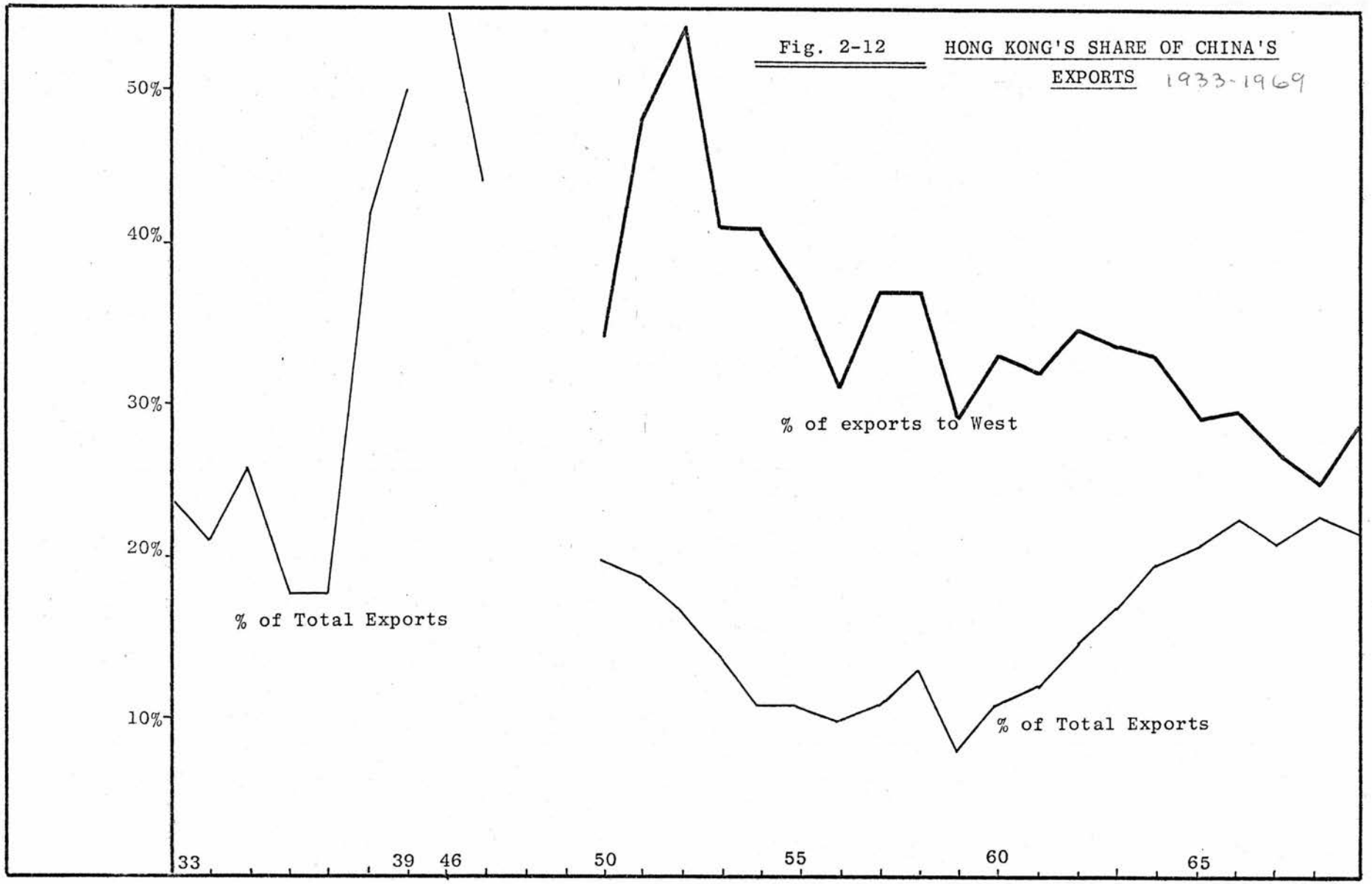
Hong Kong's share of China's trade 1933-1969

Year	China's Exports		China's Imports	
	Total	to West	Total	from West
1933	24		17	
1934	21		17	
1935	26		19	
1936	18		17	
1937	18		21	
1938	42		27	
1939	50		6	
1946	55		13	
1947	44		15	
1948	n.a.		n.a.	
1949	n.a.		n.a.	
1950	20	34	30	49
1951	19	48	26	46
1952	17	54	9	30
1953	14	41	8	26
1954	11	41	5	21
1955	11	37	2	9
1956	10	31	1.6	5
1957	11	37	1.4	4
1958	13	37	1.5	4
1959	8	29	1.0	3
1960	11	33	1.1	3
1961	12	32	1.2	2
1962	15	35	1.4	2
1963	17	34	1.1	1.6
1964	20	33	.8	1.0
1965	21	29	.7	.9
1966	23	30	.6	.8
1967	21	27	.5	.5
1968	23	25	.4	.5
1969	22	29	.3	.4

Sources: Calculated from Tables 2-27 to 2-31.

Note: Percentages under 2% have been taken to the first decimal point to show Hong Kong's declining share even though the uncertainty of the estimates used does not justify that degree of precision.

Fig. 2-12 HONG KONG'S SHARE OF CHINA'S EXPORTS 1933-1969



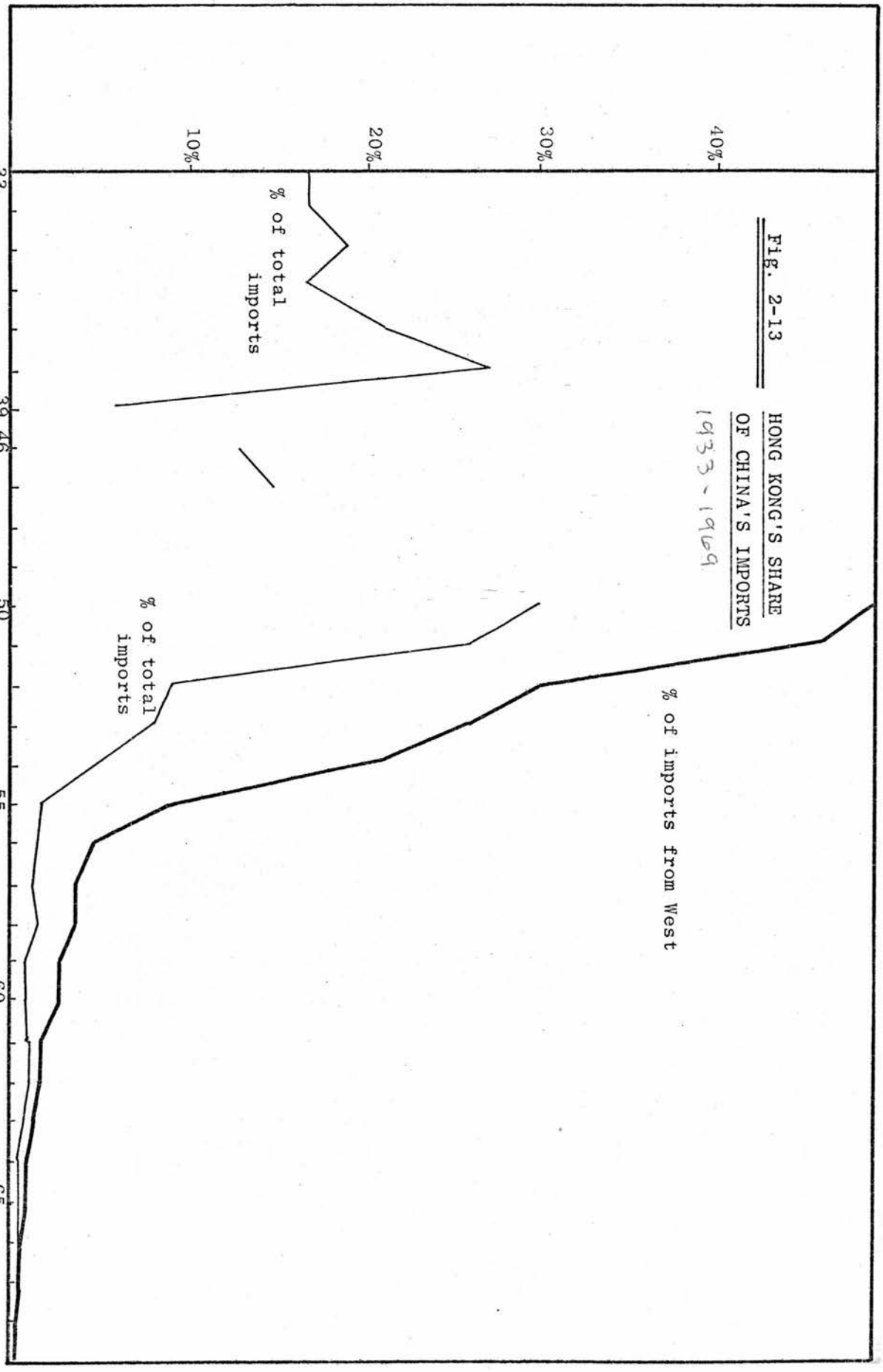


Fig. 2-13 HONG KONG'S SHARE OF CHINA'S IMPORTS 1933 - 1969

Table 2-33

Composition of Hong Kong's imports from China, 1968

	HK$m	%
TOTAL IMPORTS FROM CHINA	2,429	100
OF WHICH:-		
FOODSTUFFS:-		
LIVE ANIMALS	301	
FRUIT AND VEGETABLES	261	
CEREALS AND CEREAL PREPARATIONS	167	
MEAT AND MEAT PREPARATIONS	165	
FISH AND FISH PREPARATIONS	150	
DAIRY PRODUCTS AND EGGS	103	
OTHER	67	
	1,209	50
OTHER:-		
TEXTILE YARNS, FABRICS & MADE-UP ARTICLES	430	18
MISCELLANEOUS MANUFACTURED ARTICLES, NES	127	5
CRUDE ANIMAL & VEGETABLE MATERIALS	88	4
CLOTHING	87	4

Source: *Hong Kong Annual Report, 1968*, pp.56-57, 327.

Table 2-34

Hong Kong's Population & Imports of Foodstuffs, 1959 & 1968

	1959	1968
TOTAL IMPORTS OF FOODSTUFFS	HK$ 1,236m	HK$ 2,468m
IMPORTS OF FOODSTUFFS FROM CHINA	HK$ 507m	HK$ 1,209m
FOODSTUFFS FROM CHINA AS % OF:-		
TOTAL IMPORTS FROM CHINA	49%	50%
TOTAL IMPORTS OF FOODSTUFFS	41%	49%
POPULATION OF HONG KONG	2.9m	3.9m

Source: *Hong Kong Annual Report, 1959 & 1968.*

must come from limited catchment area, but it is also this high degree of localism which presumably causes exports to Hong Kong to be out of phase with the general movement of exports (Fig. 2-14) and which exacerbates the swings in Hong Kong's share of exports.

The movement of Hong Kong's share of China's imports is quite clear-cut and incontrovertibly shows not merely the demise of Hong Kong's general exports to China but, without doubt, her re-exports in particular. By 1955 Hong Kong only provided 2 per cent of China's imports, and whilst this still represented a substantial part of Hong Kong's exports, by 1959 even this was no longer so. Whilst we do not have a breakdown into domestic exports/re-exports prior to 1959, there is no doubt that the overwhelming part of Hong Kong's general exports to China were re-exports. From Table 2-35 it can be seen that, whilst domestic exports fluctuate, the trend is fairly horizontal; re-exports on the other hand display an unmistakable decline. If we presume, as seems reasonable to do, that this level of domestic exports roughly obtained in the fifties, then all but a thin layer at the base of the pinnacle in Fig. 2-15 will be re-exports.

Taken together, this data on Sino-Hong Kong trade shows that by the late fifties, "The traditional entrepôt trade in the exchange of China produce against the manufactures and chemicals of Europe has given way to an inter-Asia trade through Hong Kong."[38] And even in the 'inter-Asian' aspect of Hong Kong's trade the importance of China diminished. Domestic imports to China had been negligible in 1959, although she was still the third largest market for re-exports; by 1968 Japan had overtaken China as principal supplier to Hong Kong and China had fallen to sixteen on the re-exports table.

The Pre-War years

The second period to consider is the pre-war one, and specifically the years 1935-39 when the Japanese invasion dislocates China's trade and we

---

[38] *Hong Kong Annual Report, 1959*, p.71.

Fig. 2-14

CHINA'S EXPORTS, 1956-65

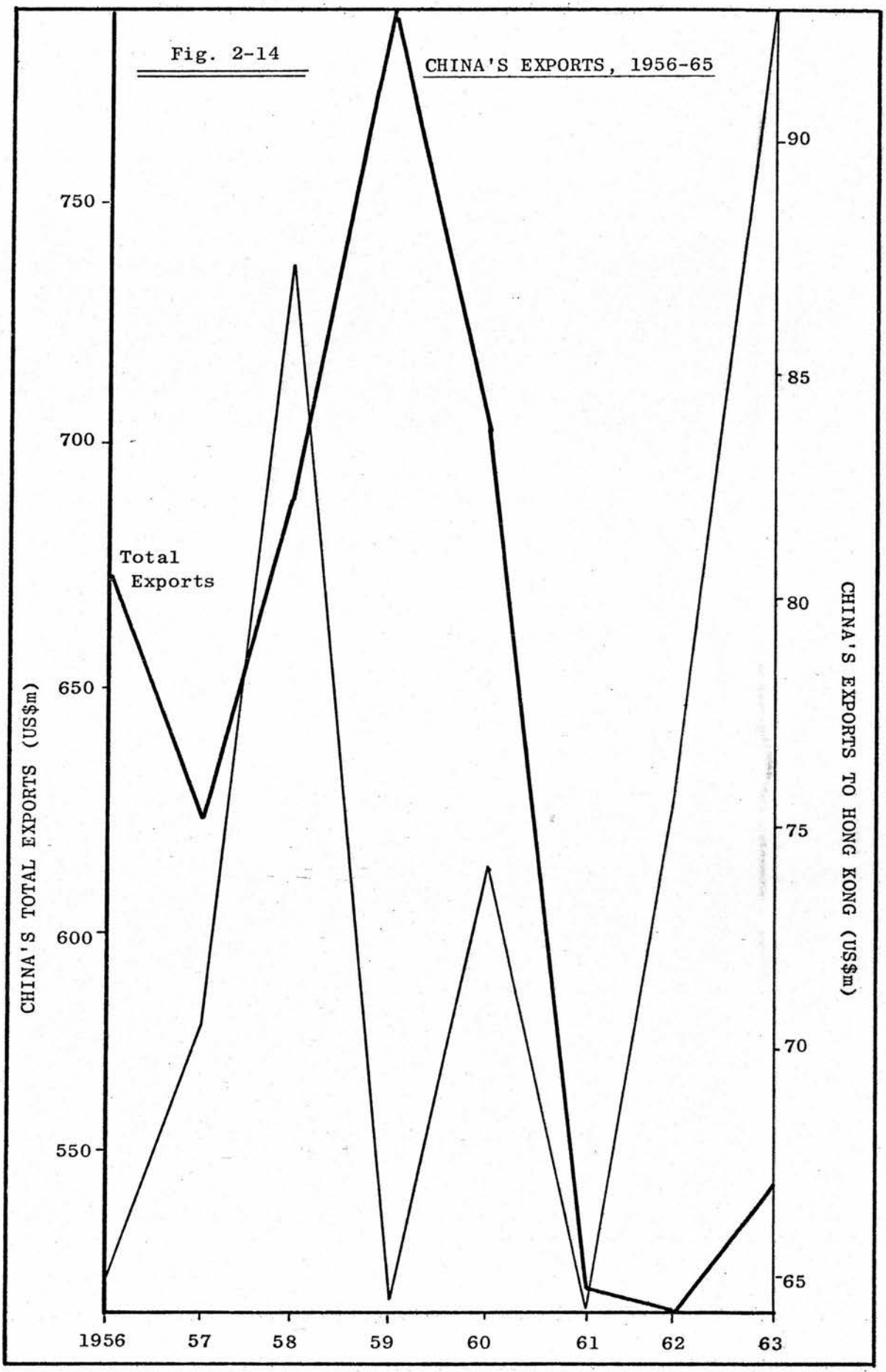


Table 2-35

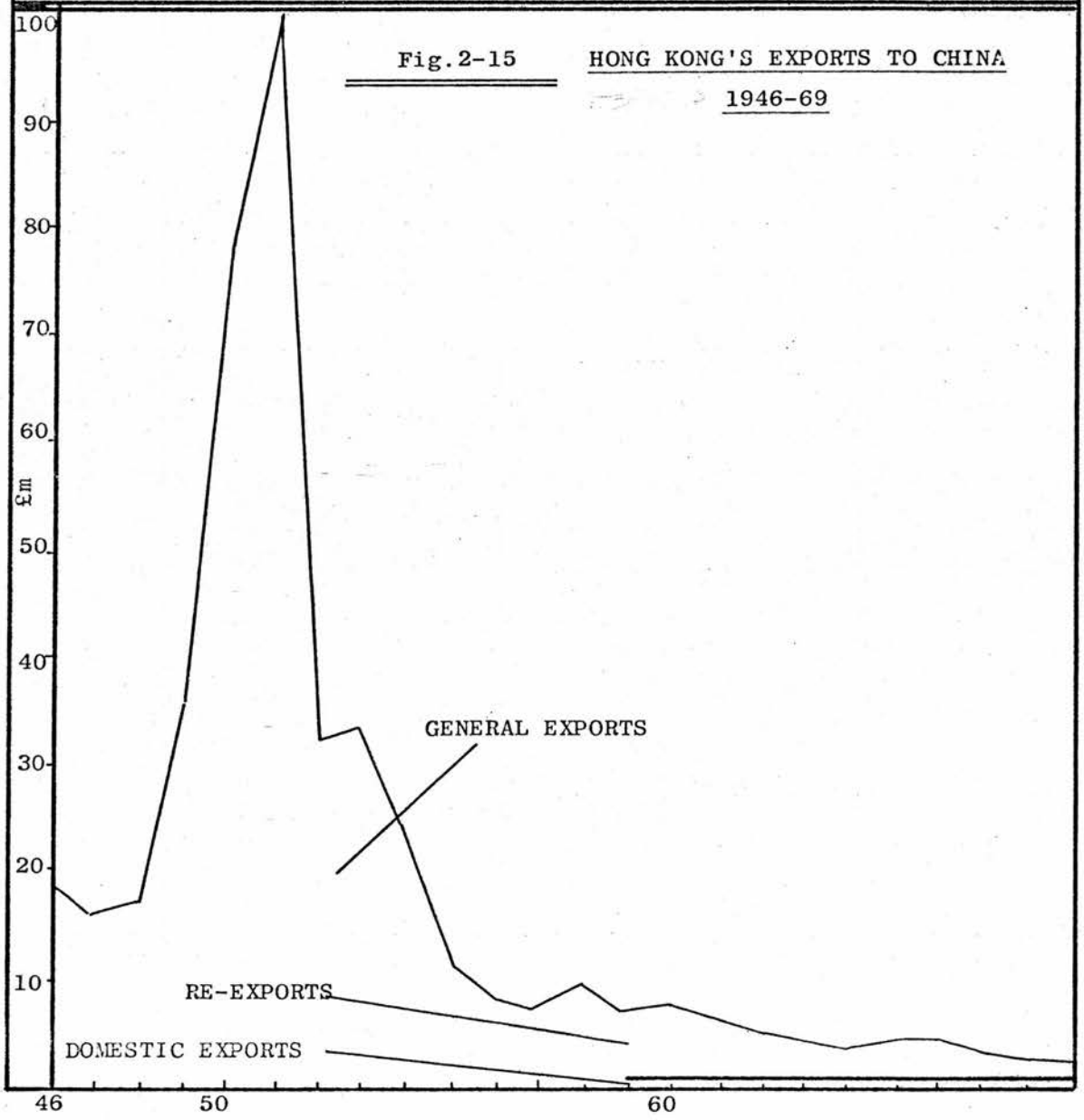
Hong Kong's re-exports & domestic exports to China

HK$m

	Re-exports	Domestic Exports
1959	106	8
1960	107	13
1961	91	8
1962	77	8
1963	62	8
1964	47	13
1965	54	18
1966	54	15
1967	42	6
1968	36	9
1969	30	7

Source: *Hong Kong Annual Report*.

Fig.2-15 HONG KONG'S EXPORTS TO CHINA 1946-69



might expect an increased role for Hong Kong. The relevant figures and indexes for this period are presented in Tables 2-36 and 2-37. Indexes for eastwards trade are plotted in Fig.2-16 and indexes for westwards trade in Fig.2-17. Figs.2-20 and 2-22 show Britain's exports and imports respectively, while Fig.2-21 plots Hong Kong's trade, both imports and exports.

Eastwards-trade (Fig.2-16).- Britain's total exports (line A, Table 2-36) show a rise to 1937 and a fall thereafter, while China's total imports (line B, Table 2-36) fall until 1938 and then rise rapidly in 1939. However, it must be remembered that these Chinese figures are dubious and 1939 is especially affected by the uncertainties of currency conversion. Lines D and F are of course different versions of the same trade and, whilst there are differences in the absolute figures, as we have already discussed, their movements are, as one would expect, much the same. Line E, Hong Kong's exports to China, and line C, Britain's exports to China, are not the same; rather, the opposite, in that they display an inverse movement. As Britain's exports rise in 1936, Hong Kong's fall, but by 1938 the position is reversed with Hong Kong's exports up to 110 (Table 2-37) and Britain's down to 82 (Table 2-36). Exports to China from both countries fall in 1939, Britain's less so than Hong Kong's. This apparently greater resilience of British exports is probably an optical illusion caused by recording lag. If we presume that exports were bunched in the earlier part of the year, then a two-month recording lag will bolster Britain's exports as against Hong Kong's. (If the trade had been rising the reverse would have happened.) The relative movements of lines C and E suggest there is a degree of inverse relationship between exports of the two countries to China. This supposition is reinforced by the similarity between line E and lines F and D. Thus it seems likely that in 1936 more British exports to China went direct, but that by 1938 there had been a shift towards more re-export trade via Hong Kong. However, this inverse relationship may also be due to competition between Britain and Hong Kong as entrepôt for other countries. That is, Britain's exports of widgets to China may have suffered from Hong Kong's re-exports of German or Japanese widgets.

Moreover, the inverse relationship is not the only one. We must also consider the possibilities of direct and secular relationships: direct

Table 2-36

Selected Indexes, 1935-9

(1935=100)

Year	A:BRITAIN'S TOTAL IMPORTS		B:BRITAIN'S IMPORTS FROM CHINA	
	£m	INDEX	£m	INDEX
1935	757	100	6.3	100
1936	847	112	7.6	121
1937	1,028	136	8.3	132
1938	920	122	6.4	102
1939	885	117	5.2	83
Year	C:BRITAIN'S IMPORTS FROM H.K.		D:CHINA'S TOTAL EXPORTS	
	£m	INDEX	£m	INDEX
1935	0.7	100	47	100
1936	0.8	114	57	121
1937	0.9	129	73	155
1938	1.0	143	35	75
1939	0.9	129	27	58
Year	E:BRITAIN'S TOTAL EXPORTS		F:BRITAIN'S EXPORTS TO CHINA	
	£m	INDEX	£m	INDEX
1935	481	100	5.1	100
1936	502	104	5.8	114
1937	596	124	6.0	118
1938	532	111	4.2	82
1939	485	101	3.7	73
Year	G:BRITAIN'S EXPORTS TO H.K.		H:CHINA'S TOTAL IMPORTS	
	£m	INDEX	£m	INDEX
1935	2.5	100	69	100
1936	2.2	88	57	83
1937	3.5	140	57	83
1938	4.0	160	54	78
1939	2.8	112	94	136

Sources: British figures - *Annual Statement of Trade of U.K.*
Chinese figures - *U.N.Yearbook of Internat'l.Trade Statistics,1950.*

Table 2-37

Indexes & Percentages of Hong Kong's Trade with U.K. & China,1935-9

Year	A:IMPORTS FROM U.K.		B:IMPORTS FROM CHINA	
	£m	INDEX	£m	INDEX
1935	2.3	100	12.1	100
1936	1.8	79	9.6	80
1937	2.9	123	13.0	108
1938	3.5	149	14.4	120
1939	2.5	105	13.8	114
Year	C:TOTAL IMPORTS		D:TOTAL EXPORTS	
	£m	INDEX	£m	INDEX
1935	35.7	100	26.6	100
1936	28.6	80	22.2	84
1937	38.1	107	28.9	109
1938	38.2	107	31.7	119
1939	36.6	102	32.9	124
Year	E:EXPORTS TO U.K.		F:EXPORTS TO CHINA	
	£m	INDEX	£m	INDEX
1935	0.7	100	13.0	100
1936	0.8	114	9.5	73
1937	1.3	174	11.8	91
1938	1.3	178	14.3	110
1939	1.4	187	5.6	43
Year	G:PERCENTAGE OF TOTAL IMPORTS		H:PERCENTAGE OF TOTAL EXPORTS	
	from U.K.	from China	to U.K.	to China
1935	7	34	3	49
1936	6	34	4	43
1937	8	34	5	41
1938	9	38	4	45
1939	7	38	4	17

Source: *Statistical Abstract for the British Commonwealth*, No.70, October 1950, (London, Board of Trade).

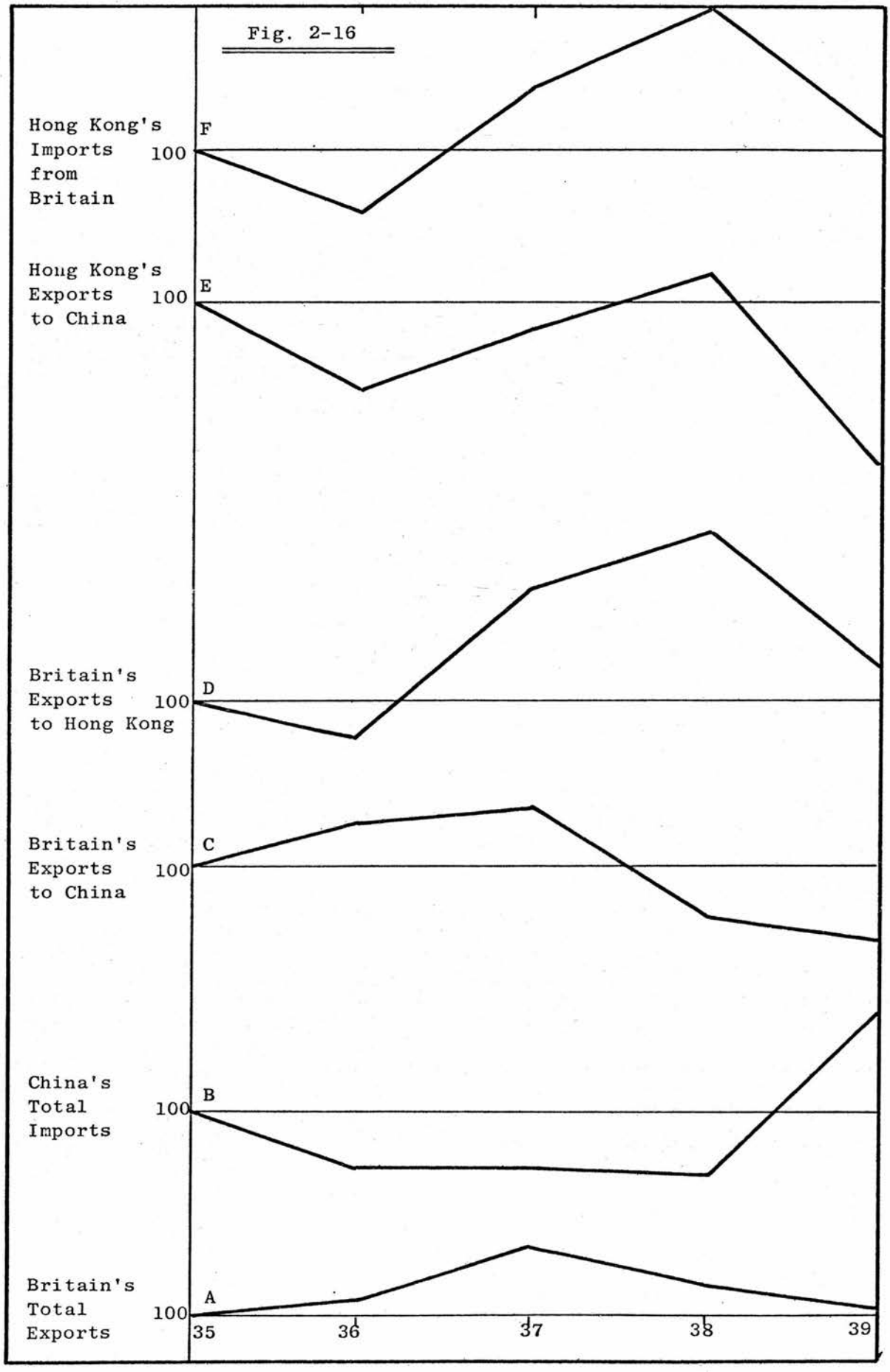


Fig. 2-16
Hong Kong's Imports from Britain
100
F
Hong Kong's Exports to China
100
E
Britain's Exports to Hong Kong
100
D
Britain's Exports to China
100
C
China's Total Imports
100
B
Britain's Total Exports
100
A
35
36
37
38
39

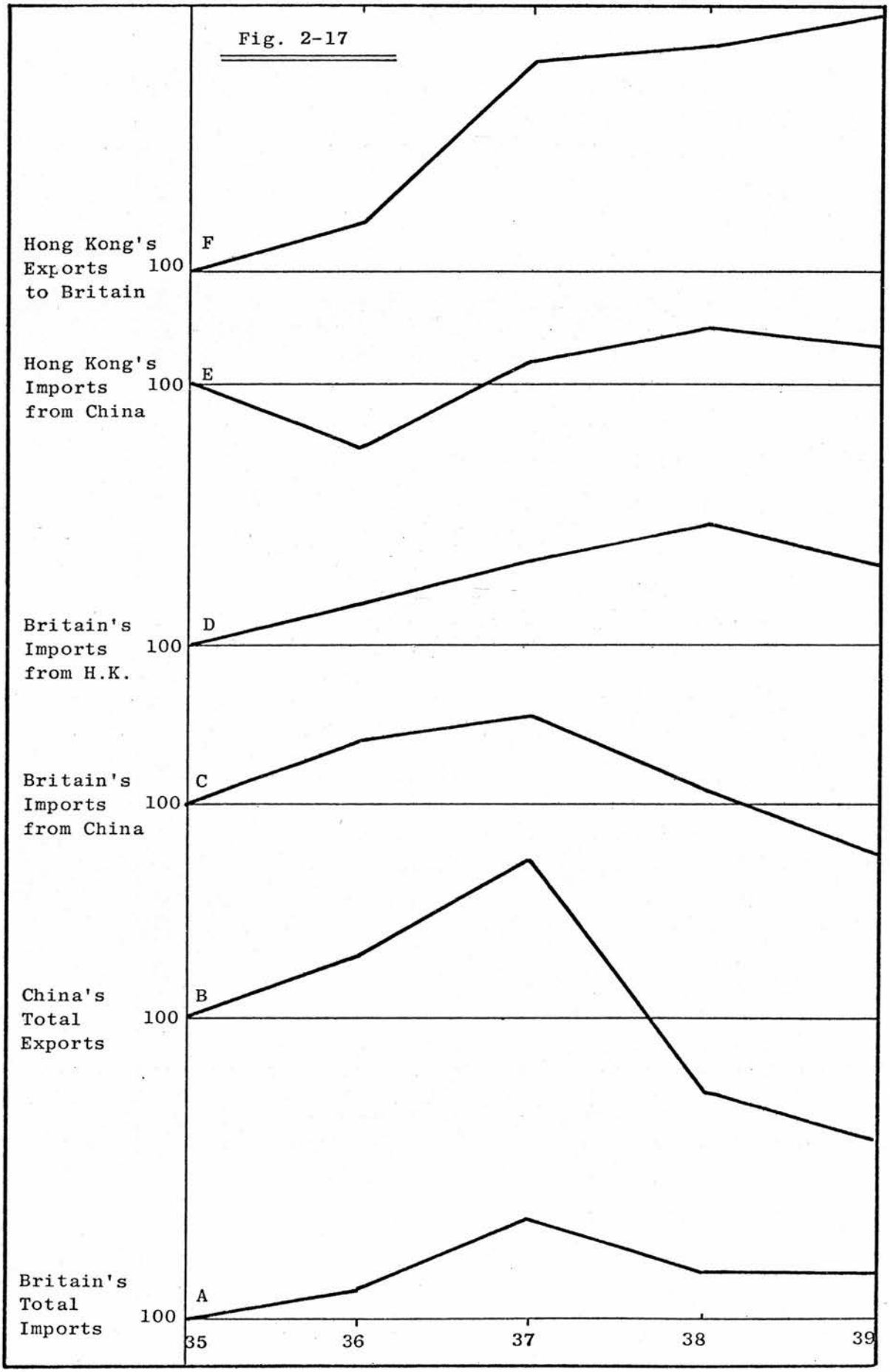


Fig. 2-17
Hong Kong's Exports to Britain
100
F
Hong Kong's Imports from China
100
E
Britain's Imports from H.K.
100
D
Britain's Imports from China
100
C
China's Total Exports
100
B
Britain's Total Imports
100
A
35
36
37
38
39

in the sense that China's demand for widgets might be such that both Britain's direct exports and re-exports through Hong Kong may rise, or fall; alternatively, both China and Hong Kong may be secular markets for British widgets. The commodities shown in Table 2-38, Figs.2-18 and 2-19, display these possible explanations.

Drugs, beer, and (between 1935 and 1936) spirits,linseed oil and confectionery as well suggest an inverse relationship, whilst arms, iron and steel scrap until 1938 move in unison, as do spirits, linseed oil and confectionery after 1936. It is to be expected that diverse commodities will be more unambiguous in their particular movements and more ambiguous in their totality to the degree that the extraneous pressure is less pronounced. This will be clearer when we look at the post-war period, when the influence of political forces is stronger and individual commodities move more in unison with each other and the general trend.

In Fig.2-20 we can see again how British exports to China and Hong Kong move together through the thirties until 1937-38 when there is a clear shift towards Hong Kong. Looking at this from the viewpoint of Hong Kong in Fig.2-21 we see that Hong Kong's exports to China parallel her total exports (and being such a large part of them do much to determine them) until 1939, when exports to China slump while total exports continue to rise strongly. Again, as we have seen in Fig.2-16, imports from Britain move in the same direction as exports to China until 1939, but here we can also see that these imports from Britain match the movement of total exports. This is to be expected, because Hong Kong's re-exports of British goods did not merely go to China.

Westwards-trade (Fig.2-17).- Britain's imports from China (C), China's total exports (B) and Britain's total imports all display roughly the same movement over the years 1935-39, rising to a peak in 1937 and falling thereafter, although the China trade, partly because it is just smaller but principally of course because of the Japanese invasion, shows a much greater decline. In 1939, Britain's total imports are still above the 1935 level, while imports from China have fallen to 83 per cent of 1935 and China's exports in general have slumped to nearly half their level of five years previously. Again, lines D, Britain's imports from Hong Kong, and

Table 2-38

British exports of selected commodities to China & Hong Kong, 1935-9

	1935	1936	1937	1938	1939
Beer					
China	10.0	4.7	2.2	1.4	.9
Hong Kong	16.2	15.9	15.0	17.8	19.3
Spirits, Home-made					
China	64.8	43.1	46.2	52.7	72.7
Hong Kong	59.5	58.5	71.4	68.8	87.2
Confectionery					
China	4.9	4.5	2.2	3.1	1.5
Hong Kong	5.5	4.5	6.5	8.5	5.8
Iron & Steel Scrap					
China	31.2	37.6	46.3	8.7	19.6
Hong Kong	12.3	6.8	10.3	7.5	2.0
Linseed Oil					
China	12.1	4.6	5.1	6.0	2.1
Hong Kong	11.1	6.6	6.4	6.3	4.8
Drugs, Medicines & Medicinal Preparations					
China	67.7	63.7	55.8	40.6	44.1
Hong Kong	28.9	32.9	42.7	46.6	49.6
Arms, Ammunition & Military and Naval Stores					
China	83.1	141.9	155.0	284.2	1.9
Hong Kong	15.9	12.0	15.8	219.5	55.3

Source: *Annual Statement of Trade of the U.K.*

Fig. 2-18

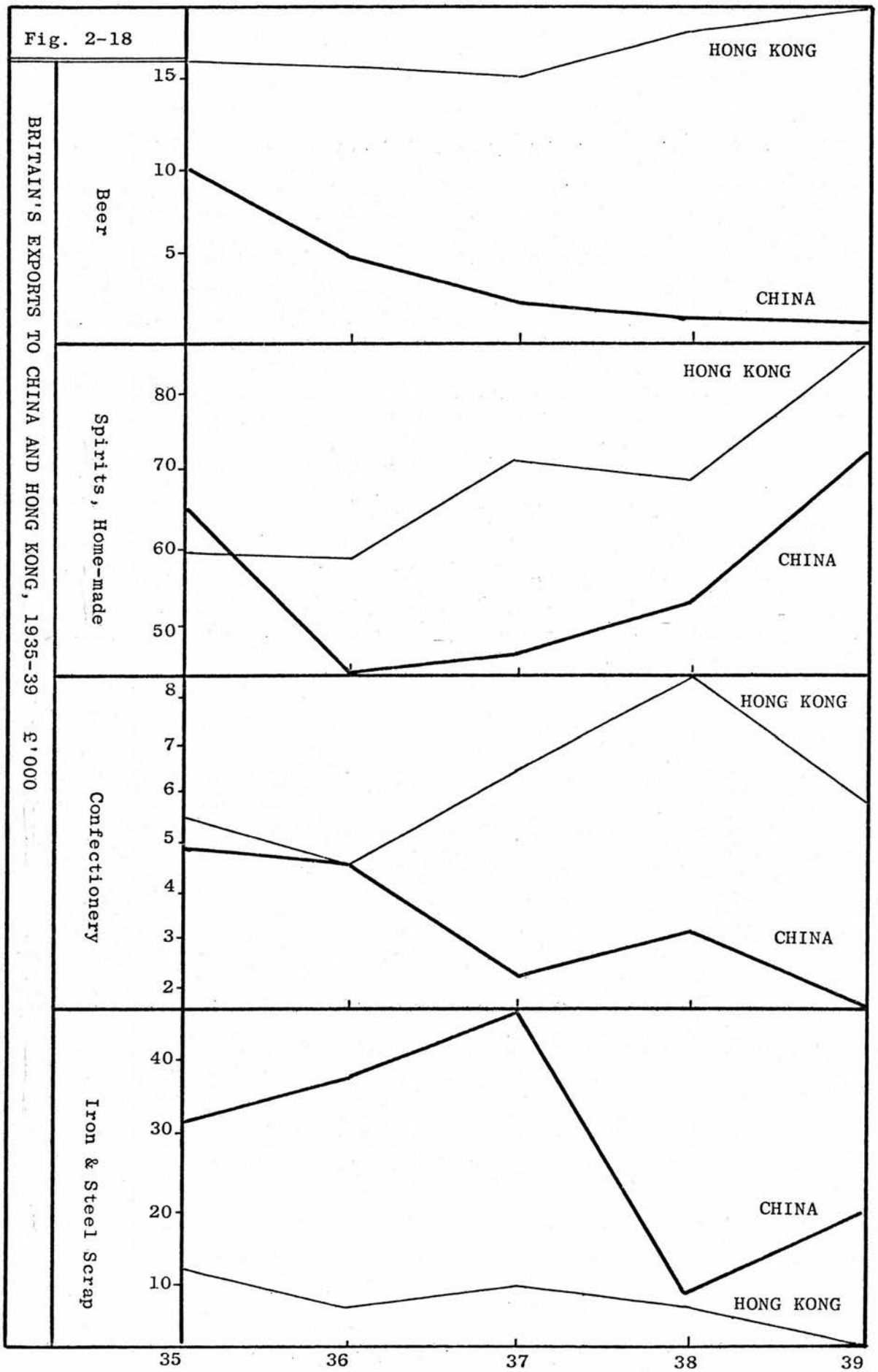

BRITAIN'S EXPORTS TO CHINA AND HONG KONG, 1935-39 £'000
Beer
15
10
5
HONG KONG
CHINA
Spirits, Home-made
80
70
60
50
HONG KONG
CHINA
Confectionery
8
7
6
5
4
3
2
HONG KONG
CHINA
Iron & Steel Scrap
40
30
20
10
CHINA
HONG KONG
35
36
37
38
39

Fig. 2-19

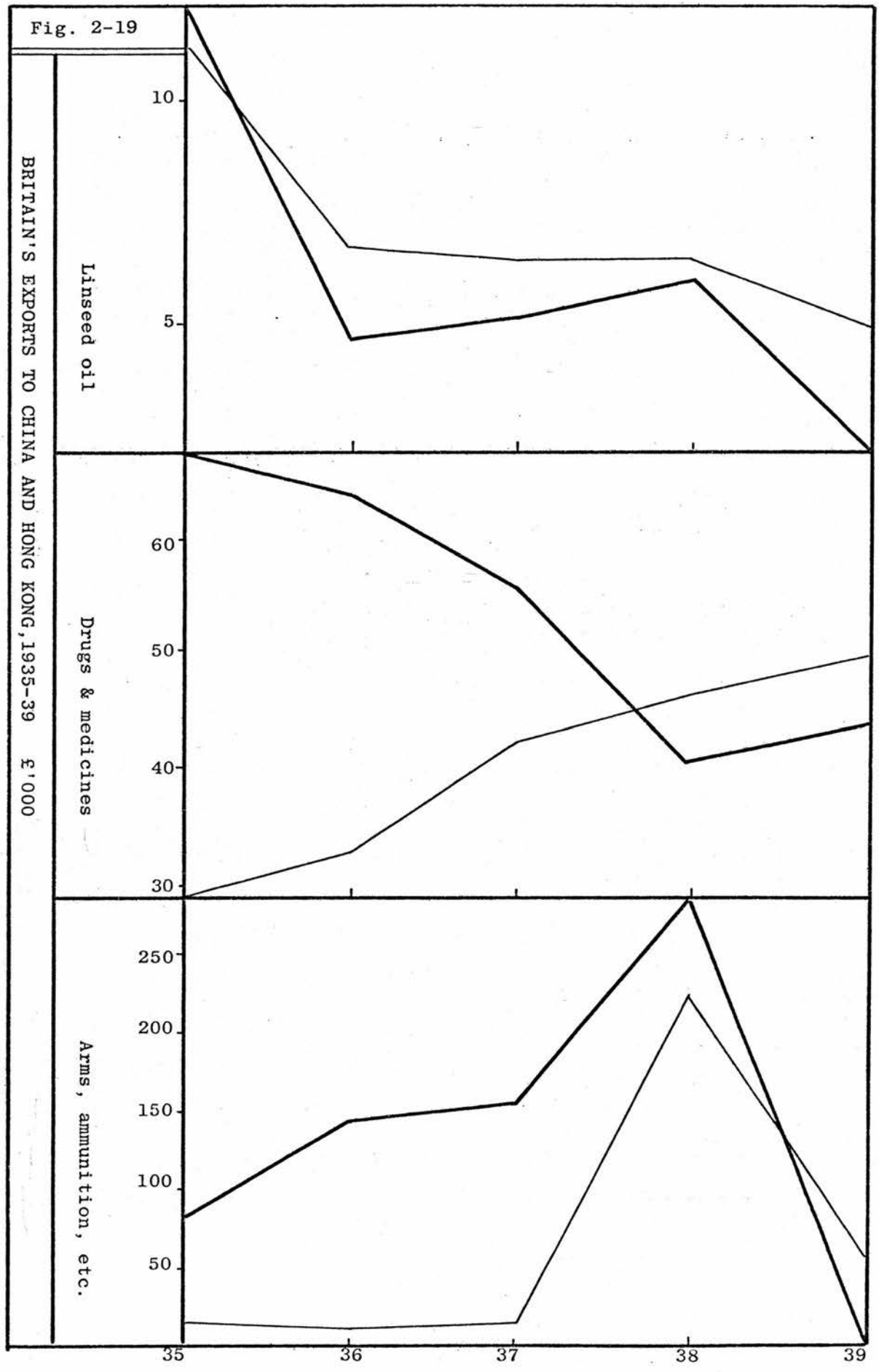

BRITAIN'S EXPORTS TO CHINA AND HONG KONG, 1935-39 £'000
Linseed oil
10
5
Drugs & medicines
60
50
40
30
Arms, ammunition, etc.
250
200
150
100
50
35
36
37
38
39

Fig. 2-20 BRITAIN'S EXPORTS TO CHINA AND HONG KONG, 1930-1939

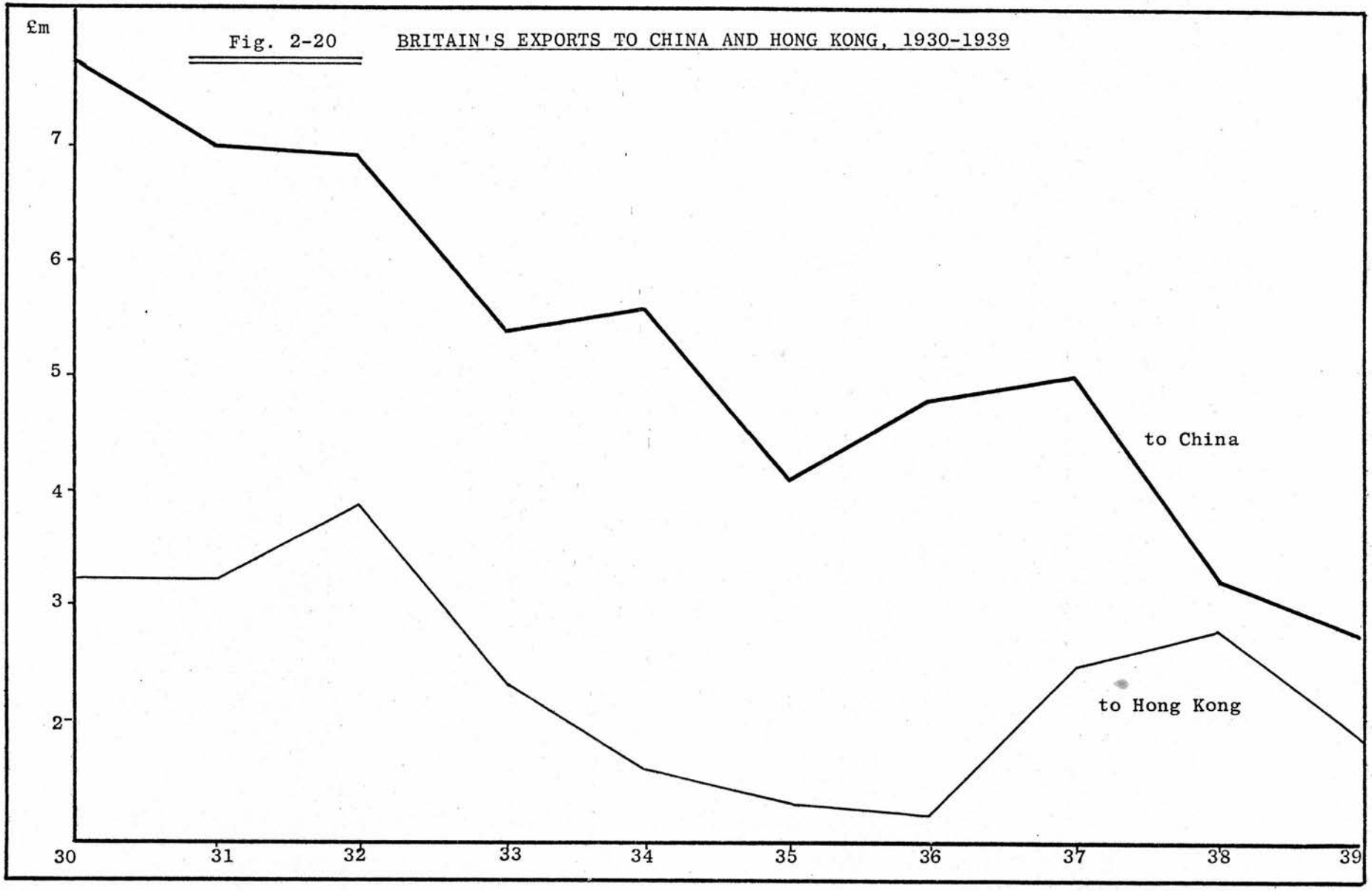
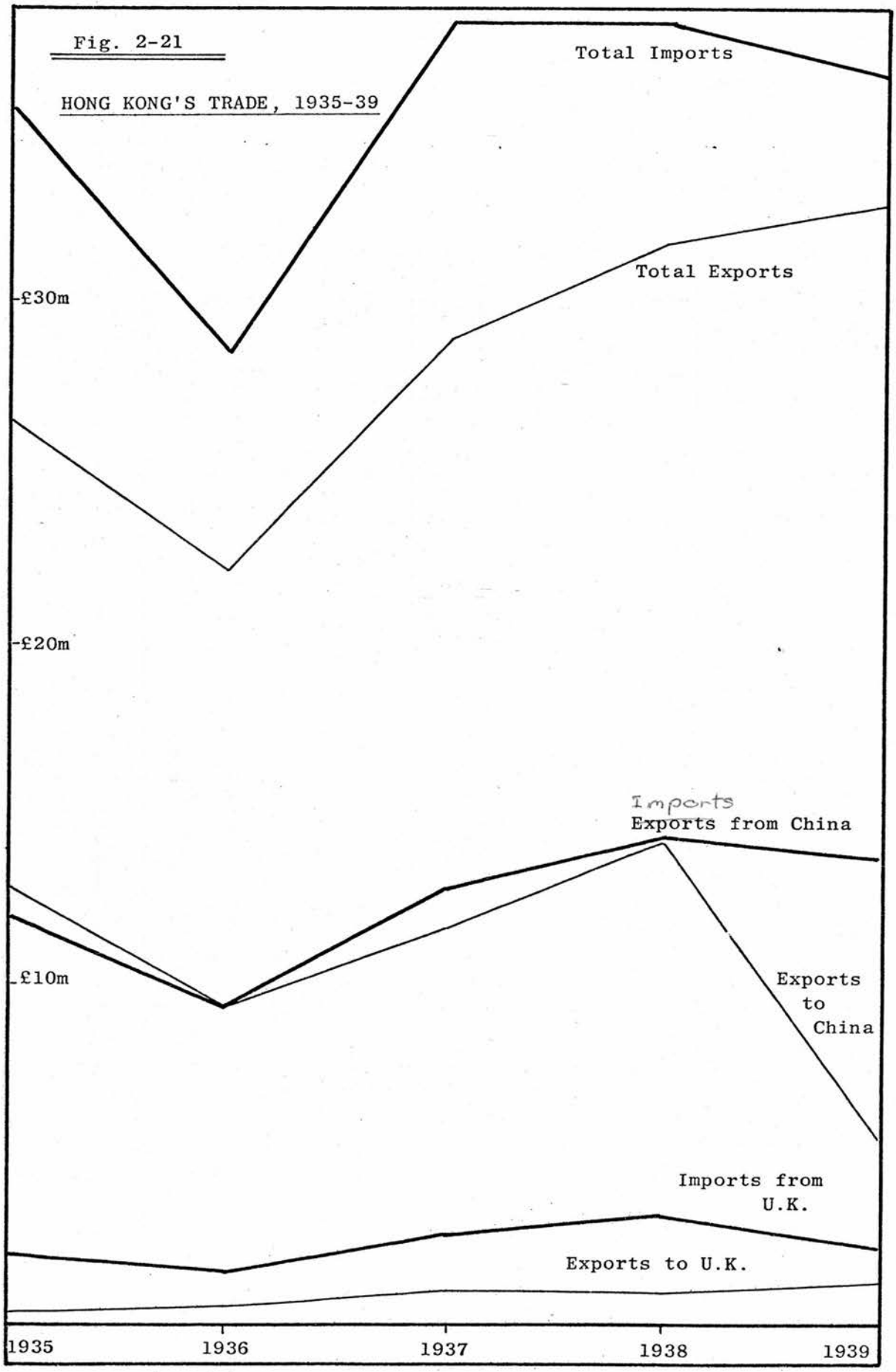


Fig. 2-21

HONG KONG'S TRADE, 1935-39



F, Hong Kong's exports to Britain, are different records of the same trade. In 1936 Hong Kong's imports from China drop, while both its exports to Britain and Britain's direct imports from China rise. In 1937 there is a general rise, but again in 1938 the lines diverge, with Britain's imports from China falling while her imports from Hong Kong and Hong Kong's imports from China continue to rise. In 1939 Hong Kong's exports to Britain rise while Britain's imports from the colony fall, but this divergence is again probably due to bunching and time lag; in any case the physical discrepancy, some £70,000 in either direction, is not large. Apart from this, both Hong Kong's and Britain's imports from China drop in that year in line with the general fall in China's exports. It would appear that Hong Kong's re-exports of Chinese goods to Britain rose in 1938 and 1939, but it must be remembered that the level of trade from Hong Kong to Britain was very low before the war compared with Britain's direct imports from China, so the effect would have been slight (Fig. 2-22).

Quantification:- Hong Kong's pre-war trade was composed of four parts:-

1. Domestic imports and exports
2. Chinese external entrepôt trade
3. Chinese coastal entrepôt trade
4. Non-Chinese entrepôt trade

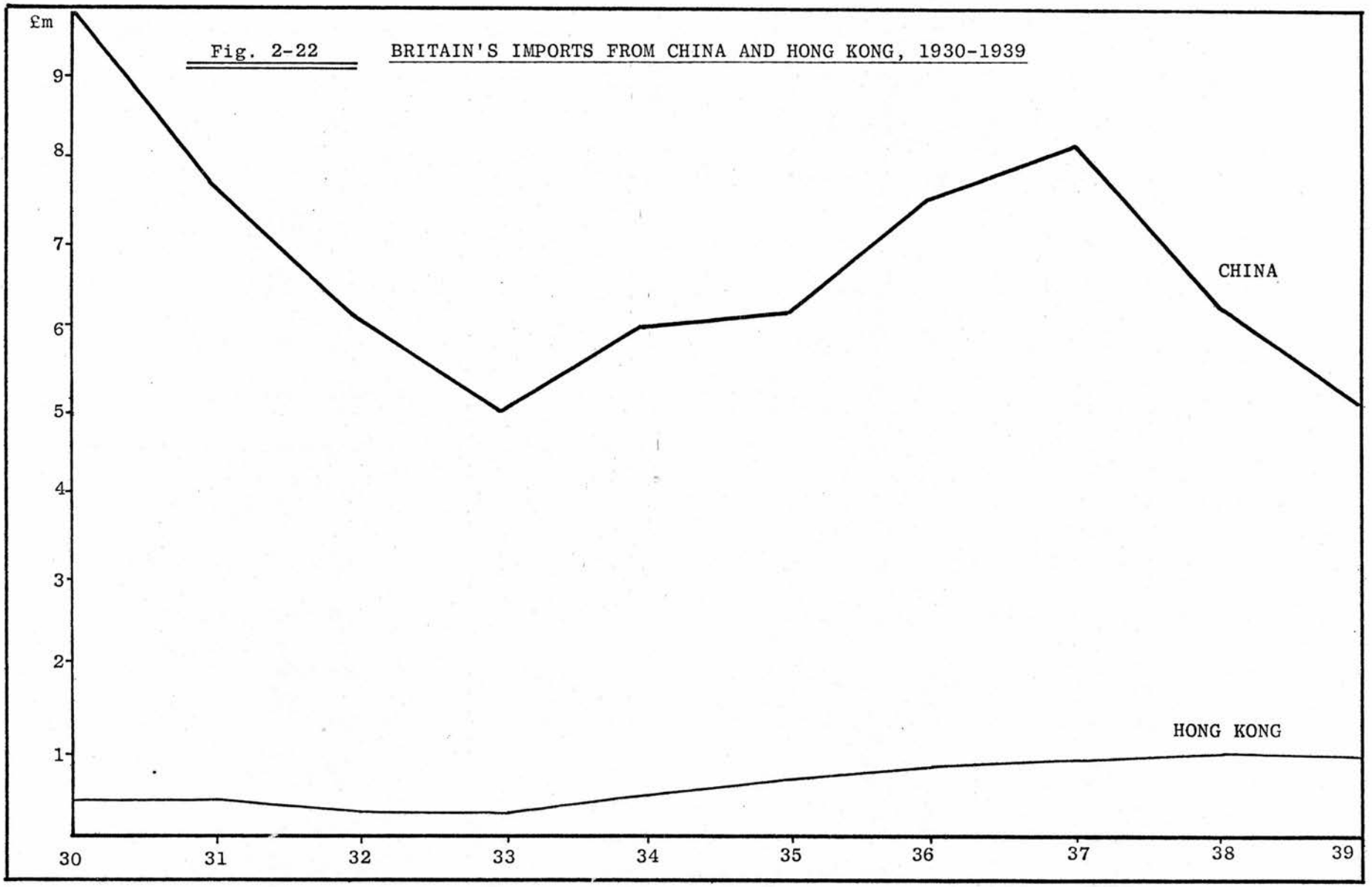
Whilst the Hong Kong trade returns do not distinguish between these four components, a government report of 1938 estimated that, prior to July 1937:

> One third of the imports into Hong Kong was of goods intended for retention in Hong Kong, coming from Chinese and non-Chinese countries in the proportion of one to three; and a tenth or less of the exports was of goods originating in Hong Kong (e.g. refined sugar, rubber shoes, etc.). Re-exports constituted two-thirds of the imports and nine-tenths of the exports. Of them 10 per cent consisted of "Chinese coastal trade", 20 to 25 per cent consisted of non-Chinese entrepôt trade and the remainder, nearly 70 per cent, was made up of goods passing between China and the rest of the world via Hong Kong.[39]

---

[39] "Extracts from Hong Kong Administration Reports, 1938" in G.B. Endacott, *An Eastern Entrepôt* (London, HMSO, 1964), p.186.

Fig. 2-22 BRITAIN'S IMPORTS FROM CHINA AND HONG KONG, 1930-1939



On the other hand, Lennox A. Mills, writing in 1941, whilst agreeing that re-exports comprised 90 per cent of exports, suggested that only 10 per cent of imports were retained for consumption or manufacture, the other 90 per cent being re-exported.[40] Although it is likely, as Table 2-39 suggests, that the percentage of imports re-exported rose in the latter years, it could not have been the same as the proportion of re-exports to total exports, since imports were always considerably larger than exports. In Table 2-39 we assume that the estimated 90 per cent contribution of re-exports to total exports remains constant, and ignore problems of valuation and lag, to calculate roughly the percentage of imports that are re-exported. It is noteworthy that the average for 1931-36 is 69 per cent, which corresponds closely enough with the government estimate of two-thirds, and that the average for 1937-39 rises to 78 per cent.

It seems, then, that the 1938 government report estimate for the pre-1937 proportions is at least internally consistent. However, these estimates cover trade with all countries, and whilst Britain and China, accounting as they do for the bulk of the trade, are unlikely to deviate too much from the average (had they done so the report would have mentioned it), there will be differences in the proportion of their trade composed of re-exports. Thus, it is to be expected that a larger proportion of imports from China would be retained for consumption and manufactures than would be from Britain, and this must influence our estimate.

It will be recalled that Hong Kong trade statistics were discontinued between 1925 and 1930, so 1931 is the first full year for which we have Hong Kong figures. In addition there are at times quite considerable discrepancies between different (official) sources of Hong Kong data during this period, amounting at one time to £700,000.[41] Part of the reason for this was the fluctuation of the Hong Kong dollar, caused largely by the variation in the price of silver to which it was tied until

---

[40] Lennox A. Mills, *British Rule in Eastern Asia*, (Oxford University Press, 1942), p.438.

[41] *Ibid.*, pp.539-541.

Table 2-39

The proportion of Hong Kong's imports re-exported 1931-1939

	1/ Total exports	2/ Re-exports (90% of col.1)	3/ Imports	4/ Re-exports as % of imports
	£m	£m	£m	%
1931	28.4	25.6	38.7	66
1932	31.2	28.1	41.3	68
1933	27.2	24.5	33.8	73
1934	24.5	22.1	31.3	71
1935	26.6	23.9	35.7	67
1936	22.2	20.0	28.6	70
1937	28.9	26.0	38.1	68
1938	31.7	28.5	38.2	75
1939	32.9	29.6	36.6	81

Sources: *Statistical Abstract of British Empire*; subsequently ... *British Commonwealth*

Table 2-41

China's imports from Hong Kong as % of Hong Kong's Exports to China 1931-1939

	1/ China's imports from Hong Kong	2/ Hong Kong's exports to China	3/ 1 as % of 2
	£m	£m	%
1931	16.761	15.442	109
1932	5.858	18.509	32
1933	2.980	15.311	20
1934	1.991	11.759	17
1935	1.506	13.004	12
1936	1.064	9.476	11
1937	1.138	11.751	10
1938	1.082	14.270	8
1939	.885	5.556	16

Source: Table 2-40.

1935.[42]

So far we have a reasonably acceptable estimate of the re-export/residual proportions of Hong Kong's imports and exports up to July 1937 (or 1936, since we are only dealing in full years). At that time, the Report continues:

> The latter half of the year 1937 shewed, in spite of the general decline in China's trade, a considerable increase in the proportion of that trade passing through Hong Kong. The proportion of China's imports credited to Kowloon increased from 3% in July, 1937 to 45% in January, 1938. The proportion of China's exports returned as going to Hong Kong increased from 12% in July, 1937, to 41.3% in January, 1938. At the same time the absolute amount of Hong Kong's trade with China also increased.
>
> This state of affairs with regard to the Colony's China trade, accompanied by a steady increase in general trade, continued during the first three quarters of 1938. In October of that year an abrupt downward movement in all trading figures was shewn as the Japanese extended their operations to South China. As a result of the military occupation of Canton and the closure of the Pearl River the normal trade routes between the Colony and the South China delta regions were almost entirely disrupted, and at the close of the year there were no signs of any early appreciable resumption of the South China trade. In the first nine months of 1938 the import and export trade with South China averaged $70.9 millions [£4.43m at 16 HK$ to the pound] in each quarter. In the final quarter of the year the total was $32.6 millions [£2.04m].
>
> In terms of the analysis of Hong Kong's trade before the Sino-Japanese hostilities, given above, the position at the end of the year was that, though categories (a) (domestic imports and exports) and (d) (non-Chinese entrepôt trade) were only indirectly affected, categories (b) (Chinese external entrepot trade) and (c) (Chinese coastal trade) had, with the exception of air transport and minor attempts at avoiding the Japanese blockade of the Pearl River delta, come to a virtual standstill.[43]

---

[42] See: "Report of the Currency Committee, July 14, 1930: Hong Kong Sessional Papers 1930", Document No.38 in Endacott, *Eastern Entrepôt*, pp.222-233; G.B. Endacott, *A History of Hong Kong* (Oxford University Press, 1958), pp.291-292; Mills, *British Rule in Eastern Asia*, p.541 and pp.451-452.

[43] Quoted in Endacott, *An Eastern Entrepôt*, p.187.

This passage requires some comment. Firstly, it is difficult to reconcile the percentage in paragraph one with either Chinese or Hong Kong statistics. These statistics are shown in Table 2-40. It will be noted that the Chinese figures do not correspond with the United Nations statistics (which also claim to be official Chinese customs figures) given in Tables 2-3, 2-4, 2-9 and 2-10: the import figures are reasonably close, but the exports diverge wildly (c.f. chapter one). That apart, it is notable that, while the Hong Kong figures for imports and exports are roughly in balance, the Chinese figures show exports to Hong Kong several times greater than imports from the colony. It will be remembered that it was earlier suggested that the discrepancy between Chinese figures for imports from Hong Kong and Hong Kong figures for exports to China might well be principally due to Chinese customs only recording as imports from Hong Kong the colony's domestic exports. Bearing in mind the 1938 Hong Kong Government report's estimate that 90 per cent of recorded exports were re-exports, this would seem to explain the discrepancy, as Table 2-41 indicates.

If both sets of figures are reasonably accurate, this would seem to suggest that in 1931 the Chinese customs did not differentiate between Hong Kong's domestic exports and re-exports (the figures for that year are described as "net figures") but thereafter they did. Moreover, the proportion of re-exports to domestic exports increases from 1932 to 1938, from roughly 70 per cent to 90 per cent, which does not tally with the report's estimate of 90 per cent "prior to July,1937". Furthermore, whilst the statement that "The proportion of China's exports returned as going to Hong Kong increased from 12% in July, 1937, to 41.3% in January, 1938." is compatible with yearly percentages of 19.4 for 1937 and 31.9 for 1938, if we presume that the monthly percentages rose from July to January and then fell some time thereafter, it is impossible to reconcile the earlier statement that "The proportion of China's imports credited to Kowloon increased from 3% in July, 1937 to 45% in January, 1938." with either Chinese or Hong Kong statistics, unless we presume that the 3 per cent refers to Hong Kong's domestic exports while the 45 per cent covers the colony's general exports to China. If this supposition is correct, then China's imports of Hong Kong's general exports will have risen from 30 per cent in July to 45 per cent in January, which is much more plausible.

Table 2-40a

China's total trade & trade with Hong Kong, 1930-9

	Imports from H.K.	Exports to H.K.	Total Imports	Total Exports	% of trade with Hong Kong	
	Value in thousands of Haikwan taels				Imports	Exports
1930	218,370	158,018	1,328,232	894,844	16.9	
1931	218,170+	148,312+	n.a.	n.a.	15.7	
1932	60,474	75,666	1,062,617	492,989	5.7	15.4
	Value in Standard Dollars					
1933	48,287	120,955	1,359	612,293	3.6	19.8
1934	29,639	101,001	1,038,979	545,733	2.9	18.9
1935	20,359	94,893	924,695	576,298	2.2	16.5
1936	17,755	106,547	944,523	706,791	1.9	15.1
1937	19,078	162,904	956,234	838,797	2.0	19.4
1938	24,589	243,395	893,500	763,732	2.8	31.9
1939	35,416	222,099	1,343,018	1,030,498	2.6	21.6

+net figures. n.a.: not available.
Source: *Chinese Maritime Customs*, quoted in G.B. Endacott, *An Eastern Entrepot*, p.192.

Table 2-40b

China's total trade & trade with Hong Kong, 1930-9

£m

	CHINA				HONG KONG	
	Imports from H.K.	Exports to H.K.	Total Imports	Total Exports	Exports to China	Imports from China
1930	20.643	14.938	125.559	84.591	n.a.	n.a.
1931	16.761+	11.394+	n.a.	n.a.	15.442	10.492
1932	5.858	7.330	102.941	47.758	18.509	11.245
1933	2.980	7.465	83.874	37.790	15.311	10.468
1934	1.991	6.786	69.806	36.666	11.759	11.026
1935	1.506	7.018	68.389	42.622	13.004	12.075
1936	1,064	6.382	56.573	42.334	9.476	9.621
1937	1.138	9.715	57.025	50.022	11.751	13.042
1938	1.082	10.712	39.323	33.612	14.270	14.427
1939	.885	5.553	33.576	25.759	5.556	13.747

Sources: Chinese figures as Table 2-40, converted at rates shown therein; Hong Kong figures, *Statistical Abstract of British Empire* (subsequently, ...*British Commonwealth*), various years.
+net figures. n.a.: not available.

Secondly, the statement that by the end of 1938 Hong Kong's China trade had "come to a virtual standstill" seems to be an exaggeration. The Japanese capture of Canton in October 1938, and with it the interdiction of the Kowloon-Canton-Hankow railway, the "main artery" of Hong Kong-South China trade, certainly dealt a blow to trade (which dropped from an average of £4.43m each way in the first three quarters to a total of £2.04m for the final quarter) but it did not kill it off entirely:

> It survived, however, to an extent not generally realized, for a large part of the trade which had passed through Canton was diverted to the South China ports of Swatow, Wenchow and Ningpo. By feverish efforts the Chinese linked them by road and railways with the lines still in their hands. It has been estimated that 80 per cent of the munitions which passed through Hong Kong on their way to China were German, while the other sources of supply were Italy, Belgium, the United States and the United Kingdom - a topsy turvy situation, when Japan's associates armed her enemy and Chiang Kai-shek's well-wishers, the United States and Great Britain, provided Japan with the bulk of her military raw materials. [cf. Table 2-38, Fig.2-17]
>
> In the summer of 1939 the Japanese occupied or mined the principal ports of South China and very greatly cut down the trade of Hong Kong. The merchants of the Colony promptly opened up alternative routes and still contrived to retain an important though unknown percentage of the trade. A large part of the munitions landed at Hong Kong were transshipped to Haiphong in French Indo-China and thence by railway to Yunnan; and shipments were increased to Portuguese Macao and the French leased port of Kwong Chow Wan. A flourishing smuggling trade was also built up, the junks being manned by the former pirates. Cargoes of arms, kerosene, etc. were landed at fishing villages or empty beaches and vanished into the interior, while the junks brought back tea and other products of China. Japan could not stop the traffic by imposing a blockade since she had not declared war and, more important, Great Britain and the United States refused to agree with it. The alternative was to blockade Macao and the other ports by land and to place detachments at every fishing village and stretch of unoccupied beach in South China. This meant a large number of small and isolated garrisons, a risky move when the Japanese controlled only as much of Kwantung Province as came within the range of their guns. Owing to the Chinese scorched-earth policy the troops could not live off the country and would have to receive all supplies from the Japanese bases. This meant a very large number of convoys and small detachments on lines of communi-

> cation which in the aggregate would lock up far more troops than they could spare. The shipment of arms through Hong Kong finally ceased in January, 1940.[44]

This description of the trade continuing, albeit at a lower level, seems to be borne out by both Chinese and Hong Kong statistics, unreliable as they must be considered (Table 2-42, Fig.2-23). It is interesting to compare the movements of these two sets of figures. Exports to Hong Kong drop by half while imports from China, that is theoretically the same trade, fall only slightly, and for Chinese imports/Hong Kong exports the situation is reversed. Mills, in a continuation of the passage quoted above, may give a clue to this discrepancy:

> The present situation [presumably 1940] is that the Japanese have ruined the South China trade for everyone, including themselves. The capture of Canton and the closing of the river, cut Hong Kong's principal means of communication with the interior. *Only Japanese goods are sold* in the ruined city which, however, has a population of about 25,000 in place of its former 1,500,000. Most of them are coolies with very little to spend, since all the well-to-do Chinese fled. Upriver from Canton are Chiang Kai-shek's troops, who *do not allow Japanese goods to pass inland.* ...The Hong Kong dollar is no longer widely used in Kwangtung Province: in the unoccupied areas the currency is the *Kwangtung dollar, and in Canton and the towns where there is a Japanese garrison the Chinese are forced to accept military yen, an inconvertible, fiat currency.*[45] [emphasis added]

It seems likely that, initially, the Japanese advance affected movement of goods from China ~~more~~ less than movement from Hong Kong into China; by the end of 1939, the trade in both directions was "ruined".

Estimate of Hong Kong's re-exports of Chinese goods to Britain:- It is assumed that between 1931 and 1936 two-thirds of Hong Kong's imports

---

[44] Mills, *British Rule in Eastern Asia*, pp.476-477. The *China Handbook, 1937-1943* notes that: "Because of the war, the center of the tea export trade was transferred from Shanghai to Hong Kong. The British Crown Colony became the chief transit market of tea either for cash export or for the fulfilment of barter agreements." The proportion of China's exports of tea going to Hong Kong increased rapidly - 1936: 5 per cent, 1937: 9 per cent, 1938: 53 per cent, 1939: 60 per cent, 1940 (January - June): 68 per cent. (p.534).

[45] *Ibid.*, p.477.

Table 2-42

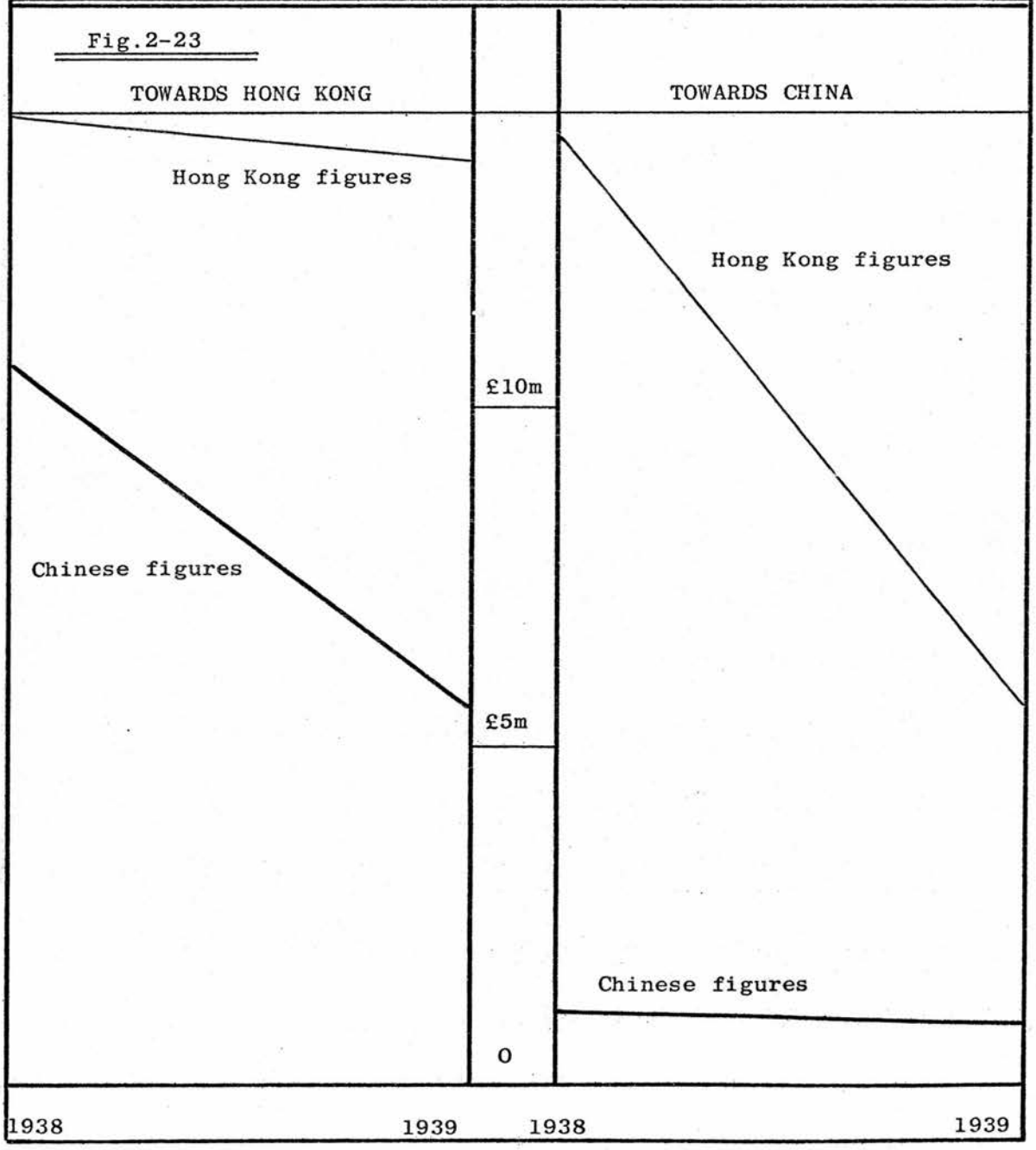
Sino-Hong Kong trade, 1938-9

£m

	CHINESE FIGURES		HONG KONG FIGURES	
	Imports from Hong Kong	Exports to Hong Kong	Exports to China	Imports from China
1938	1.082	10.712	14.270	14.427
1939	0.885	5.553	5.556	13.747

Sources: as Table 2-40b.

Fig.2-23



were re-exported and 10 per cent of these went to (North) China (column 2, Table 2-43). The percentage that these re-exports outside of China comprise of total exports other than to China is calculated in column 4. It is presumed that these proportions hold for exports to Britain, and the amounts of re-exports of Chinese origin and 'residual exports' are calculated from both Hong Kong and British statistics in columns 5 to 8. It is then presumed that the amount of residual exports followed the 1931-35 trend during 1937-39; that is, most of the increase in imports from China was re-exported.[46] 1936 is omitted from the trend because the slump in imports from China in that year would distort the trend. The trend of residual exports is extrapolated to 1937-39 with the difference between reported Hong Kong exports (Table 2-44) and British imports (Table 2-45) and the trend being the estimate of re-exports of Chinese goods. Finally, these estimates are brought together and averaged in Table 2-46. The process is illustrated by Fig.2-24, using the Hong Kong statistics.

Estimate of Hong Kong's re-exports of British goods to China:- It is presumed that the report's estimate that two-thirds of imports are re-exported holds true for non-Chinese imports until the end of the decade. This gives column 2 of Table 2-47. It is also assumed that the estimates of the composition of exports also held until 1938 and, faute de mieux, this estimate is applied to 1939 as well. This gives us, in column 4, an estimate of re-exports of non-Chinese origin to China. Column 5 then gives us the proportion of re-exports of non-Chinese goods into China to the total of re-exports of all non-Chinese goods.

The average percentage for 1931-36 is 71, which corresponds with the report's estimate of 70 per cent. The percentages are applied to the 're-exported element' (that is, two-thirds) of British trade into Hong Kong (both Hong Kong and British figures) and the two estimates averaged in column 12.

---

[46] There is a difference of opinion on the course of Hong Kong's domestic exports. Endacott (*A History of Hong Kong* , p.293) implies that their importance was increasing, but Mills (*British Rule*, pp.453-458) does not; in fact, Mills makes the unfortunate prediction that: "it seems clear that industry will always be of subsidiary importance in the Colony." Nevertheless, the China trade is the main variable in these years.

Table 2-43

Estimate of Chinese goods via Hong Kong, 1931-6

	1	2	3	4	5	6	7	8
	Hong Kong's Imports from China	Re-exports of Chinese goods (Col.1 x .66 x .9)	Exports to countries other than China	% of re-exports of China origin ($^2/_3$ x 100)	Hong Kong Exports to U.K.		British Imports from Hong Kong	
					Re-exports of China origin	Other	Re-exports of China origin	Other
	£'000			%	£'000			
1931	10,492	6,232	12,999	47.9	131	144	195	211
1932	11,245	6,680	12,721	52.5	120	109	128	116
1933	10,468	6,218	11,893	52.3	163	149	147	134
1934	11,026	6,549	12,727	51.3	247	232	217	204
1935	12,075	7,173	13,548	53.0	392	347	373	331
1936	9,621	5,715	12,750	44.8	377	464	338	416

For explanation see text.

Table 2-44

Estimate of Hong Kong's re-exports of goods of Chinese origin to Britain, 1937-9

Linear trend of exports of non-China origin to U.K., 1931-35:
Yt = 90 & 53Xt where Yt is £'000, Xt years

	1	2	3
	Trend of exports* of non-China origin Yt	Total exports to U.K.	estimated re-exports of Chinese goods (2 - 1)
1937	408	1288	880
1938	461	1312	851
1939	514	1381	867

*Linear extrapolation of Table 2-43, Column 6.

Table 2-45

Estimate of Britain's imports from Hong Kong of goods of China origin, 1937-39

Linear trend of Britain's imports from Hong Kong of goods of non-China origin, 1931-35:
Yt = 134 & 33Xt where Yt is £'000, Xt years

	1	2	3
	Trend*	Total imports from H.K.	Estimated imports of goods of Chinese origin (2 - 1)
1937	330	935	605
1938	363	1002	639
1939	396	944	548

*Linear extrapolation of Table 2-43, Column 8.

Table 2-46

Estimate of Hong Kong's re-exports of Chinese goods to Britain, 1931-9

£'000

	Hong Kong figures	British figures	Rounded average
1931	131	195	160
1932	120	128	120
1933	163	147	160
1934	247	217	230
1935	392	373	380
1936	377	338	360
1937	880	604	740
1938	851	638	750
1939	867	547	710

Sources: Tables 2-43, 2-45

Fig. 2-24

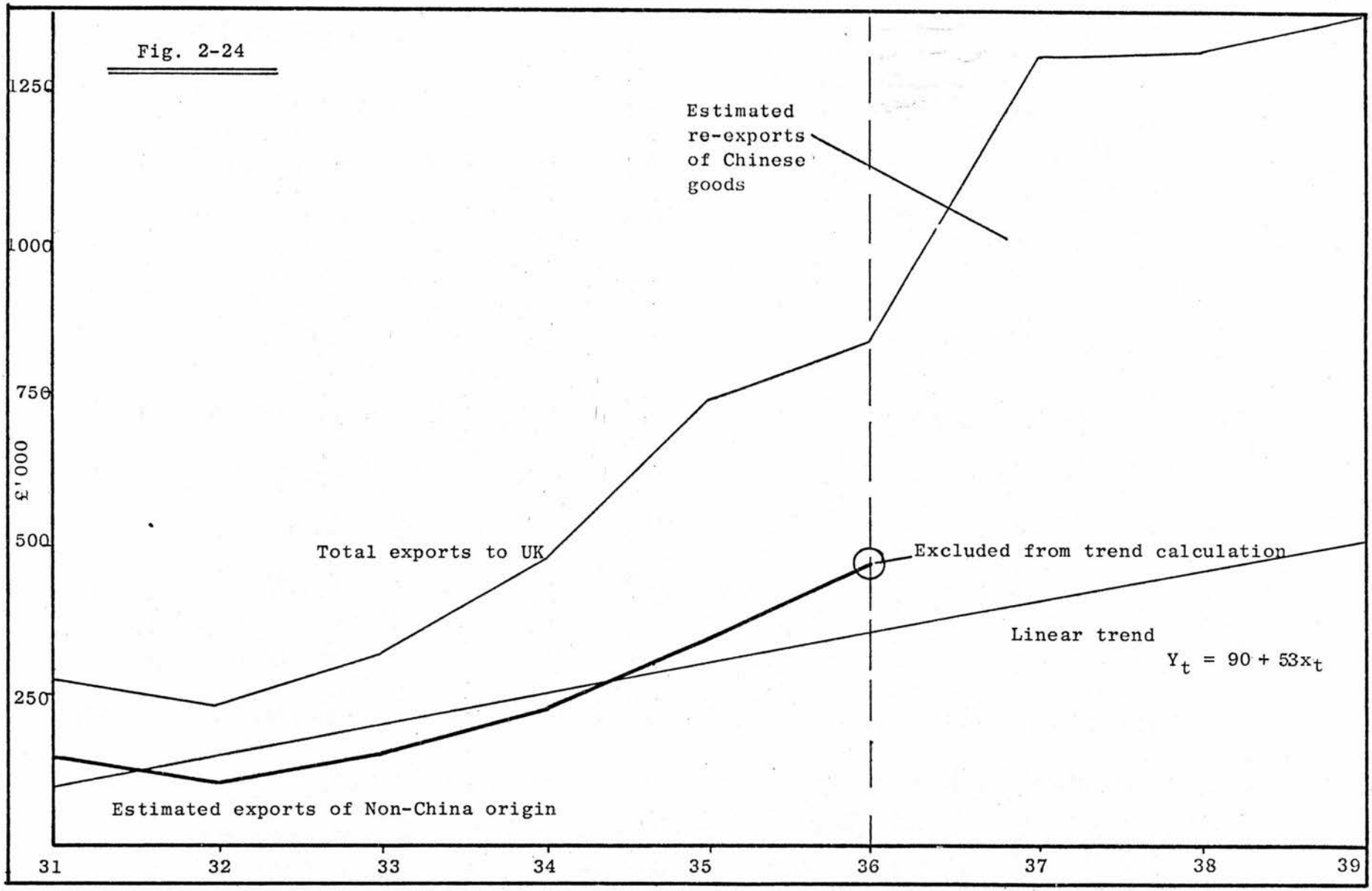

1250
1000
750
500
250
£'000
Estimated re-exports of Chinese goods
Total exports to UK
Excluded from trend calculation
Linear trend
$Y_t = 90 + 53x_t$
Estimated exports of Non-China origin
31
32
33
34
35
36
37
38
39

Table 2-47

Estimate of Hong Kong's re-exports of British goods to China, 1930-9

£m (except column 5)

	1	2	3	4	5	6	7	8	9	10	11	12
	Imports other than from China	Re-exports of non-China origin (col.1 x.66)	90% of exports to China	Less 10% China coastal trade	% of re-exports to China ($^4/_2 \cdot 100$)	Hong Kong's imports from U.K.	Of which re-exported (66%)	Re-exports of British goods to China	Britain's exports to H.K.	Of which re-exported ($^2/_3$'s)	Re-exports of British goods to China	Average of columns 8 & 11
1930	n.a.				71*	n.a.			4,449	2,936	2,085	2,090
1931	28,160	18,586	13,898	12,508	67	4,096	2,703	1,811	4,494	2,966	1,987	1,900
1932	30,039	19,826	16,658	14,992	76	5,087	3,357	2,551	4,873	3,216	2,444	2,500
1933	23,321	15,392	13,780	12,402	81	3,519	2,323	1,882	3,277	2,163	1,752	1,820
1934	20,277	13,383	10,583	9,525	71	2,449	1,616	1,147	2,561	1,690	1,200	1,170
1935	23,664	15,618	11,704	10,534	68	2,340	1,544	1,050	2,455	1,620	1,102	1,080
1936	19,005	12,543	8,528	7,675	61	1,836	1,212	739	2,151	1,420	866	800
1937	25,043	16,528	10,576	9,518	58	2,884	1,903	1,104	3,444	2,273	1,318	1,210
1938	23,807	15,713	12,843	11,559	62	3,489	2,303	1,428	3,981	2,628	1,629	1,530
1939	22,849	15,080	5,000	4,500	30	2,445	1,614	484	2,826	1,865	560	520

n.a.: Hong Kong statistics suspended.
*average 1931-6.

Post War to late fifties

This third period marks the transformation of Hong Kong's economy from an entrepôt with a minor manufacturing sector to a manufacturing centre with a subsidiary entrepôt sector. In respect of China the change is even more pronounced; by the late fifties Hong Kong was no longer a "transit centre" for "China's trade", as the Currency Committee had described it in 1930,[47] and the China trade passing through the colony was fairly small beer for both countries.

The transformation of the Hong Kong economy was very much the result of the transformation of China itself, and yet the connection between the two was a paradoxical one. It is perhaps commonly supposed that the Communist victory in the civil war imperilled Hong Kong; it is more likely that Liberation saved the colony. It is often argued that Hong Kong is the last bastion of laissez-faire in the world - "John Stuart Mill's Other Island", where there is "absolute freedom of trade"[48] - and yet its post-war development (let alone its creation) is very much the result of intervention by governments.

At the end of the war "it was by no means certain that British rule in Hong Kong would be restored".[49] But British authority was re-imposed, and the Japanese surrender received by a British admiral against the protests of Chiang Kai-shek.[50] Not merely were there fears of a Chinese take-over, there were more fundamental doubts about its ability to survive economically in the post-war world. "The problem was to maintain Hong Kong as a viable community, now that the forces which had brought it into existence and nourished it for nearly a century were passing away."[51]

---

[47] Quoted in Endacott, *An Eastern Entrepôt*, p.227.

[48] Henry Smith, *John Stuart Mill's Other Island, A Study of the Economic Development of Hong Kong* (London, Institute of Economic Affairs, 1966)

[49] Endacott, *A History of Hong Kong*, p.301.

[50] *Ibid.*, p.302.

[51] *Ibid.*, p.302.

Hong Kong had to a large ~~extend~~ extent thrived on China's troubles,[52] and if China were now united and peaceful, and under a government which was intent on wiping out the unequal treaties, then there would be little future for the small entrepôt on the south coast. The advantages it offered trade - a fine harbour, bunkering, insurance facilities, etc. - might help stem the tide, but trade would naturally (with perhaps a little help from Nanking) flow instead to Shanghai, Tientsin, Darien, Nanking, Canton and so on. With Britain no longer a power of importance on the China coast, and the United States keen to dismember the European empires, it would not be too fanciful to envisage Chiang Kai-shek squeezing Hong Kong, economically and politically, out of existence.

The civil war and the communist victory changed all this. Already by 1947 "Chinese industrialists and capitalists, especially from Shanghai, had started to move themselves and their money into Hong Kong."[53] In the next few years this influx of refugees, and capital, became a flood. One estimate has Hong Kong's population rising from 600,000 in August 1945 to 1,800,000 at the end of 1947, and 2,360,000 by the end of 1950.[54] Whilst there were border incidents when the People's Liberation Army arrived on the borders and there have been times of great stress subsequently, it is likely that, in the end, a Communist government was less liable either to want, or to be able, to take over Hong Kong than its Nationalist predecessor.

Economically, the immediate effect of the civil war and Liberation was to boost Hong Kong's China trade. Then China "leaned to one side" in trade as well as international relations, and the direction of trade swung to the East (Fig.2-11). The new regime's attempts to 'organise' the bourgeoisie also affected trade. The 'Five Anti Campaign' (against bribery, avoiding taxes, stealing of state property, poor work using bad materials and theft of state economic information) of early 1952 brought:

---

[52] As an entrepôt for the China trade it had, of course, also suffered when China's trade declined.

[53] *Hong Kong Annual Report, 1957*, quoted by Smith, *John Stuart Mill's Other Island*, p.18.

[54] *Hong Kong Annual Report, 1959*, p.77.

"Private trade and commercial activities in China's large cities...to almost a complete halt during the peak of the campaign, and as a consequence Hong Kong's trade with the mainland dropped from $HK148 million in December 1951 to HK$68 million in March."[55]

Meanwhile,in May 1951,the United Nations adopted the American-sponsored embargo on 'strategic' trade with China.[56] On top of this, the United States had its own *Battle Act* which, in addition, banned "American economic aid to foreign countries shipping designated strategic goods to Communist China".57

The embargo "fell with particular weight on Hong Kong, which was regarded almost as part of China for this purpose."[58] The result of all this was a dramatic slump in Hong Kong's trade. There were, however, other results, one of which was that Hong Kong stepped into the place, in the U.S. and other markets, vacated by China. This was especially so for textiles which, being additionally helped by restrictions on Japanese imports into the United States, rapidly became Hong Kong's leading industry. But Hong Kong's exports to the United States had to be proven to be of 'non-Communist Chinese origin' and so, "certification of the origin of the products which it sells has become increasingly a matter of importance."[59] This certification was not needed only for the American market and is, in fact, a development of the pre-war attempts to verify Hong Kong's exports qualification for Imperial (subsequently Commonwealth) Preference.[60]

---

[55] A. Doak Barnett, *Communist China: The Early Years, 1949-55* (London, Pall Mall, 1964), p.136.

[56] T.J. Hughes and D.E.T. Luard, *The Economic Development of Communist China, 1949-58* (London, Royal Institute of International Affairs, 1959), p.124.

[57] Mah Feng-hua, *The Foreign Trade of Mainland China* (Edinburgh University Press, 1972), p.21.

[58] Endacott, *A History of Hong Kong*, p.305.

[59] *Hong Kong Annual Report*, 1959, p.77.

[60] See Mills, *British Rule*, p.454, for pre-war certification.

Thus, Hong Kong's economy was forced into a new mold by exterior political forces and policies - laissez faire within a dirigiste framework, with most of the dirigisme coming paradoxically from the United States and its policy of hostility towards the new Chinese regime.

The movement of Hong Kong's trade over the whole of the post-war period (1946-1969) with reference to China is presented in Figs.2-25 to 2-27. The data for these graphs is to be found in Tables 2-27 and 2-28. In Fig.2-25 imports from China and total imports move fairly much in unison: imports from China are a significant and reasonably constant proportion of total imports (the actual percentages are given in Table 2-27) irrespective of whether Hong Kong re-exports or consumes these imports. The situation is quite different for exports (Fig.2-26), where the civil war/Liberation boom in exports to China is very pronounced; and, as pointed out earlier, this means re-exports to China. Fig.2-27 plots total exports with (when the data becomes available) re-exports and re-exports of China origin; but as we know, it is the earlier period for which the data is not available that is the interesting one.

Figs.2-28 to 2-32 concentrate on this earlier period. Figs.2-28 and 2-29 again show the proportion of China trade in Hong Kong's total trade; the boom in exports to China against the constant, or rather slightly increasing, proportion of imports. (The space between the 'Total' and 'Rest of World' lines shows the China element.) Fig.2-30 again illustrates that exports to China during the boom were in fact re-exports - today's re-exports are yesterday's imports. No such connection is evident from Fig.2-31, which is to be expected, since we know that during this period there is a shift in the Hong Kong economy away from re-exporting imports from China to consuming and manufacturing them. Nevertheless, we will attempt in the next section to identify when this shift takes place, and to estimate the value of re-exports of China origin to Britain.

Trade from China:- In Appendix I we look at some commodities imported into Britain from China and Hong Kong which indicate the movement of re-exports of China origin through Hong Kong. The general impression gained from comparing the import of these commodities from China and Hong Kong is clearly that there was an inverse correlation over the period;

Fig. 2-25 HONG KONG'S IMPORTS, 1946-1969

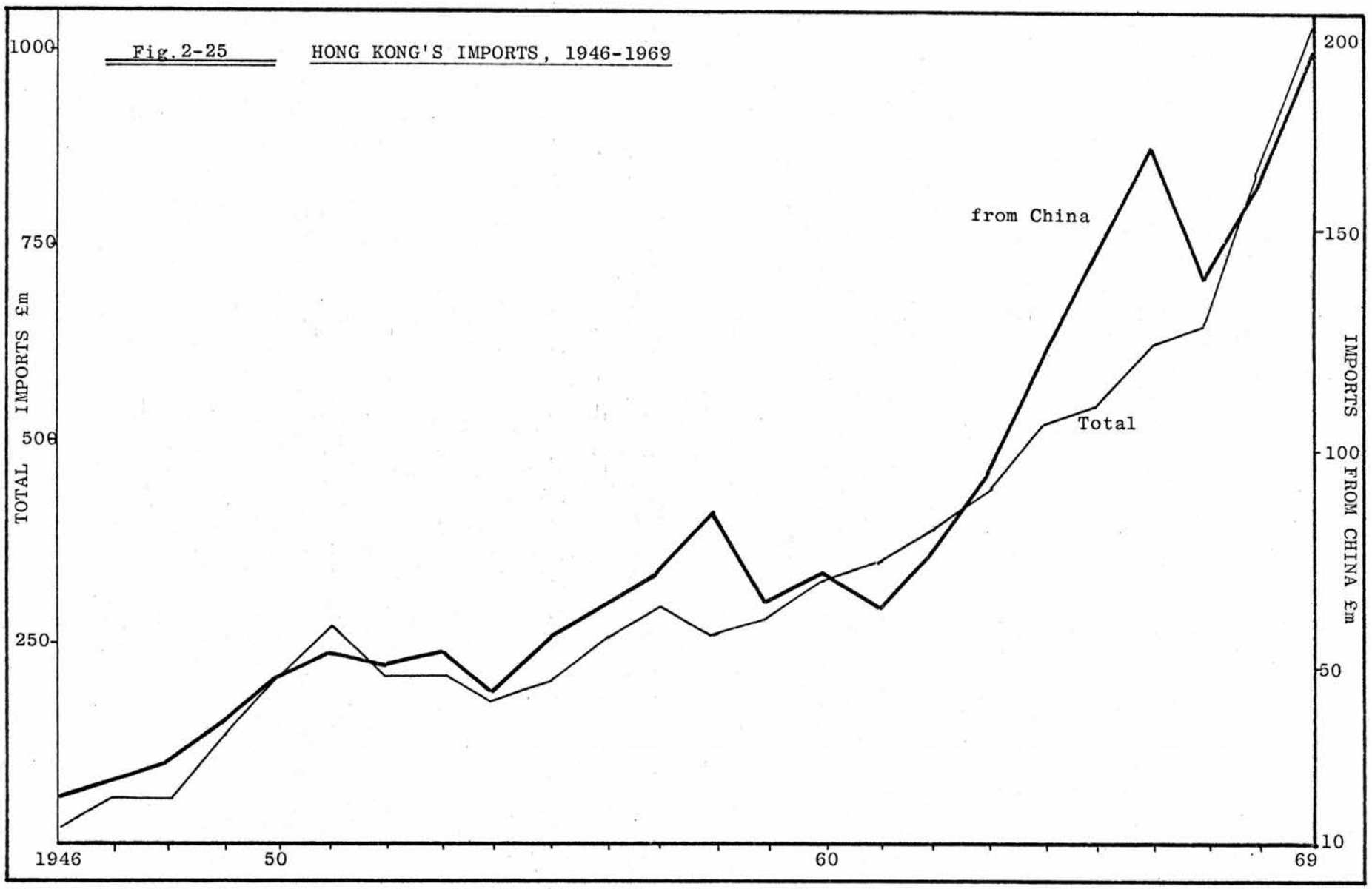


Fig.2-26 HONG KONG'S EXPORTS, 1946-1969

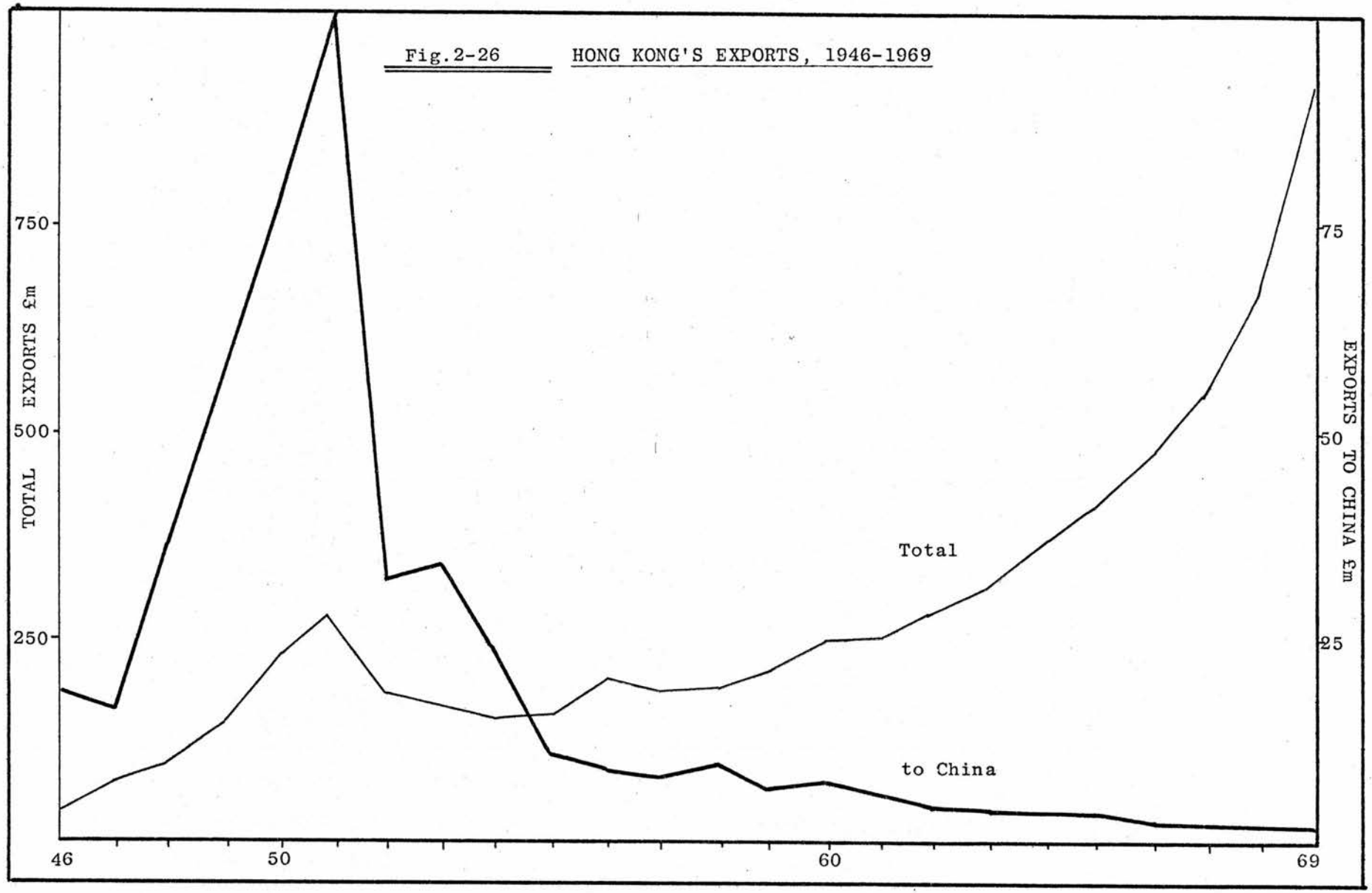


Fig.2-27 HONG KONG'S GENERAL EXPORTS & RE-EXPORTS, 1946-69

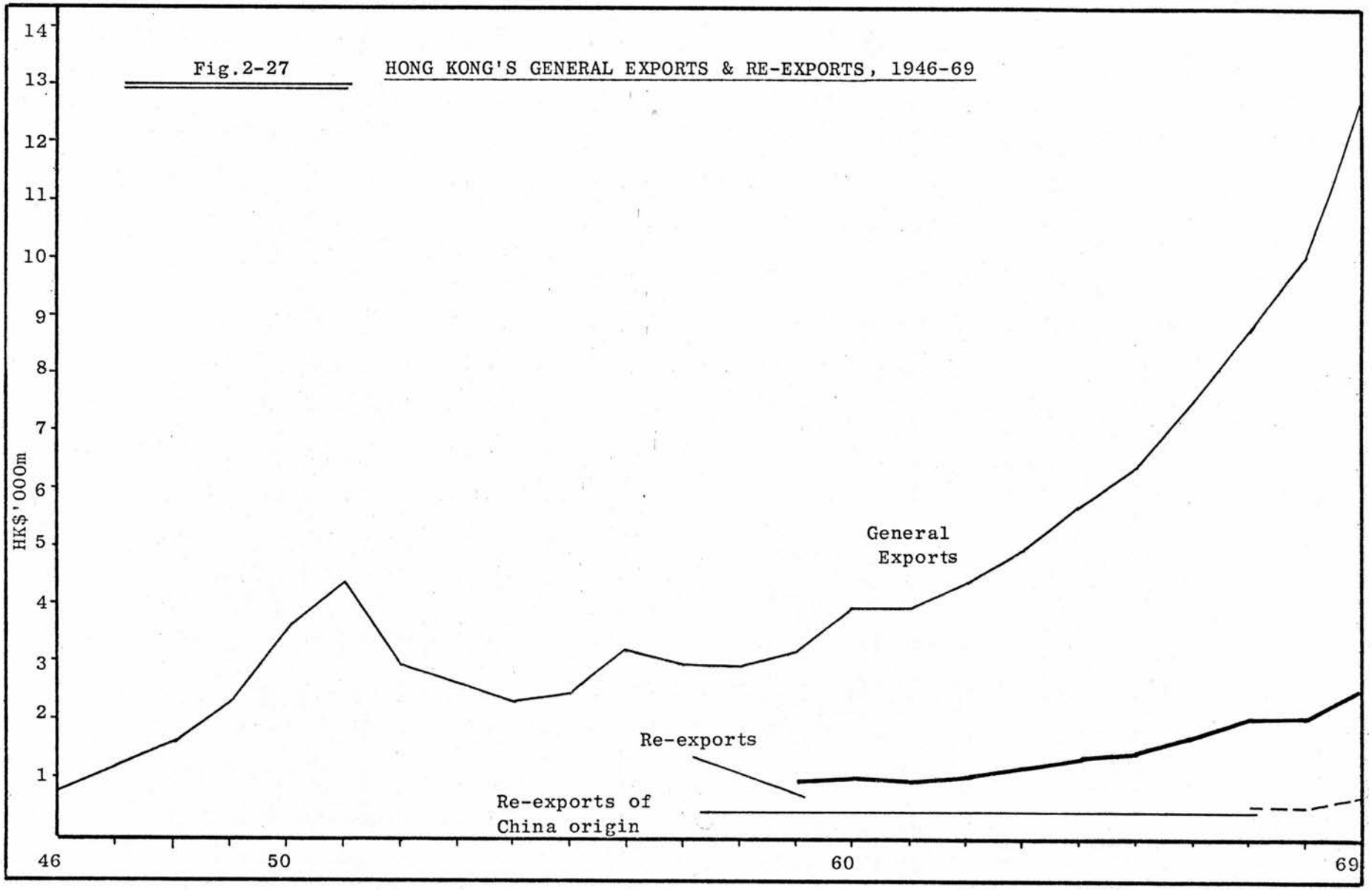


Fig.2-28

HONG KONG'S EXPORTS 1946-1958

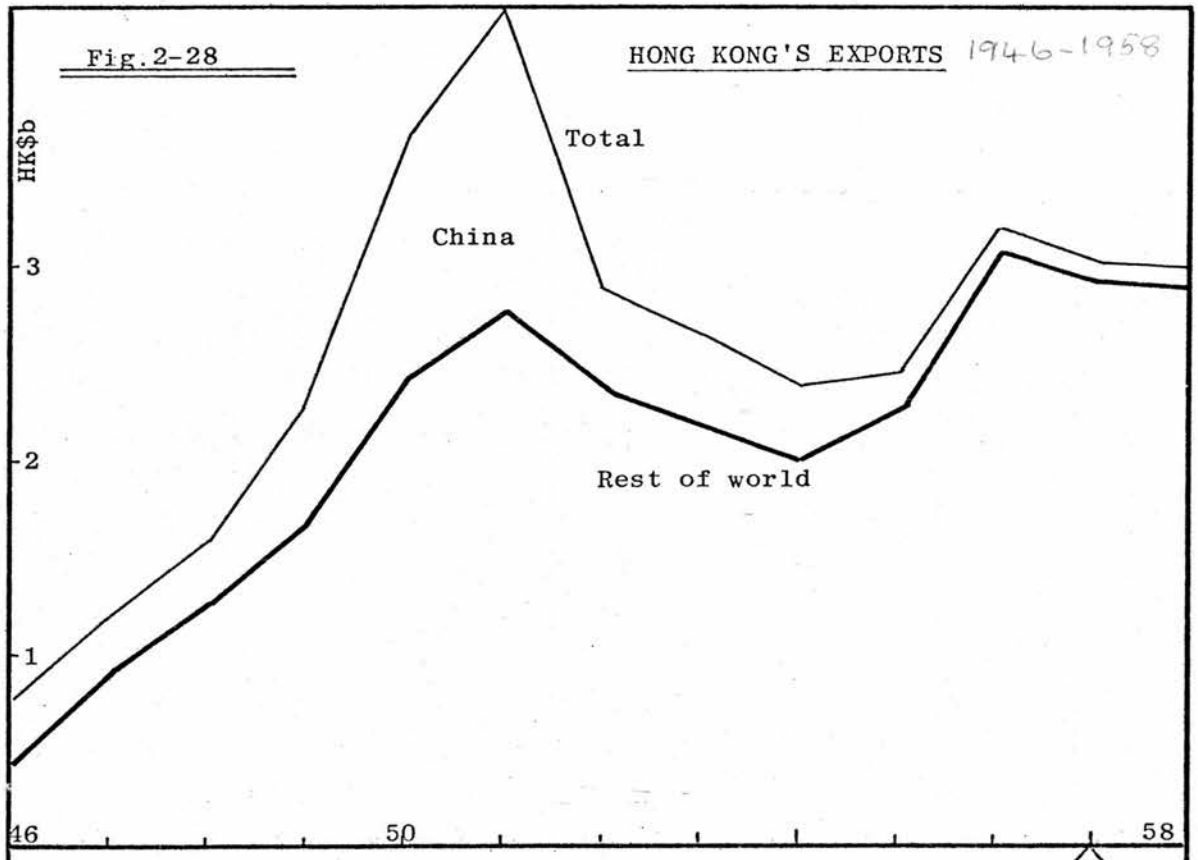


Fig.2-29

HONG KONG'S IMPORTS
1946-1958

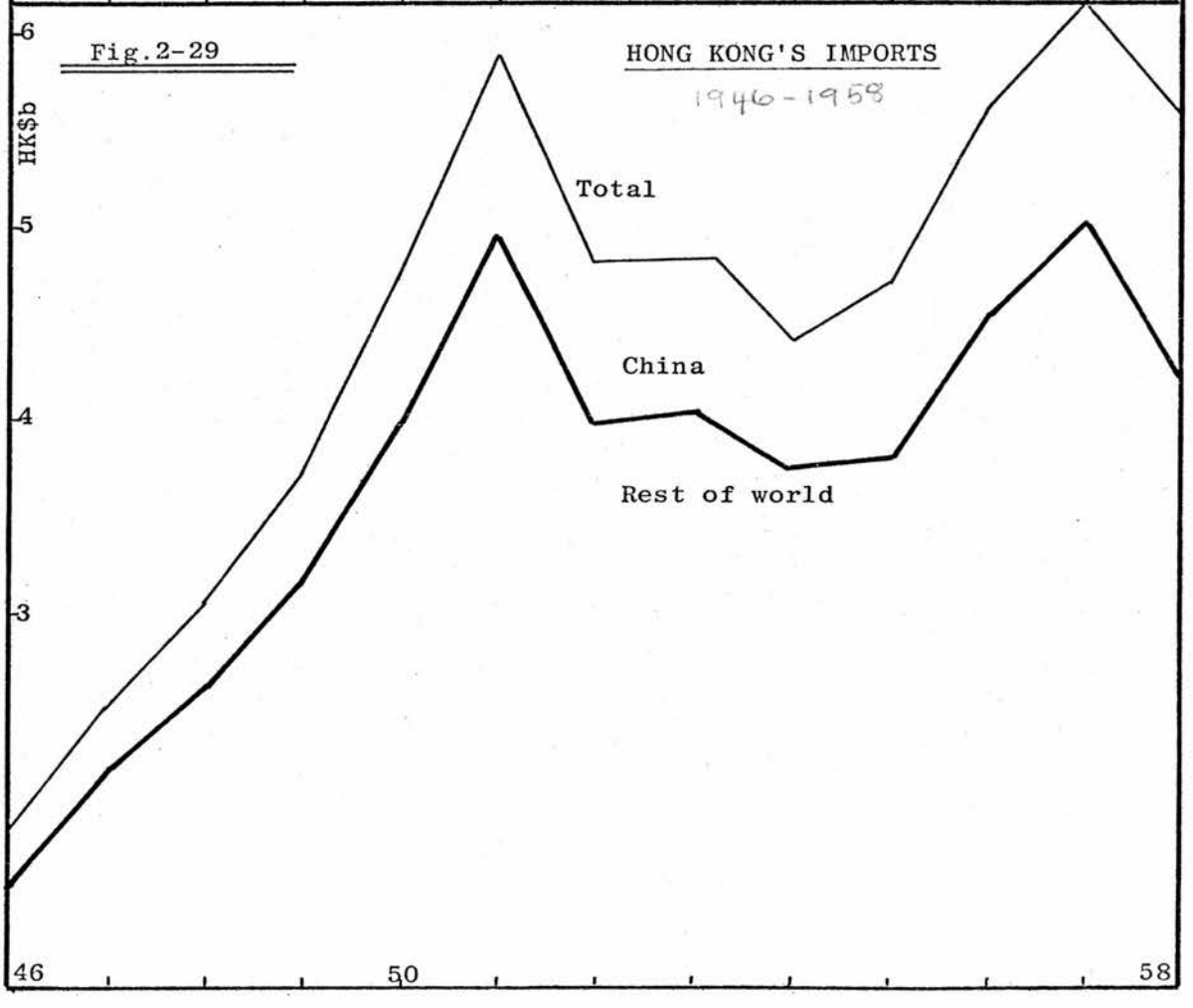


Fig.2-30

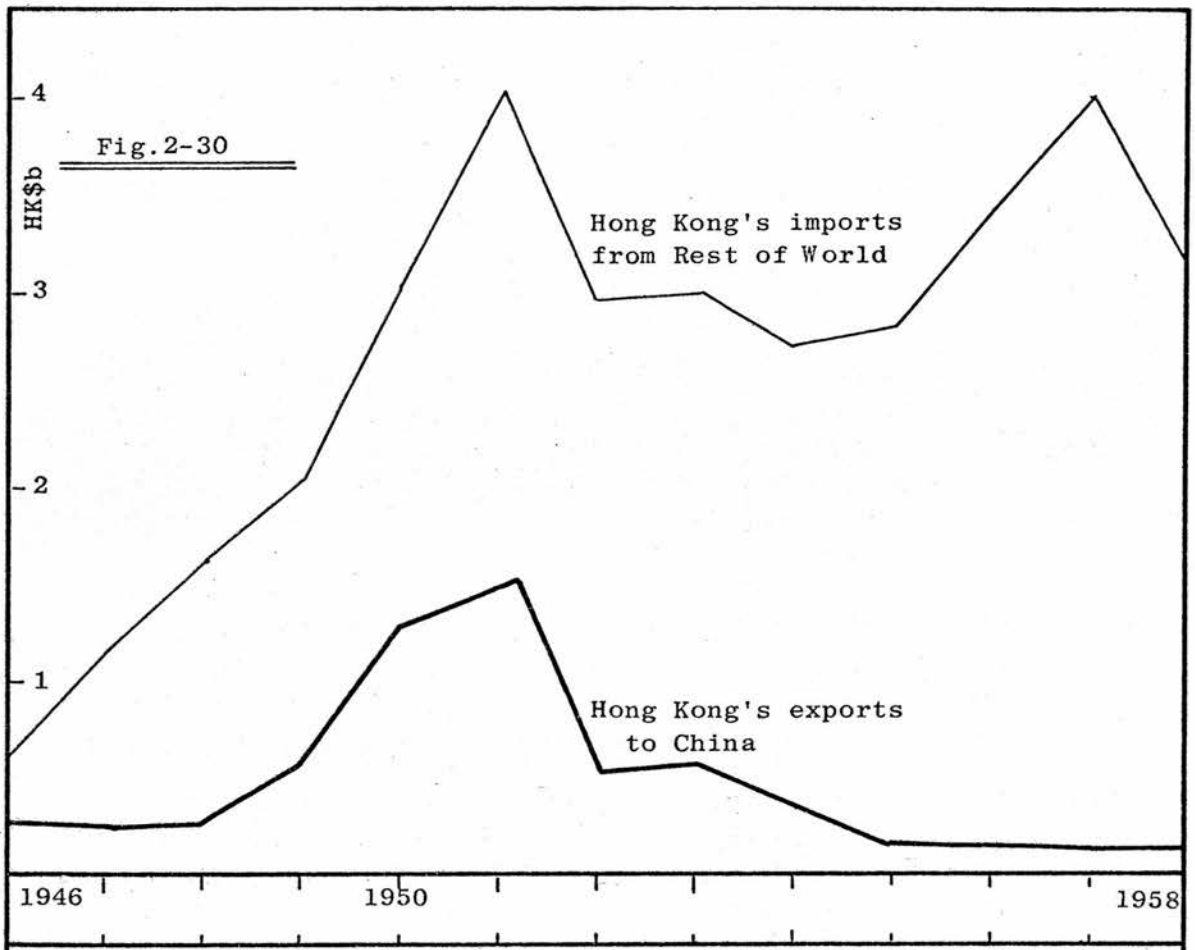
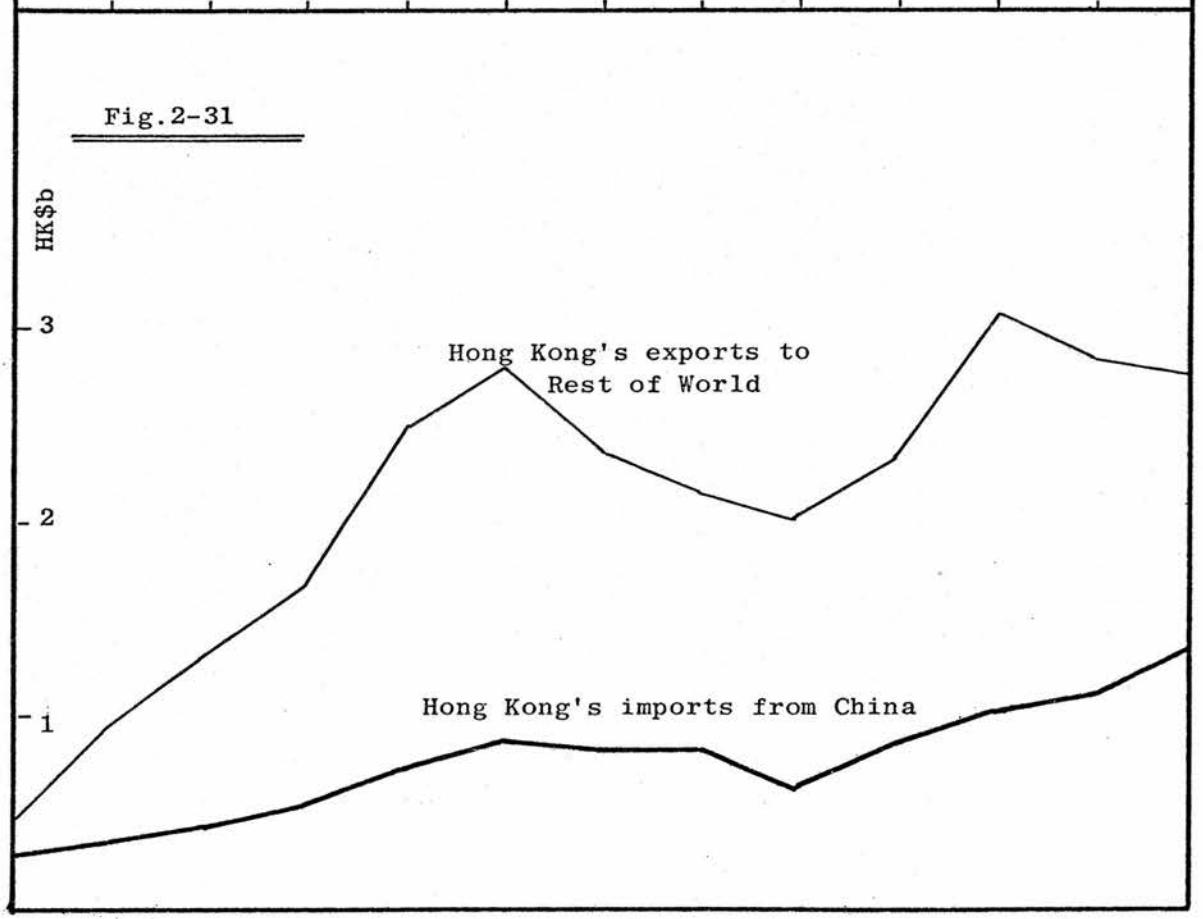


Fig.2-31



that is, when imports direct from China fell during the civil war and early post-Liberation years, imports from Hong Kong rose, strongly suggesting a movement of Chinese produce through Hong Kong. The general procedure was to take commodities for which imports from China were considerably more than imports from Hong Kong in the pre-war period (that is, 1935-39), but for which imports from Hong Kong rose significantly during the boom years. Often the relative position of the two countries reverted to the pre-war one by the late fifties, indicating that the transit trade through Hong Kong was a transitory phenomenon occasioned by the unsettled conditions in China. Other commodities, however, do not revert, and China appears to lose the British market to Hong Kong. This may merely mean that China is not exporting that particular commodity any more, or that she is exporting it elsewhere. On other occasions imports from both countries increase or decline. In brief, the general thrust of the comparison is a temporary surge of re-exports of China origin through Hong Kong, but that each of the commodities displays different characteristics and is looked at individually.

Quantification:- Fig.2-32 plots Britain's total imports and imports from China and Hong Kong for the crucial years 1946 to 1958. There is a definite surge in Hong Kong imports but no clearly discernible, counter-balancing, dip in imports from China. This is partly due to the rise in 1950, but it is also probably due to the shift in China's direction of trade which suppressed exports to Britain during the fifties.

Hong Kong's domestic exports are officially distinguished from 1959 (HK$ 2,282m), and there is an estimate of HK$ 864 million for 1954.[61] Fitting a log curve through these two figures we get a trend for domestic exports (column 1, Table 2-48). Domestic exports to China ran at an annual average of HK$10m from 1959 to 1969 (Table 2-35) and it seems reasonable to apply this average to the earlier period to give, in column 2, the trend of domestic exports other than to China. Subtracting this from total exports other than to China (column 3) we get, in column 4, an estimate of Hong Kong's re-exports other than to China, which is then

---

[61] Smith, *John Stuart Mill's Other Island*, p.15.

compared to imports other than from China to give, in column 6, the relationship between imports and re-exports which (if we presume that there is no longer any China coastal trade through Hong Kong) excludes trade with China. It will be noticed that the percentages for 1947 to 1950 and, to a lesser degree, to 1952 correspond with the pre-war estimate that two-thirds of imports were re-exported.

The next question to be asked is whether Hong Kong's China trade followed the same pattern as her non-China trade. Table 2-49 compares the relationship between imports and re-exports for China and 'non-China' from 1967 to 1969 when the figures become available. It can be seen that the relationship is higher for China but not exceedingly so. The 'non-China' percentages from Table 2-48 are then applied to imports from China in Table 2-50 to give an estimate of Hong Kong's re-exports of China origin (column 3).

There is a further problem of the increase in Hong Kong's population, which might be presumed to especially affect imports from China because of the high proportion of foodstuffs. An estimate of population growth is therefore tested against the derived estimate of retained imports from China, and it can be seen that this latter estimate comfortably copes with the population increase (columns 4 to 6).

We now need to estimate the mix of domestic exports/re-exports to Britain during these years. Table 2-51 calculates Britain's share of Hong Kong's general exports (that is, domestic plus re-exports) from 1946 to 1969. Two things stand out. Firstly, there is a rise during the Liberation period which is probably caused, in part at least, by an increase in re-exports of China origin. Secondly, there is a rapid rise after the 1952 slump to a distinctly new level. It would seem likely that this leap is caused by the rapid expansion of domestic exports to Britain attracted by Commonwealth Preference. The timing of this presumed growth in domestic exports corresponds, it will be noted, with the estimate in column 2 of Table 2-48. The supposition that there was an above-average growth of domestic exports to Britain is borne out by Tables 2-52 and 2-53 which show that by 1959, and thereafter, Hong Kong's re-exports to Britain are only about five per cent of her domestic exports.

Fig.2-32 BRITAIN'S IMPORTS, 1946-58

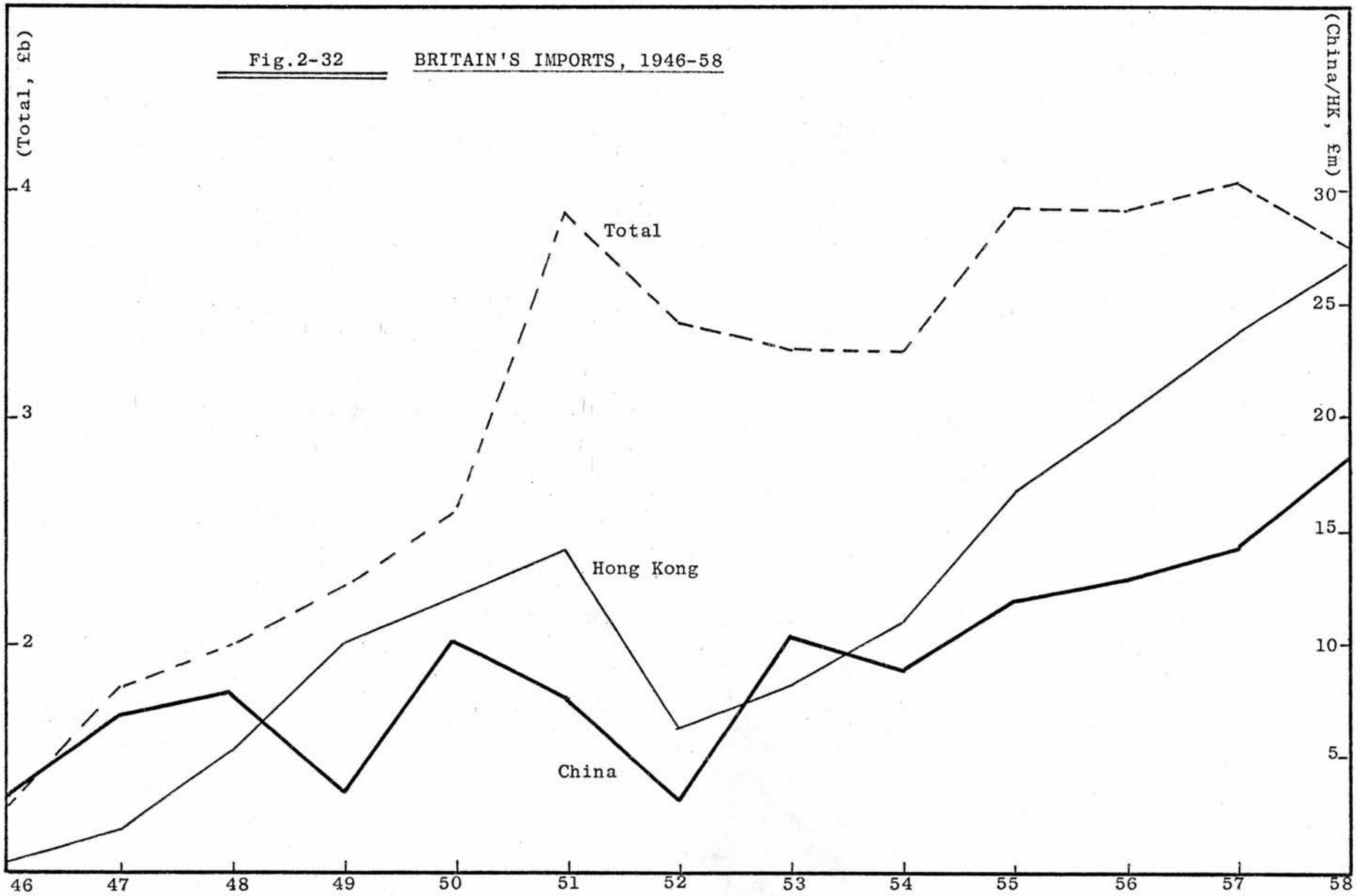


Table 2-48

Estimated relationship between Hong Kong's (non-China) imports and re-exports, 1946-59

	1	2	3	4	5	6
	Total domestic export trend	Trend of domestic exports other than to China	Total exports other than to China	Re-exports other than to China	Imports other than ~~to~~ from China	Relationship ($^4/_5 \cdot 100$)
	HK$m					%
1946	182	172	460	288	600	48
1947	222	212	950	738	1,168	63
1948	269	259	1,302	1,043	1,647	63
1949	327	317	1,734	1,417	2,157	66
1950	397	387	2,456	2,069	3,005	69
1951	482	472	2,829	2,357	4,007	59
1952	586	576	2,379	1,803	2,950	61
1953	711	701	2,194	1,493	3,016	50
1954*	864	854	2,026	1,172	2,743	43
1955	1,049	1,039	2,351	1,312	2,821	47
1956	1,274	1,264	3,074	1,810	3,528	51
1957	1,547	1,537	2,893	1,356	4,019	34
1958	1,879	1,869	2,833	964	3,197	30
1959**	2,282	2,272	3,162	890	3,915	23

Sources: 1946 - *Statistical Abstract of the British Commonwealth*, No.70, converted from sterling @ HK$16 to the pound.
1947-67 - Hong Kong Government, *Hong Kong Statistics, 1947-67*.
1967-9 - *Hong Kong Annual Report*.

Note: The trend for domestic exports is log Yt = 2.2601 & 0.0846Xt

*Estimate; see Note 59. **Official statistics.

Fig.2-33 HONG KONG'S EXPORTS 1946-1969

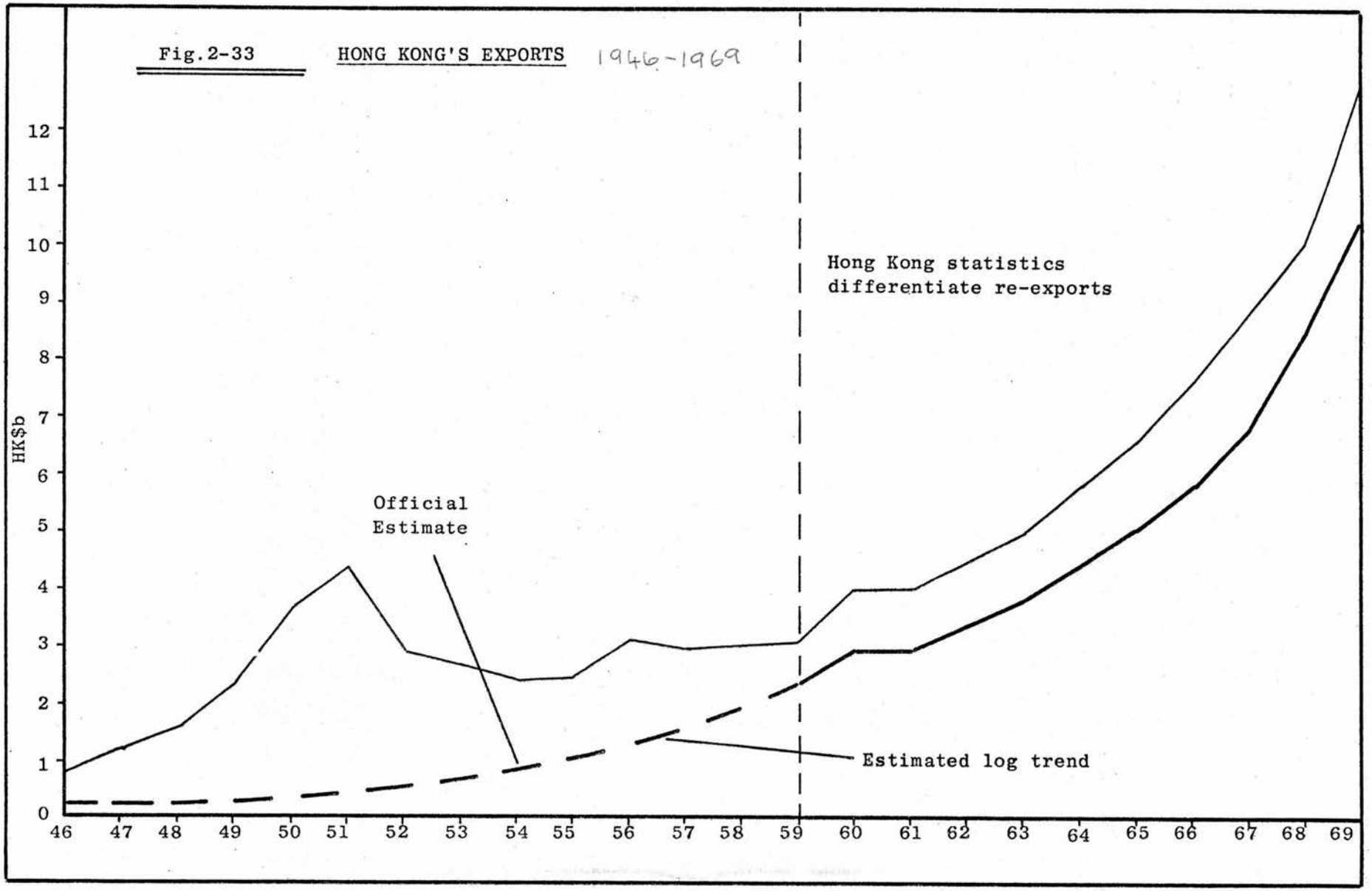


Table 2-49

Hong Kong: Proportion of re-exports to imports 1967-1969

	1	2	3	4	5	6
	Re-exports of China origin	Imports from China	Proportion ($\frac{1}{2}$ · 100)	Re-exports of non-China origin	Imports other than from China	Proportion ($\frac{4}{5}$ · 100)
	HK$m		%	HK$m		%
1967	613	2,282	27	1,468	8,167	18
1968	550	2,429	23	1,592	10,043	16
1969	724	2,700	27	1,955	12,193	16

Source: *Hong Kong External Trade*.

Table 2-50

Estimate of Hong Kong's use of imports from China 1946-1959

	1	2	3	4	5	6
	Imports from China	% Re-exported	Re-exports of China origin	Retained imports from China	H.K. Population	Retained requirement at 1947 level*
	HK$m	%	HK$m		millions	HK$m
1946	324	48	156	168	1.600	125
1947	382	63	241	141	1.800	141
1948	431	63	272	159	(1.830)	143
1949	593	66	391	202	1.860	146
1950	783	69	540	243	2.360	185
1951	863	59	509	354	(2.383)	187
1952	830	61	506	324	(2.405)	188
1953	857	50	429	428	(2.429)	190
1954	692	43	298	394	(2.452)	192
1955	898	47	422	476	(2.475)	194
1956	1,038	51	529	509	2.500	196
1957	1,131	34	385	746	(2.613)	205
1958	1,397	30	419	978	(2.733)	214
1959	1,034	23	238	796	2.857	224

Sources: Trade figures - as Table 2-48.
Population:- 1946,1949,1956 - *Hong Kong Annual Report*,1959,p.3 /1947,1950 - *Hong Kong Annual Report*, 1968, p.279/1959 - *Hong Kong Annual Report*, 1968, p.341.
Years in parentheses by log extrapolation. *78.3 per capita.

Table 2-51

The proportion of Hong Kong's non-China general exports going to Britain 1946-1969

	General exports other than to China	General exports to Britain	Proportion to Britain
	HK$m		%
1946	460	16	3.5
1947	950	38	4.0
1948	1,302	75	5.8
1949	1,734	140	8.1
1950	2,456	168	6.8
1951	2,829	215	7.6
1952	2,379	83	3.5
1953	2,194	119	5.4
1954	2,026	162	8.0
1955	2,351	251	10.7
1956	3,074	298	9.7
1957	2,893	337	11.7
1958	2,833	393	13.9
1959	3,163	462	14.6
1960	3,818	608	15.9
1961	3,831	608	15.9
1962	4,302	737	17.1
1963	4,921	907	18.4
1964	5,724	1,024	17.9
1965	6,458	908	14.1
1966	7,494	1,017	13.6
1967	8,733	1,178	13.5
1968	10,525	1,407	13.4
1969	13,160	1,537	11.7

Source: As Table 2-59.

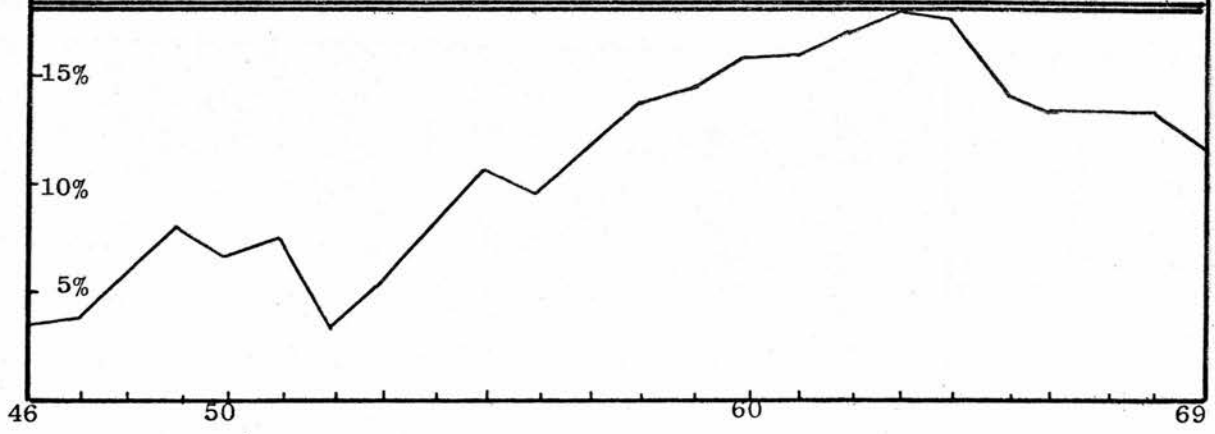


Table 2-52

Britain's share of Hong Kong's re-exports other than to China,1959-69

	Total re-exports other than to China	Re-exports to Britain	Proportion to Britain
	HK$m		%
1959	889	23	2.6
1960	964	23	2.4
1961	900	19	2.1
1962	993	23	2.3
1963	1,098	43	3.9
1964	1,309	55	4.2
1965	1,449	47	3.2
1966	1,779	30	1.7
1967	2,039	31	1.5
1968	2,106	64	3.0
1969	2,649	72	2.7

Source: As Table 2-48

Table 2-53 Britain's share of Hong Kong's domestic exports other than to China, 1959-69

	Domestic exports other than to China	Domestic exports to Britain	Proportion to Britain
	HK$m		%
1959	2,274	439	19.3
1960	2,854	585	20.5
1961	2,931	589	20.1
1962	3,309	714	21.6
1963	3,823	864	22.6
1964	4,415	968	21.9
1965	5,009	861	17.2
1966	5,715	987	17.3
1967	6,694	1,147	17.1
1968	8,419	1,343	16.0
1969	10,511	1,465	13.9

Source: As Table 2-48.

It seems that 1952 is the turning point, and that from that year on the proportion of re-exports remains fairly static while the proportion of domestic exports expands to the level of the sixties. In Table 2-54, therefore, we apply the average re-export proportion of the sixties, 2.7 per cent, to our earlier estimate of total re-exports other than to China to give an estimate of re-exports to Britain from 1952 to 1958. These re-exports are then subtracted from general exports to give an estimate of domestic exports. It will be seen that the proportion of domestic exports to Britain in column 6, plausibly, rises rapidly to the sixties level.

We now take the derived proportion of domestic exports exported to Britain in 1952, 5.9 per cent, and assume that this was constant from 1946 to 1951 (Table 2-55). Again it will be seen that the proportions in column 6 correspond with the proportions for those years in Table 2-51.

Finally, in Table 2-56, these estimates are brought together and converted into sterling. Column 5 indicates that these estimates are plausible.

By the end of the sixties, as we have already seen, Hong Kong's recorded re-exports of Chinese origin to Britain, HK$5.4 million (£370,000), were quite negligible in terms of Hong Kong's total exports to Britain (0.35 per cent) and Britain's imports from China (0.98 per cent). Since Britain's share of Hong Kong's general exports during the sixties is relatively stable compared with the preceding period, and the same, we have argued, applies to the mix of re-exports/domestic exports, it is arbitrarily assumed that the proportions obtaining at the end of the decade shown in Table 2-57 held throughout the decade, and so the resulting average proportion is simply applied to imports from China to give a rough measure of re-exports of Chinese origin to Britain (Table 2-58). The estimate for 1969, HK$5.6 million, is very close to the recorded figure of HK$5.4 million.

Trade towards China:- Because of the diffuseness of British exports to China it is not practical to examine individual commodities as in Appendix I. However, bearing in mind the huge surge in Hong Kong's

Table 2-54

Hong Kong's domestic exports & re-exports to Britain, 1952-8

	1	2	3	4	5	6
	Re-exports other than to China	Re-exports to U.K. (2.7%)	Total exports to U.K.	Domestic exports to U.K.	Total domestic exports other than to China	% of domestic exports to U.K.
	HK$m					%
1952	1,803	49	83	34	576	5.9
1953	1,493	40	119	79	701	11.3
1954	1,172	32	162	130	854	15.2
1955	1,312	35	251	216	1,039	20.1
1956	1,810	49	298	249	1,264	19.7
1957	1,356	37	337	300	1,537	19.5
1958	964	26	393	367	1,869	19.6

Source: See text.

Table 2-55

Hong Kong's domestic exports & re-exports to Britain,1946-51

	1	2	3	4	5	6
	Total domestic exports other than to China	Domestic exports to U.K. (5.9%)	Total exports to U.K.	Re-exports to U.K.	Total re-exports other than to China	% of re-exports to U.K.
	HK$m					%
1946	172	10	16	6	288	2.1
1947	212	13	38	25	738	3.4
1948	259	15	75	60	1,043	5.8
1949	317	19	140	121	1,417	8.5
1950	387	23	168	145	2,069	7.0
1951	472	28	215	187	2,357	7.9

Source: See text.

Table 2-56

Estimate of Hong Kong's re-exports of China origin to Britain, 1946-58

	1	2	3	4	5
	Total re-exports of China origin	% to U.K.	Re-exports of China origin to U.K.		Proportion*
	HK$m	%	HK$m	£m	%
1946	156	2.08	3.25	.2	20
1947	241	3.39	8.17	.5	22
1948	272	5.66	15.40	1.0	21
1949	391	8.54	33.39	2.1	24
1950	540	7.01	37.85	2.4	23
1951	509	7.93	40.36	2.5	19
1952	506	2.7	13.66	.9	17
1953	429	2.7	11.58	.7	10
1954	298	2.7	8.05	.5	5
1955	422	2.7	11.39	.7	5
1956	529	2.7	14.28	.9	5
1957	385	2.7	10.40	.7	3
1958	419	2.7	11.31	.7	3

Conversion rate: HK$16 = £1/ *Proportion: Re-exports of China origin as percentage of total Hong Kong exports to Britain.

Table 2-57

Hong Kong's re-exports of China origin to U.K. as proportion of imports from China, 1967-73

	1	2	3	4	5
	Re-exports of China origin	Re-exports of China origin to UK	% to U.K. ($^2/_1$. 100)	Imports from China	Re-exports as % ($^1/_4$. 100)
	HK$m		%	HK$m	%
1967	613	NS	?	2,282	27
1968	550	NS	?	2,429	23
1969	724	5.40	.75	2,700	27
1970	688	6.45	.94	2,830	24
1971	759	5.85	.77	3,330	23
1972	983	7.45	.76	3,847	26
1973	1,589	13.07	.82	5,634	28
		Average	.81	Average...	25.4

Source: *Hong Kong External Trade*.

general exports to China, the bulk of which was re-exports (see Fig. 2-26), it seems reasonable to assume that there was a significant movement of British goods through Hong Kong to China during the early part of the period. This assumption is reinforced by comparing the relative movements of Britain's exports to Hong Kong and China (Fig.2-10, Fig. 2-34). It would seem that there is an inverse relationship between 1948 and 1954 but thereafter there is a largely secular growth in Britain's exports to Hong Kong,which fits in with our conclusions in the previous section about the transformation of Hong Kong's trade.

In Table 2-59 we assume that British exports to Hong Kong and China would have been in a straight line between 1948 and 1954 had it not been for Hong Kong's re-exports of British goods to China (dotted lines in Fig.2-34). It will be seen that the percentage deviations from the linear trend for both countries mirror each other, indicating that there was an inverse relationship during this period (Fig.2-35).

It is assumed in Table 2-60 that the proportion of British goods in Hong Kong's re-exports to China is the same as the proportion of her imports from Britain to total imports other than from China. The resulting calculation for re-exports of British origin is shown in columns 5 and 6. How accurate is this assumption of proportionality? Returning to Table 2-7 (column 2),we see that the estimate seriously overstates re-exports of British origin for the years 1968, 1969, for which we have official figures. This, however, does not necessarily invalidate the assumption for the earlier, crucial, period up to the mid-fifties. To test the estimate for these years, it is added to direct exports in Table 2-61 to calculate the proportion of 'total' British imports in China's imports from the West. Table 2-62 then shows Britain's direct share of China's imports from the West over a wider span. This share rises from 8 per cent in 1948 to 10 per cent at the end of the fifties. Indeed, if we take the figure for China's total imports for 1947 in Table 2-3, £112 million, then Britain's direct exports to China in that year, £12.8 million, are 11.5 per cent of what is virtually China's imports from the West. In any case, a figure of seven to nine per cent for the combination of direct and indirect exports seems plausible.

Table 2-58

Estimate of Hong Kong's re-exports of China origin to U.K., 1959-69

	Imports from China	Re-exports of China origin to U.K.*			Imports from China	Re-exports of China origin to U.K.*	
	HK$m		£m		HK$m		£m
1959	1,034	2.1	.1	1965	2,322	4.8	.3
1960	1,186	2.4	.2	1966	2,769	5.7	.4
1961	1,028	2.1	.1	1967	2,282	4.7	.3
1962	1,213	2.5	.2	1968	2,429	5.0	.3
1963	1,487	3.1	.2	1969	2,700	5.6	.4
1964	1,970	4.1	.3				

Conversion rates as Table 2-19.
*Imports x 25.4% x 81%.

Table 2-59

Divergences from straight line of Britain's exports to Hong Kong and China, 1947-54

	British exports	Straight line	DIVERGENCE	
			ABSOLUTE	PERCENTAGE
	£m			%
CHINA				
1947	12.8	12.8	0	0
1948	8.7	12.0	-3.3	-27
1949	2.4	11.1	-8.7	-78
1950	3.6	10.3	-6.7	-65
1951	2.7	9.4	-6.7	-71
1952	4.6	8.6	-3.0	-47
1953	6.3	7.7	-1.4	-19
1954	6.9	6.9	0	0
HONG KONG				
1947	12.8	12.8	0	0
1948	20.7	14.4	6.3	44
1949	28.0	16.0	11.0	75
1950	28.1	17.6	10.5	59
1951	36.1	19.3	16.8	87
1952	29.0	20.9	8.1	39
1953	27.3	22.5	4.8	21
1954	24.1	24.1	0	0

Fig.2-34 BRITAIN'S EXPORTS TO CHINA & HONG KONG, 1946-60

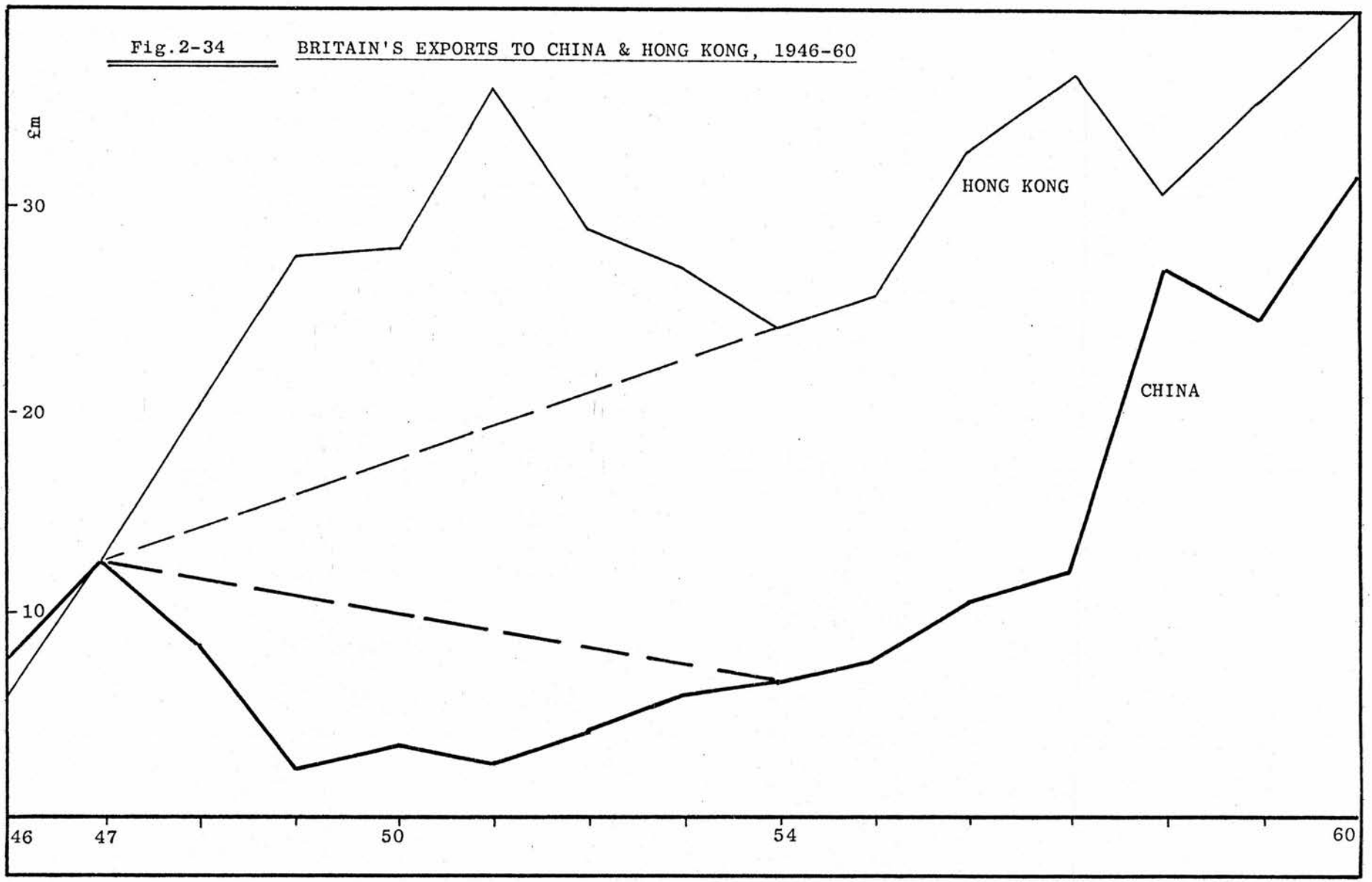


Table 2-60

Estimate of Hong Kong's re-exports of British origin to China

1946-1969

	1	2	3	4	5	6
	IMPORTS		% from Britain	Re-exports to China	Re-exports of British origin to China	
	O/T CHINA	BRITAIN				
	HK$m		%	HK$m		£m
1946	600	44	7.3	288	21.1	1.3
1947	1,168	163	14.0	257	35.9	2.2
1948	1,647	301	18.3	271	49.5	3.1
1949	2,157	388	18.0	575	103.4	6.5
1950	3,005	405	13.5	1,250	168.5	10.5
1951	4,007	619	15.5	1,594	246.3	15.4
1952	2,950	470	15.9	510	81.2	5.1
1953	3,016	474	15.7	530	83.3	5.2
1954	2,743	369	13.5	381	51.3	3.2
1955	2,821	441	15.6	172	26.9	1.7
1956	3,528	513	14.5	126	18.3	1.2
1957	4,019	667	16.6	113	18.8	1.2
1958	3,197	531	16.6	146	24.3	1.5
1959	3,915	574	14.7	106	15.5	1.0
1960	4,678	664	14.2	107	15.2	1.0
1961	4,942	757	15.3	91	13.9	.9
1962	5,444	760	14.0	77	10.8	.7
1963	5,925	860	14.5	62	9.0	.6
1964	6,581	838	12.7	47	6.0	.4
1965	6,643	962	14.5	54	7.8	.5
1966	7,328	1,011	13.8	54	7.5	.5
1967	8,167	984	12.1	42	5.1	.3
1968	10,043	1,083	10.8	36	3.9	.2
1969	12,193	1,201	9.9	30	3.0	.2

Note: Re-exports to China prior to 1959 have been estimated by deducting HK10m (the average for domestic exports, 1959-69) from general exports to China.

Fig. 2-35

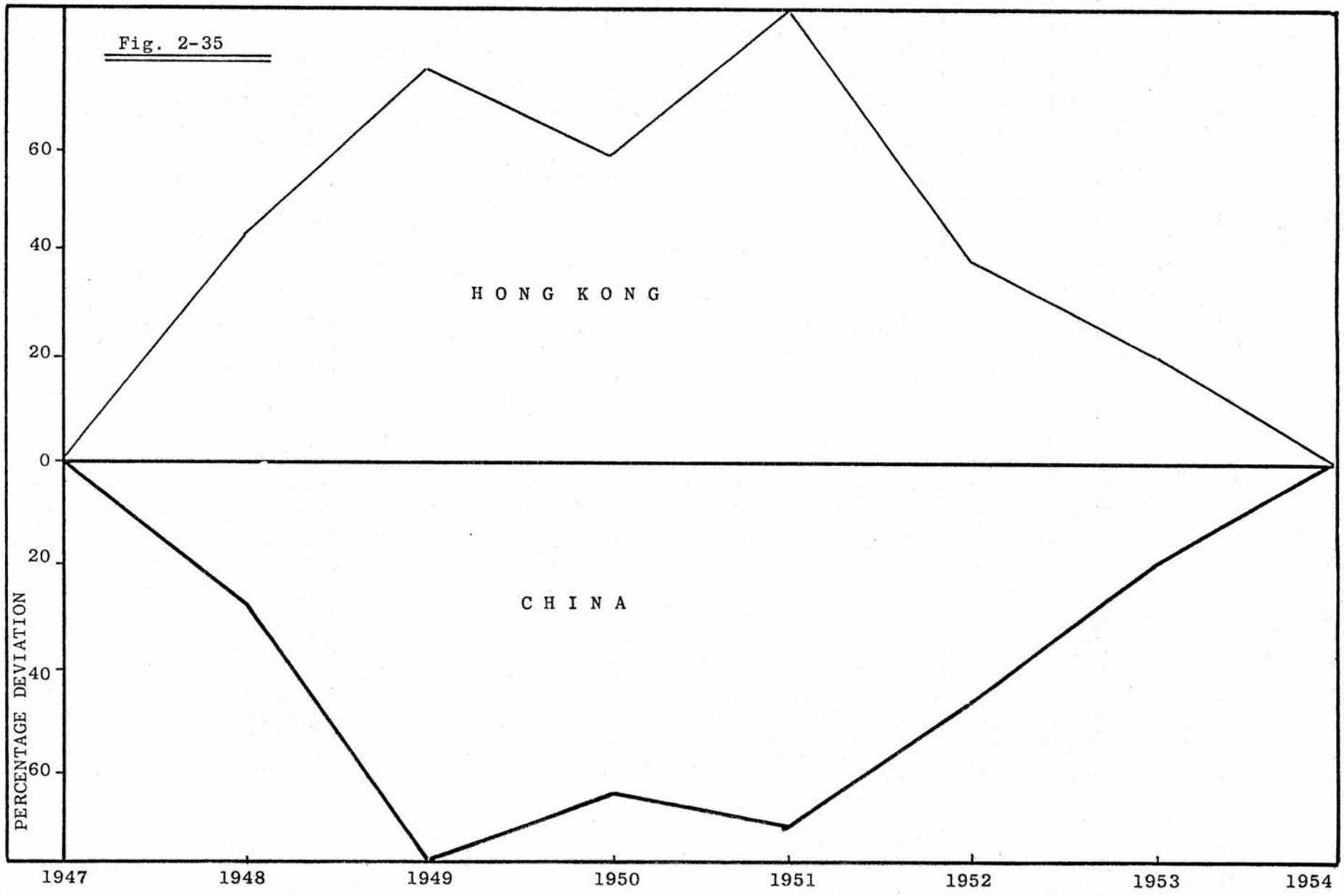

HONG KONG
CHINA
PERCENTAGE DEVIATION
60
40
20
0
20
40
60
1947
1948
1949
1950
1951
1952
1953
1954

Table 2-61

Britain's 'total' exports to China as proportion of China's imports from the West, 1950-58

	Direct exports to China	Re-exports via Hong Kong	'Total' exports	China's imports from West	Proportion from Britain
	£m				%
1950	3.69	10.5	14.1	161	8.8
1951	2.7	15.4	18.1	216	8.4
1952	4.6	5.1	9.7	109	8.9
1953	6.3	5.2	11.5	132	8.7
1954	6.9	3.2	10.1	114	8.9
1955	8.0	1.7	9.7	129	8.5
1956	10.8	1.2	12.0	170	7.1
1957	12.2	1.2	13.4	200	6.7
1958	27.2	1.5	28.7	259	11.08

Source: See text.

Table 2-62

Britain's share of China's imports from the West 1938-1969

%

1938	7.9	1952	4.2	1958	10.5	1964	4.6
1947	6.9	1953	4.8	1959	10.0	1965	5.4
1948	8.1	1954	6.1	1960	12.1	1966	6.1
1949	na	1955	6.2	1961	4.7	1967	6.7
1950	2.2	1956	6.4	1962	3.7	1968	4.7
1951	1.3	1957	6.1	1963	4.9	1969	8.6

Sources:

1938, 1947, 1948: Calculated from figures in *Yearbook of International Trade Statistics, 1950* (N.Y., United Nations, 1951). [This covers total imports, but since imports from the 'Soviet Bloc' were very small in these years, this is virtually the same as imports from the West.]

Other years: Estimate of China's imports from the West (in US$) from U.S. Congress, Joint Economic Committee, *The People's Republic of China: an Economic Assessment* (Washington, 1972). British figures are converted from sterling at the following rates:- 1950-66; 2.80/ 1967; 2.75/ 1968, 1969; 2.40.

The General Perspective

Finally, Table 2-63 gathers together the estimates for the whole period and calculates the proportion of presumed indirect trade through Hong Kong to direct Sino-British trade, and Figs.2-36, 2-37 plot direct and indirect trade via Hong Kong for the period.

This substantial, indeed at times quite massive, unreported indirect trade via Hong Kong is intrinsically significant, of course, but in the context of this study it is especially so. It is obviously very important to be clear precisely what 'China' means in the British statistics if we are going to extrapolate from them to China's trade with the West in general. At the same time, it is vital to have a fairly full and reliable picture of China's trade with Hong Kong since, even when the indirect trade is discounted, she was, on average, the main trading partner for most of the period under examination.

Table 2-63

Britain's direct trade with China and estimated indirect trade via Hong Kong 1930-1960

	IMPORTS			EXPORTS		
	Direct	via H.K.	% via HK	Direct	via H.K.	% via HK
	£m		%	£m		%
1930	9.889	na	na	8.660	2.090	24
1931	7.773	.160	2	7.973	1.900	24
1932	6.163	.120	2	7.926	2.500	32
1933	5.095	.160	3	6.413	1.820	28
1934	6.142	.230	4	6.593	1.170	18
1935	6.260	.380	6	5.058	1.080	21
1936	7.618	.360	5	5.836	0.800	14
1937	8.249	.740	9	5.976	1.210	20
1938	6.409	.750	12	4.147	1.530	37
1939	5.147	.710	14	3.655	0.520	14
1946	2.697	.2	7	7.856	1.3	17
1947	7.172	.5	7	12.824	2.2	17
1948	8.201	1.0	12	8.717	3.1	36
1949	3.622	2.1	58	2.406	6.5	270
1950	10.324	2.4	23	3.591	10.5	292
1951	7.670	2.5	33	2.697	15.4	571
1952	3.012	.9	30	4.581	5.1	111
1953	10.222	.7	7	6.267	5.2	83
1954	8.959	.5	6	6.919	3.2	46
1955	12.302	.7	6	7.947	1.7	21
1956	12.549	.9	7	10.782	1.2	11
1957	14.225	.7	5	12.195	1.2	10
1958	18.541	.7	4	27.167	1.0	4
1959	19.687	neg	neg	24.825	1.0	4
1960	24.719	neg	neg	32.075	neg	neg

Indirect trade through Hong Kong is negligible from now on, both in absolute terms and as a percentage of direct Sino-British trade.

Fig.2-36 BRITAIN'S IMPORTS FROM CHINA: DIRECT & VIA HONG KONG 1930-1960

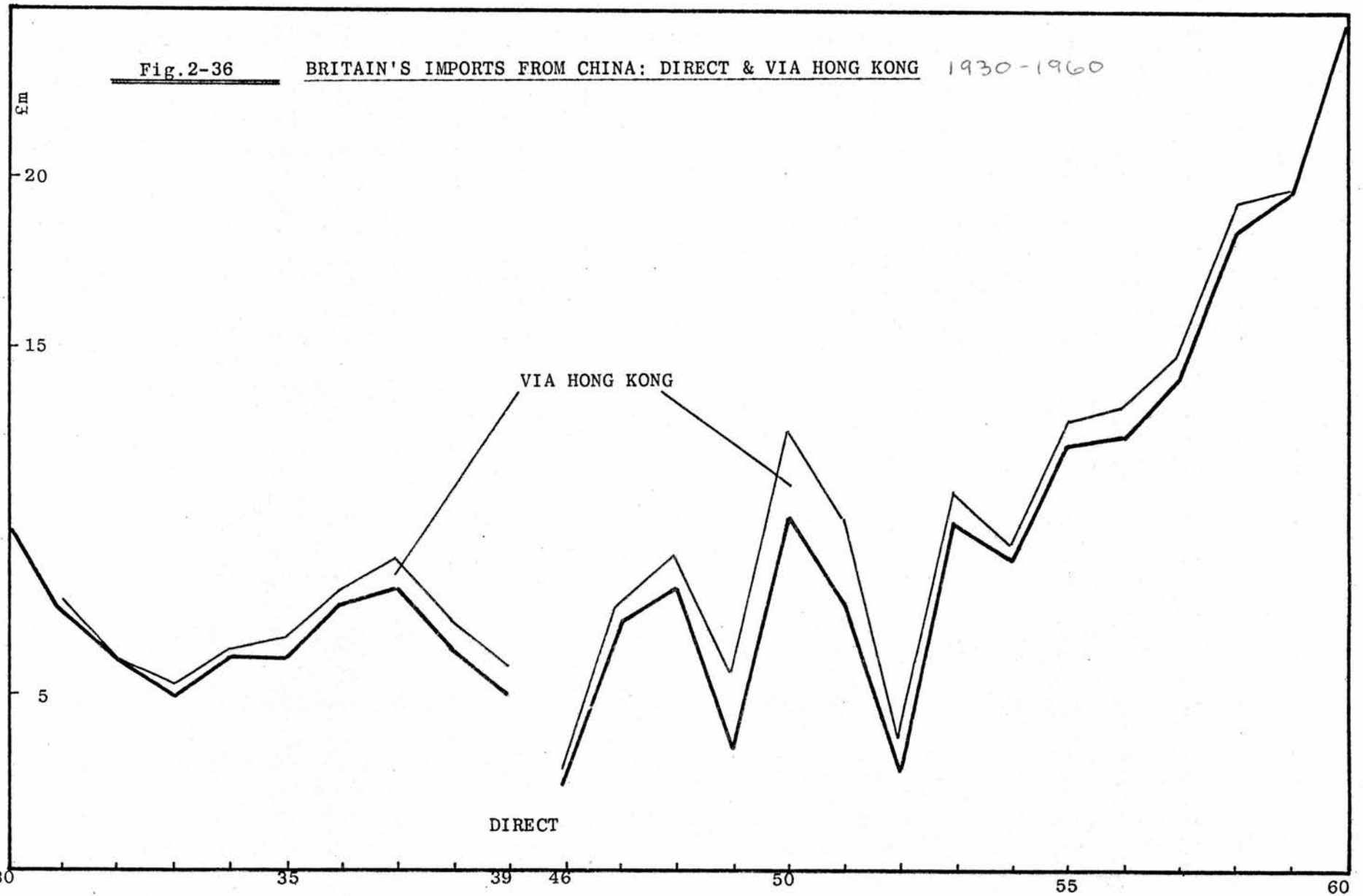
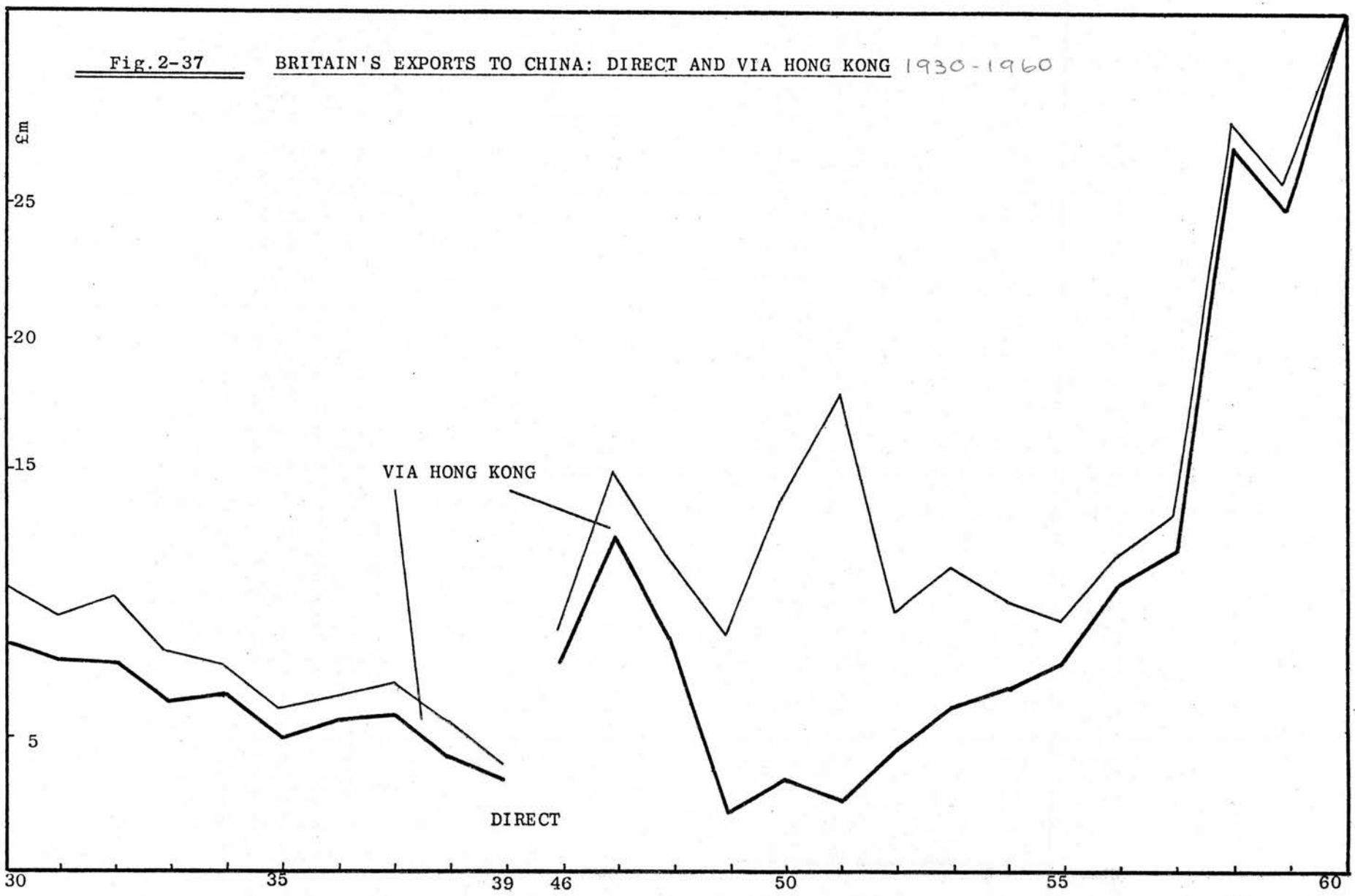


Fig. 2-37 BRITAIN'S EXPORTS TO CHINA: DIRECT AND VIA HONG KONG 1930-1960



CHAPTER THREE

Problems of Constructing the Indexes

In the previous chapter we have seen that direct Sino-British trade is but a part of Britain's China trade. It will be apparent that the indexes in this study are necessarily derived from a further diminution of the trade.

Had data been available for every commodity traded during the period, the potential number of entries would have been over 10,000 a year and one would have to limit this to a more manageable number. If the trade were spread fairly evenly over this large number of commodities the normal statistical technique of random selection would have been used;[1] if trade were consistently concentrated in a relatively small number of commodities then one would simply have specified an acceptable coverage and used the requisite number of commodities. It will come as no surprise that neither of these options was possible. Data was not available for many commodities and what data there was shows that the trade is indeed concentrated, but not consistently.

The problem is illustrated by Table 3-1(a-g) and Fig.3-1. For three years that span the period - 1938, 1958 and 1968 - all specified commodities in Vol.IV of the *Annual Statement* (the by-country tables) are entered in descending order of value. Non-specified entries ("All other sorts") and the few commodities which are less than £10,000 are excluded for simplicity. Exports of iron and steel, which are given in non-compatible groupings in 1958 and 1968, are re-totalled to preserve

---

[1] The task would not be daunting if the data were in a form suitable for random selection. To select, say, a sample of households to be interviewed from a census list, presents no great problems. The difficulty with the data used here is that it first has to be extracted and ordered before such a selection can be made. By then the data set is so diminished that no further reduction is necessary.

Table 3-1a

Vol.IV Coverage: Imports, 1938

NOC	DESCRIPTION	£'000	%	COVERAGE			
				TOTAL	EXV	1Y	2Y
1	Eggs, not in shell	2,863	45	45	45		
2	Bristles	459	7	52	52	7	7
3	Tea	410	6	58	58	14	14
4	Tung oil	392	6	64	64	20	
5	Tin	312	5	69	69	25	
6	Tungsten ores	226	4	73	73	28	
7	Hats	139	2	75	75	30	
8	Silk manufactures (V)	139	2	77	V		
9	Eggs, in shell	114	2	79	77		
10	Camels' hair	89	1	80	78	32	
11	Silk, raw	85	1	82	79	33	
12	Hair, raw	82	1	83	81		
13	Carpets	81	1	84	82	34	15
14	Mats	71	1	85	83		
15	Nuts	68	1	86	84		
16	Silk cocoons	47	1	87	85		
17	Plaiting of straw	45	1	88	86	35	
18	Hides	43	1	88	86		
19	Canes (V)	38	1	89	V		
20	Cotton waste	34	1	90	87	35	
21	Antimony	31	*	90	87		
22	Manufactures of skin	31	*	90	88		
23	Ginger	30	*	91	88		
24	Cotton manufactures (V)	27	*	91	V		
25	Essential oils	25	*	92	89	36	
26	Feathers	23	*	92	89		
27	Beans	21	*	92	89		
28	Fur skins, raw	19	*	93	90	36	15
29	Rabbit skins	19	*	93	90		
30	Curios (V)	15	*	93	V		

Coverage is shown by cumulative %.
EXV: excluding 'value only' commodities.
1Y : commodity obtains in one other year.
2Y : commodity obtains in both other years.

	Total imports	6,409	NOC	30	26	13	4

*less than 0.5%

Table 3-1b

Vol.IV Coverage: Imports, 1958

NOC	DESCRIPTION	£'000	%	COVERAGE			
				TOTAL	EXV	1Y	2Y
1	Eggs, frozen	3,170	17	17	17		
2	Cotton yarns	2,170	12	29	29		
3	Bristles	1,707	9	38	38	9	9
4	Tea	1,086	6	44	44	15	15
5	Oil seeds	1,037	6	49	49		
6	Eggs, dried	669	4	53	53	19	
7	Fruit	657	4	57	57		
8	Rosin	651	4	60	60		
9	Tung oil	577	3	63	63	22	
10	Goat hair	549	3	66	66		
11	Tin	400	2	68	68	24	
12	Cotton waste	347	2	70	70	26	
13	Wool, raw	309	2	72	72	27	
14	Albumen, frozen and liquid	296	2	73	73		
15	Fur skins, raw	281	2	75	75	29	17
16	Silk fabrics	277	1	76	76	30	
17	Meat	247	1	78	78		
18	Hats	238	1	79	79	32	
19	Albumen, dried	228	1	80	80		
20	Carpets	209	1	81	81	33	18
21	Silk, raw	201	1	83	83	34	
22	Gallnuts	197	1	84	84		
23	Miscellaneous fibres	184	1	85	85		
24	Fur skins (V)	147	1	85	V		
25	Paper	120	1	86	85	35	
26	Linseed oil	106	1	87	86		
27	Turpentine	105	1	87	86		
28	Menthol	73	*	88	87		
29	Drugs (V)	44	*	88	V		
30	Peppermint	36	*	88	87		
31	Canes (V)	26	*	88	V		
32	Camels' hair	15	*	88	87	35	
	Total imports	18,540	NOC	32	29	14	4

*less than 0.5%

Table 3-1c

Vol.IV Coverage: Imports, 1968

NOC	DESCRIPTION	£'000	%	COVERAGE			
				TOTAL	EXV	1Y	2Y
1	Bristles	3,119	9	9	9	9	9
2	Cotton fabrics	2,685	8	17	17		
3	Diamonds (V)	1,706	5	22	V		
4	Wool, raw	1,650	5	27	22	14	
5	Rice	1,480	4	31	26		
6	Rabbit meat	1,458	4	35	30		
7	Fur skins, raw	1,339	4	39	34	18	13
8	Fur skins (V)	1,335	4	43	V		
9	Cashmere	1,229	4	47	38		
10	Carpets	1,060	3	50	41	21	16
11	Castor oil seed	1,046	3	53	44		
12	Tea	980	3	56	47	24	19
13	Silk fibres	961	3	58	50		
14	Chemical elements (V)	858	3	61	V		
15	Walnuts	760	2	63	52		
16	Rosin	716	2	65	54		
17	Basketwork (V)	710	2	67	V		
18	Cotton	574	2	69	56		
19	Soya beans	570	2	71	57		
20	Cotton seed oil	557	2	72	59		
21	Essential oils	505	1	74	60	25	
22	Eggs, frozen and liquid	482	1	75	62		
23	Silk fabrics	470	1	77	63	27	
24	Tinned fruit	459	1	78	64		
25	Shellfish	393	1	79	66		
26	Prams, toys, etc. (V)	372	1	80	V		
27	Tungsten ores	346	1	81	67	28	
28	Non-ferrous metals (V)	332	1	82	V		
29	Other meat	308	1	83	68		
30	Clothing (V)	289	1	84	V		
31	Crude fertilisers (V)	285	1	85	V		
32	Plaiting materials	256	1	85	68	28	
33	Groundnuts	254	1	86	69		
34	Eggs, dried	224	1	87	70		
35	Paper	219	1	87	70		
36	Plywood	197	1	88	71		
37	Travel goods (V)	195	1	89	V		
38	Sugar	193	1	89	71		
39	Apricot kernels	135	*	90	72		
40	Musical instruments (V)	116	*	90	V		
	Total imports	34,274	NOC	40	30	9	4

* less than 0.5%

Table 3-1d

Vol.IV Coverage: Exports, 1938

NOC	DESCRIPTION	£'000	%	COVERAGE			
				TOTAL	EXV	1Y	2Y
1	Pictures	927	23	23	V		
2	Machinery	800	20	43	20		
3	Iron & steel	402	10	52	30	10	10
4	Arms & ammunition (V)	284	7	59	V		
5	Linen manufactures (V)	219	5	65	V		
6	Vehicles, air (V)	128	3	68	V		
7	Woollen tissues	120	3	71	33		
8	Ships (V)	117	3	74	V		
9	Cotton piece goods	91	2	76	35		
10	Vehicles, road (V)	74	2	78	V		
11	Rail carriages (V)	65	2	80	V		
12	Sodium compounds	54	1	81	36		
13	Spirits	53	1	82	37		
14	Locomotives (V)	47	1	83	V		
15	Wool tops	43	1	84	39	11	
16	Drugs (V)	41	1	85	V		
17	Cotton yarns	39	1	86	39		
18	Parcels	33	1	87	40		
19	Tobacco	27	1	88	41		
20	Paper	27	1	89	42	12	
21	Electrical wires	23	1	89	42		
22	Implements	22	1	90	43		
23	Painters' colours (V)	16	*	90	V		
24	Dyes	14	*	90	43		
25	Leather manufactures (V)	13	*	91	V		
26	Rubber manufactures (V)	13	*	91	V		
27	Apparel (V)	12	*	91	V		
28	Woollen yarns	11	*	92	43		
	THP	4,058	NOC	28	15	3	1

*less than 0.5%

Table 3-1e

Vol.IV Coverage: Exports, 1958

NOC	DESCRIPTION	£'000	%	COVERAGE			
				TOTAL	EXV	1Y	2Y
1	Wool tops	6,374	24	24	24	24	
2	Copper wire	5,178	19	43	43		
3	Iron & Steel { Plates, not coated; Plates, coated; Tubes; All other sorts }	4,258	16	59	59	40	16
4	Textile machinery	986	4	63	63		
5	Tractors	779	3	66	66		
6	Copper, refined	602	2	68	68	42	
7	Chemicals, inorganic (V)	578	2	70	V		
8	Manufactures of metal (V)	577	2	73	V		
9	Plastic materials	556	2	75	70		
10	Penicillin (V)	396	1	76	V		
11	Other anti-biotics	371	1	78	72		
12	Power generating machinery	337	1	79	73		
13	Misc. textiles manufactures (V)	336	1	80	V		
14	Artificial silk yarns	322	1	81	74		
15	Electric cables	317	1	82	75		
16	Paper	253	1	83	76	43	
17	Optical instruments (V)	209	1	84	V		
18	Scientific electrical insts. (V)	159	1	85	V		
19	Sulphonamides	154	1	85	77		
20	Bearings	149	1	86	77		
21	Radio-testing equipment	130	*	86	78		
22	Instruments (V)	114	*	87	V		
23	Wool noils	112	*	87	78		
24	Synthetic rubber	104	*	88	79		
25	Paper machinery	103	*	88	79		
26	Road vehicles (V)	97	*	88	V		
27	Lactose	94	*	89	80		
28	Dyeing materials (V)	83	*	89	V		
29	Machine tools	61	*	89	80		
30	Formaldehyde	31	*	89	80		
31	Organic dye-stuffs	10	*	89	80		
32	Watches (V)	10	*	89	V		
	THP	26,640	NOC	32	22	4	1

* less than 0.5%

Table 3-1f

Vol.IV Coverage: Exports, 1968

NOC	DESCRIPTION	£'000	%	COVERAGE			
				TOTAL	EXV	1Y	2Y
1	Diamonds (V)	5,128	18	18	V		
2	Platinum	4,729	17	35	17		
3	Iron & Steel {Wire rod, Bars, Universals, Wire, All other sorts}	3,835	13	48	30	13	13
4	Copper, refined	2,690	9	57	39	23	
5	Organic chemicals (V)	2,082	7	65	47		
6	Lead, unwrought	1,642	6	71	53		
7	Man-made fibres	1,088	4	74	56		
8	Scientific measuring equipment (V)	955	3	78	V		
9	Transport equipment (V)	496	2	79	V		
10	Electrical measuring equipment (V)	379	1	81	V		
11	Copper bars	345	1	82	58		
12	Textile machinery (V)	324	1	83	V		
13	Iron scrap	315	1	84	59		
14	Nickel scrap	270	1	85	60		
15	Telecommunications apparatus (V)	249	1	86	V		
16	Metal working machinery	232	1	87	60		
17	Nickel, unwrought	212	1	88	61		
18	Manufactures of metal (V)	200	1	88	62		
19	Medicines	186	1	89	63		
20	Office machinery	140	*	89	63		
	THP	28,505	NOC	20	14	2	1

*less than 0.5%

Table 3-1g

VOLUME IV COVERAGE: SYNOPSIS AND NOTES

Year	M/X	TOTAL			EXV			1 YEAR			2 YEARS		
		NOC	COV	PC	NOC	COV	PC	NOC	COV	PC	NOC	COV	PC
38	X	28	92	51	15	43	25	3	12	6	1	10	3
38	M	30	93	53	26	90	48	13	36	22	4	15	8
58	X	32	89	53	22	80	42	4	43	13	1	16	4
58	M	32	88	53	29	87	50	14	35	22	4	18	8
68	X	20	89	42	14	63	30	2	23	7	1	13	4
68	M	40	90	30	72	9	46	9	28	16	4	19	9

NOTES:

M : Imports

X : Exports

NOC : Number of commodities

COV : Coverage

PC : Product of coverage - square root of the product of NOC by COV

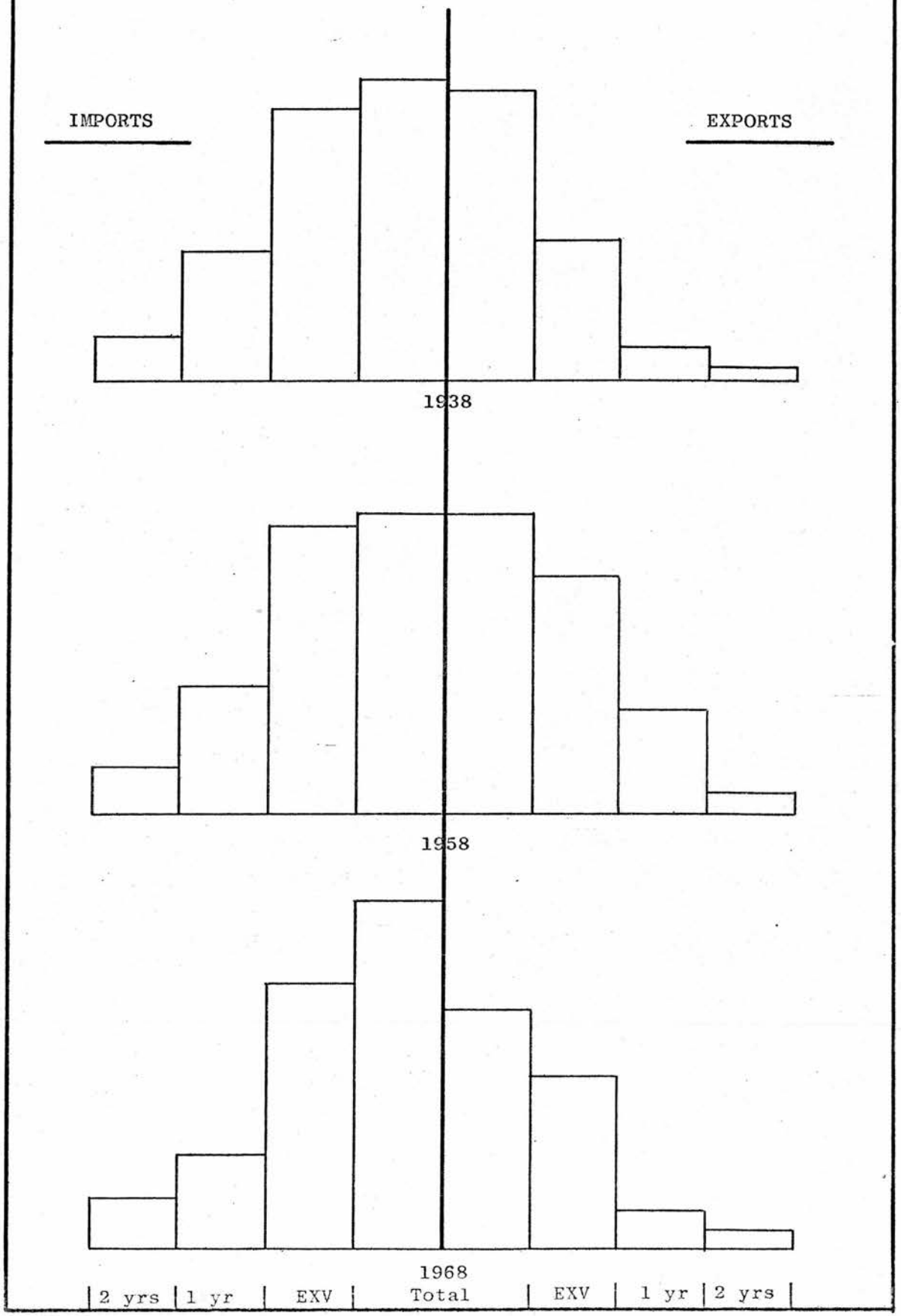
EXV : Excluding 'value only' entries

1 YEAR : Commodity obtains in one of the other years

2 YEARS: Commodity obtains in both of the other years

Fig. 3-1

PRODUCT OF COVERAGE



continuity with 1938. The descriptions of the commodities have been radically abbreviated for clarity. It will ben seen that initial coverage is high and concentrated. About 50 per cent of imports are covered by two, five and ten commodities in 1938, 1958 and 1968 respectively and, when iron and steel is counted as one, the same coverage is given for exports with just three items. Approximately 90 per cent coverage is achieved with thirty to forty import commodities and twenty to thirty-two export commodities.

If these commodities were utilisable it would be a simple matter indeed to construct high-coverage unit value indexes. However, it is with the EXV column that the problems begin and rapidly become worse. For a unit value we of course need a quantity measure and so 'value only' entries must be discarded. This has a much greater effect on exports than on imports. The next criterion is continuity, and the last two columns show cumulative coverage for those commodities which are reported in one, and both, of the other two years respectively. Not merely does coverage crumble but the number of commodities (NOC) contracts drastically as well; imports are reduced to four, and exports to but one, iron and steel (cf. Appendix E).

These two indicators, coverage and number of commodities, are conveniently expressed in one measure by their geometric mean (Table 3-1g and Fig.3-1). This 'product of coverage' is not entirely satisfactory since it equates the importance of NOC and COV, which may not be justified, but it suffices here.

It is clear from this simplified illustration that the Vol.IV data is far from adequate for constructing unit value indexes. However, it will be noted that imports are less affected than exports, both in terms of coverage and number of commodities, by these increasing constraints. In fact, it was possible from Vol.IV to identify a sufficient, but relatively small, number of commodities which, when data for them had been extracted from the by-commodity table of Vol.II, provided adequate coverage and NOC for the construction of import unit value indexes. As can be seen in Table 3-15 (a synopsis is given in Table 3-2 and Fig.3-2) coverage ranges from 59 per cent to 91 percent, with an annual average

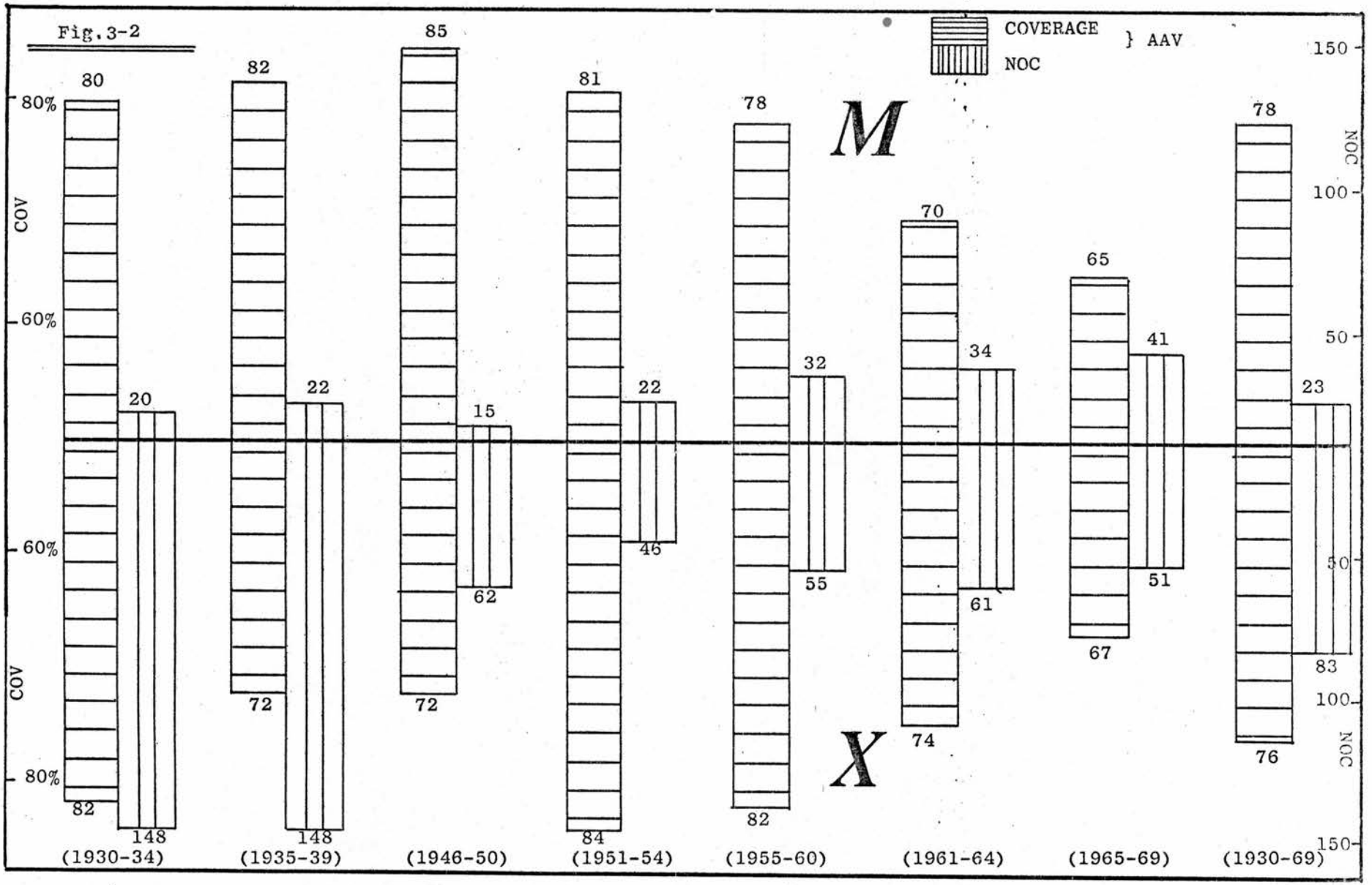
Table 3-2

Coverage & NOC for Main Indexes

Year	IMPORTS (MS3)				EXPORTS (XS5)			
	COV	AAV	NOC	AAV	COV	AAV	NOC*	AAV
1930	79		21		83		139	
1931	79		20		83		141	
1932	78		19		85		148	
1933	82		20		79		154	
1934	82		20		81		157	
30-34		80		20		82		148
1935	80		22		79		151	
1936	79		22		73		149	
1937	80		22		77		151	
1938	86		22		55		144	
1939	85		22		74		145	
35-39		82		22		72		148
1946	91		11		61		67	
1947	84		15		65		69	
1948	93		17		58		65	
1949	78		15		82		62	
1950	78		18		92		49	
46-50		85		15		72		62
1951	74		21		67		46	
1952	69		16		94		39	
1953	86		21		92		50	
1954	90		22		86		60	
1955	86		32		79		34	
51-55		81		22		84		46
1956	83		32		75		40	
1957	85		32		75		47	
1958	83		39		90		72	
1959	74		28		86		56	
1960	67		29		84		58	
56-60		78		32		82		55
1961	69		29		83		53	
1962	75		29		85		56	
1963	71		35		64		50	
1964	64		36		66		74	
1965	71		39		71		74	
61-65		70		34		74		61
1966	70		41		59		89	
1967	67		40		78		49	
1968	62		41		60		41	
1969	59		40		70		26	
66-69		65		41		67		51
Total		78		23		76		83

*This index uses but one commodity (TIS) for iron and steel: indexes XS3,8,13 which use ISIII have up to 29 more commodities. See App.E, table E-3.

Fig.3-2


COVERAGE
NOC
} AAV
M
X
COV
COV
NOC
NOC
80%
60%
60%
80%
150
100
50
50
100
150
80
82
20
148
82
22
148
85
72
15
62
72
81
22
46
84
78
32
55
82
70
34
61
74
65
41
51
67
78
23
83
76
(1930-34)
(1935-39)
(1946-50)
(1951-54)
(1955-60)
(1961-64)
(1965-69)
(1930-69)

value of 78 per cent, and this was achieved with a total of sixty-six commodities. This is no mean number, and as will be seen from the case of 'hat bodies' (below) and Appendixes B and C, the construction was far from straightforward. However, compared with the problem of constructing unit value indexes for exports, it was relatively simple.

It will be clear that the Vol.IV data offered no such short cut for exports. The only commodity which runs throughout the period is 'total of iron and steel' (TIS, see Appendix E) and even that has a change of definition. Moreover, had the TIS unit value index been used as a surrogate for a general export UVI, a completely misleading result would have been obtained, especially in the latter sixties.

Since there was no identifiable core of commodities with which an index could be constructed there was no alternative but to scour the 'by commodity' tables and extract every instance when exports to China were reported. Only cases where a quantity was given were used; that is, the 'value only' entries were excluded. Apart from regret that some large (e.g., diamonds) and often strategic (e.g., Section 8; see below) exports were thus discarded, it was sometimes frustrating that some exports could not be pursued further. The case of the extraordinarily large exports of 'pictures' just before and after the war is one instance (Table 3-3).[2] Another, which would be of interest to anyone studying the course of birth control in China, was her sudden emergence in 1958 as the principal purchaser of 'seamless rubber products (in-

---

[2]My enquiry to the Statistical Office of Customs and Excise produced the following reply from the Public Record Office:

> "Your letter of 21 November to the Customs and Excise Statistical Office in Southend has been forwarded to this Office, where the historical records of the Board are kept. I regret to say, however, that the detailed breakdown of exports which might answer your question has not yet been transferred to us for any date later than 1899, and it seems unlikely that a visit to this Office would provide you with the information you seek."

Although the nature of these 'pictures' is an intriguing question, it is peripheral, and since it clearly requires some perseverance to elicit information from Customs and Excise, it was not pursued further for this study.

Table 3-3

Exports of 'Pictures, prints, engravings, photographs, 1935-50

Year	Value	as % of THP	Year	Value	as % of THP
1935	95,906	2	1946	1,156,221	15
1936	536,259	9	1947	1,368,817	11
1937	435,825	7	1948	1,761,163	20
1938	927,452	23	1949	97,234	4
1939	376,575	11	1950	169	negligible

Fig.3-5

TIME

	1	2	3	4	5	6
A	NC	X	X	NS	X	X
B	NS	NS	X	X	NC	NC
C	X	X	NS	X	NS	NS

NC: Commodity not classified in that year
NS: Commodity classified, but no trade with China specified
X : Trade with China reported

Fig. 3-6

COMMODITY	1930-3	1934	1935-9
Eggs, in shell	C	NC	C
Eggs,in shell,Poultry,under 14 lbs/120	NC	C	NC
Eggs,in shell,Poultry,14 to 17 lbs/120	NC	C	NC
Eggs,in shell,Poultry,over 17 lbs/120	NC	C	NC
Eggs,in shell,Other sorts	NC	C	NC

C: Commodity classified in that year

NC: Commodity not classified in that year

cluding prophylactics)', presumably contraceptive sheaths - at a time when it is usually said that birth control was somewhat ignored.

Volume IV could by no means be dispensed with entirely. There were cases when large exports to China which were shown in Vol.IV were inexplicably omitted from the 'by-commodity' table. For instance, some £1m. worth of synthetic rubber was exported to China in 1960, making her by far the largest customer, and yet she is not identified in the Vol.III entry for 1958-62. (China is, in fact, specified in the earlier, superseded, 1958-60 edition.) The same happens for copper wire (X406) and railway axles (X741) (see Appendix D). Aside from omissions of this sort, Vol.IV with its different approach and categorisation, often usefully supplements the 'by-commodity' data. The relationship between the two sources is discussed later.

Even excluding 'value only' trade, the massive amount of data contained in the *Annual Statement* over the period, which would perhaps be best measured by the interior-decorator's unit of feet of bookcase, yields some 5,000 data points. These were arranged initially in 871 commodities, which were themselves then arranged in SITC order - a process not without its problems. Exports of 'imported merchandise', which were entered separately in Vol.II, were then deleted since it was found there was insufficient consistent data to construct an independent index and it was considered unwise to mix them in with 'home produce'. Others were superseded by data from another level (see below). The result is a data set of 517 commodities with a coverage ranging from 55 per cent to 92 per cent, with an annual average value of 76 per cent. (Tables 3-15, 3-2; Fig.3-2). A synopsis of this data set is given in Appendix G. Virtually all the commodity descriptions have been simplified, many quite considerably, and it was considered unnecessarily confusing to attempt to indicate changes in description (see 'commodity description variation' below). However, it is felt that no great difficulty will be experienced in tracing any of these commodities in the *Annual Statement*.

Despite its bulk, the *Annual Statement*, as was pointed out in Chapter One, is not tailored to our purpose. There are three main reasons why it is difficult to assemble sufficient suitable data:

1. Trade with China is only reported for those commodities where it is a substantial part of the trade in that commodity. The cut-off point will clearly vary with the value of the commodity - for some commodities the total trade is in the order of millions of pounds, for others in the thousands. The criterion is the proportion, not the absolute amount, and so the chances of trade with China being reported are affected by the proportions of other countries. It should also be added that the number of countries reported has declined drastically over the years - from an average of about twenty in the 1930's to a handful in the late sixties. Thus data on the China trade has decreased over time, irrespective of the actual course of the trade.

2. For some commodities (industrial diamonds have already been mentioned),only the value is given, not the quantity. The more heterogeneous the commodity, the more likely this is to happen.

3. The most important limiting factor, and the one that gives rise to the most problems because of the ambiguity that is often involved, is the question of comparability. Clearly this becomes more difficult as the time span increases.

There is nothing to be done about the first two factors, 'non-reported trade'[3] and 'value-only trade', but the third factor is not so clear-cut. The question of comparability arises precisely because of changes in the composition of the trade. These changes are of two kinds - 'invisible' and 'visible'.

INVISIBLE COMPOSITION CHANGES

The description of the commodity may remain the same but what is actually traded under that commodity may vary. This may be due to shifts

---

[3] Sometimes, as we shall see later, lacunae can be filled in with a little detective work.

in the composition of undifferentiated 'sub-commodities' within the commodity. For instance, the trade returns may not differentiate between black and white, and colour, television sets and if there were a shift in the proportion of colour sets to black and white exported, this would distort a comparison of unit-values of 'television sets' over the years. Clearly, as we have mentioned in Chapter One, it is often difficult to decide when a commodity has changed sufficiently to necessitate a re-definition, but once it has, the composition change becomes visible. There is, however, a limit to which re-definition can in practice go, and commodities in trade returns will always retain a large element of heterogeneity - which is why we talk of 'unit-values' rather than prices.[4] Thus, even if black and white and colour sets are differentiated, it might still be too unwieldy in the published statistics to differentiate between different sizes of sets and so a shift in the proportion of larger sets to smaller will again distort the unit value.[5]

Another aspect of this problem is the question of changes in quality. We shall distinguish two types - augmented technology component quality change and market quality change.

Augmented Technology Component Quality Change

That there is a very considerable bias towards a differential quality change between manufactured goods and raw materials is an argument often advanced by those who attack the view that there has been a long-term deterioration in the real terms of trade of the under-developed countries.

---

[4] "...a change in unit-value, which is taken as evidence of a change in prices, may merely be the result of a change in the proportions of the different qualities, grades or sizes of the same articles. . . .Very few commodity goods are completely homogeneous." United Nations, Department of Economic Affairs, *Relative Prices of Exports and Imports of Under-Developed Countries* (Lake Success, New York, 1949), p.134 (herein after referred to as "U.N. *Relative Prices*").

[5] See R.D.G. Allen, *Index Numbers in Theory and Practice* (London, Macmillan, 1975).

Haberler, for instance, in a burst of rather Panglossian optimism that all manufactures are getting better and better in this best of all possible worlds, argued:

> ...since it is primarily industrial products which improve in quality while primary products remain qualitatively more or less the same, and since literally hundreds of new products are added over the years to the list of finished goods, this bias operates in such a way as to make the movement in the terms of trade of the primary exporters appear much less favourable than it actually was.[6]

In a similar vein Theodore Morgan suggested:

> ...qualitative improvements in products are inadequately taken account of....on the whole, I would judge that without doubt the improvements have been less in primary than in manufactured products. In the actual statistics that we have, corrections for improvements in quality are rare and incomplete...[7]

It would appear that Haberler, Morgan, *et al*[8] have a valid point and if there were such a bias then, as Chi-ming Hou has pointed out,[9] this

---

[6]Gottfried Haberler, "International Trade and Economic Development", *National Bank of Egypt Fiftieth Anniversary Commemorative Lectures* (Cairo, 1959), p.21, quoted by Werner Baer in his article "The Economics of Prebisch and ECLA", *Economic Development and Cultural Change*, Vol.10 (January 1962), pp.169-182. In view of the occasion of Haberler's lecture it is interesting to note that, some twenty years later, "Thirty-five per cent of Egypt's export earnings go to paying foreign debts..." (*Washington Post* report, *The Guardian*, June 27, 1977, p.5).

[7]Theodore Morgan, "The Long-run Terms of Trade between Agriculture and Manufacturing", *Economic Development and Cultural Change*, Vol.8, No.1 (October 1959), p.4. In a note he adds: "The only consistent attempt to meet the problem of continued quality improvements that I have found in the data underlying the eight charts of this paper is in the construction of part of the Indian price series." (p.4). Unfortunately, he quotes a dozen, not easily obtainable, sources for the Indian series and does not identify the one that attempts the assessment of quality improvement.

[8]It is a point frequently made. See, for instance, "A Critique of the Prebisch Thesis" by G.L. Hyde in *Economia Internazionale*, Vol.16 (August 1963), pp.463-487.

[9]Chi-ming Hou, "External Trade, Foreign Investment, and Domestic Development: The Chinese experience 1840-1937", *Economic Development and Cultural Change*, Vol.10, No.1 (October 1961), pp.21-41.

could counter-balance an under-developed country's apparent deterioration in terms of trade. However, compilers of terms of trade indexes are not unaware of the point[10] and some, indeed, argue that at times there has been a bias in the opposite direction:

> Statistical data often fail to make due allowance for changes in quality. Manufactured goods are more subject to changes in quality than food and primary materials. In normal times, there is a general tendency towards improvement in the quality and efficiency of manufactured goods, especially vehicles and machinery. Hence, in normal times, studies of changes in terms of trade between under-developed countries and more highly developed countries tend to be affected by a systematic bias towards making changes appear more unfavourable or less favourable to the under-developed countries than they really are unless the manufactured goods selected are of a standardized nature. On the other hand, changes in quality during the past ten years *[this report was published in 1949]* are just as likely to be in the direction of lower quality, and hence may well impart the opposite bias to foreign trade statistics.[11]

Whilst it is impossible to deny that in some fields, electronics for instance, there have been substantial improvements, one should be rather more sceptical that quality improvement has been so marked in manufactured goods as a whole. On the contrary, it is commonly felt that the quality of consumer durables, at least, has often declined. This was, for instance, the thrust of Vance Packard's *The Waste Makers*,[12] while the example of motor cars has also been dealt with by, amongst others, Baran and Sweezy.[13]

There has been considerable work done, especially in the United States,

---

[10] See Kindleberger, *Terms of Trade*, p.358.

[11] U.N., *Relative Prices*, p.133.

[12] Vance Packard, *The Waste Makers* (London, Longmans, 1961), especially chapter 4 on motor cars.

[13] Baran and Sweezy, *Monopoly Capital* (New York, Monthly Review Press, 1966), pp.135-138. Their comments are based on earlier research by Griliches and others.

on adjusting price indexes[14] for quality change,[15] but clearly any attempt to do so here is out of the question. It is pertinent to note, however, that statistical considerations apart, a major problem in adjusting for quality change is determining the appropriate characteristics of quality. Zvi Griliches, for example, in his "Hedonic Price Indexes for Automobiles: an Econometric Analysis of Quality Change" looked at U.S. four-door sedans for 1937, 1950 and 1954 to 1960. He took various, accessible, characteristics for quality variables but omitted others for lack of data:

> No adjustment was made for any changes in minor equipment items that became standard equipment at some later point in time, such as directional signals or electric clocks. Major items, such as automatic transmissions, power steering, and power brakes were treated by defining independent variables that took the value of one if the item was "standard equipment" on a particular model and zero if it was not.
>
> The major numerical "quality" variables used in this study are horsepower (advertised brake horsepower), weight (shipping), and length (wheelbase for 1937 and 1950, and overall from 1950 on). In addition, "dummy" variables, i.e., variables that take the value of one if the particular model possesses this particular "quality" and zero if it does not, are defined for the following "qualities": V-8 engine or not, hardtop or not, automatic transmission as standard equipment or not, power steering as standard equipment or not, and for 1960 models whether a car is "compact" or not ...
>
> A variety of variables for which no convenient data are available was not included in the calculations. Most important of these are the various "performance" variables: gasoline mileage, acceleration, handling ease, durability, and styling. Scattered data already exist on some of these qualities, and I am sure that it would not prove very difficult to collect more and include such variables explicitly in a similar price-quality analysis. Variables reflecting the level of "workmanship" associated with a particular car and variable accounting for small design changes, such as

---

[14] Note, not unit value indexes; that would produce further difficulties.

[15] Zvi Griliches, ed., *Price Indexes and Quality Change; Studies in New Methods of Measurement* (Harvard, 1971). See also R.D.G. Allen, *Index Numbers in Theory and Practice* (London, 1975), p.253. Mathematical aspects are explored by Franklin M. Fisher and Karl Shell in *The Economic Theory of Price Indices* (N.Y. and London, 1972), pp.26-37 and S.N. Afriat, *The Price Index* (Cambridge University Press, 1977).

> the substitution of an alternator for the generator, were also omitted for lack of data. Nor were brand or manufacturer differentials taken into account. In fact, as far as the numerical qualities that are included in the analysis are concerned, they could probably all be interpreted as different aspects of one underlying quality "size" or "capacity".[16]

One can, without much thought, add further quality characteristics - safety, resistance to corrosion, ease of repair, noise and air pollution levels, ability to park in confined spaces, seat design, and so on. Some of these omissions, such as petrol consumption, would be easy enough to measure but others, such as ease of repair, would involve considerable difficulties, if they were measurable at all. Furthermore, there is also the problem of the cross-valuation of quality characteristics, or expressing them all in a common unit of quality.[17]

Returning to the context of Sino-British trade, or trade between underdeveloped and developed countries in general, it is obvious that the ordering of quality characteristics may well vary between the countries. Thus, for instance, ruggedness and simplicity of repair will be of greater importance in a country where the level of mechanical expertise is low, and the cadre of repairmen small, then in, say, Britain. On a more

---

[16] Zvi Griliches, "Hedonic Price Indexes for Automobiles" in *Price Indexes and Quality Change*, ed. by Griliches, p.62.

[17] At least one author in this collection does have doubts as to how useful his quality characteristics are:

> "Of course the first issue is, what does one mean by 'quality'? In this study, as in previous investigations of this type, one means the weight, length, displacement, and other identifiable characteristics as exhibited in the list of variables in Appendix A. Each such variable carries a positive weight in determining quality. Thus, for example, an increase in weight or length indicates an increase in quality, while a decrease in these two characteristics (or any one of them) would indicate a reduction in quality. In terms of this definition of quality, the historical experience of the decade presents for all three manufacturers a rather mixed record, although, *in the ordinary usage, it is doubtful whether one would accept the proposition that a larger and heavier car is necessarily one of improved quality.*" *[emphasis added]*

Phoebus J. Dhrymes, "Price and Quality Changes", *ibid*, p.91.

general level, it can be argued that what is an appropriate technology for one socio-economic system is not necessarily appropriate for another. This is not a problem that can be solved merely by 'intermediate technology', though that is part of it, because although a lower technology might be more suitable for the existing level of the economy, the very existence of a higher technology generates its own necessity. Moreover, since developed countries produce primarily for their own domestic markets and export to other developed countries, the higher technology is often the only one available.

The Chinese have tried to resolve this contradiction through the policy of "walking on two legs", but the history of the People's Republic, especially since the death of Mao Tse-tung, clearly shows how far this problem is from being solved.

In conclusion, it is by no means certain that there has been a marked improvement in quality of manufactured goods over the period vis-a-vis primary goods,[18] and if there has been a differential improvement, it may have been a mixed blessing for the under-developed countries.

However, it would seem reasonable to assume that the greater the 'technology component' of a commodity, the more likely it is to undergo a quality change that is both greater than average and greater than the increase in price - an above-average increase in quality/£. For instance, had this been written before the War it would have been with a steel-nib pen; then it would have been typed on a manual typewriter (using carbon paper to produce, at most, three copies). Now, one uses a ball-point pen, and an electric typewriter (and a photocopier which can produce any number of copies). However, the quality of the paper will have remained fairly constant. So, leaving aside the perhaps insuperable problems of quantification and comparability, we may consider that the pen and the typewriter, with their higher 'technology component', have changed in quality more than the paper.

---

[18] It is, of course, the quality differential that is important here, not the absolute quality change.

Various questions remain: If there has been an ATC quality change, how has this affected our indexes? Would such a quality change differential explain varying unit value movements of sections or the raw materials/ manufactures dichotomies? Most important of all, would it counterbalance the 'apparent' movement of the terms of trade?

Firstly, it should be remembered that the balance between manufactured goods and raw materials in Sino-British trade has oscillated quite widely (Table 2-13, Figs.2-4, 2-5).[19] Moreover, it can be seen from Appendix G that many of the most important manufactures in the export sample are in reality semi-manufactures; commodities such as non-ferrous metals or iron and steel which, although their production may involve high inputs of technology, remain low technology component commodities and hence no more susceptible to ATC quality change.[20]

The problem is perhaps that SITC categories, even at division level, are far too broad to do more than indicate the technology component of the commodities grouped together. We may reasonably assume that the technology component will be higher in, say, Division 86: "Professional, scientific and controlling instruments; photographic and optical goods; watches and clocks", than in Division 24: "Wood, lumber and cork" or even Division 26: "Textile fibres" (which includes artificial fibres), but Division 86 covers a very wide range of possible technology components.

---

[19] The common assumption that there is a consistent and immutable pattern whereby under-developed countries exchange raw materials for the manufactures of developed countries is, of course, oversimplified; cf. Cheryl Payer, ed., *Commodity Trade of the Third World* (London, Macmillan, 1975), p.viii. The pattern is further confused by the activities of multinationals.

[20] This does not rule out quality changes imposed by market conditions. I understand that one result of the present (1979) world steel overcapacity is that customers of the British Steel Corporation are able to demand 'higher quality' steel; for example, a more precise determination of nickel content. The quality improvement, of course, may often only be possible through a higher technology input in the process as a whole. The cost of this additional input will then be passed on to all customers, whether they require the enhanced quality or not.

Britain and China might well export to each other equal amounts of Division 86 commodities but, on the Chinese side, this may be comprised of fairly rudimentary clocks and watches and, on the British side, by highly sophisticated scientific instruments. What is really required, of course, is a classification of trade in terms of technology component so that instead of, say, bicycles and supersonic aircraft being lumped together as 'transport equipment', they are placed somewhat to the opposite ends of the spectrum.

A further problem is indicated by the section PNC (proportion of the trade not covered by the sample that falls within that section). Presumably the sections most liable to ATC quality change are Britain's exports in Section 8 (more precisely, Division 86) and Section 7: "Machinery and transport equipment". As can be seen in Tables 3-4, 3-5 and Fig.3-3, these high risk sections in general have low coverage (especially 8), high contribution (especially 7) and high PNC.[21] So serious is the problem

---

[21] PNC is defined as:-

$$PNC_s = \frac{VAL_s - PcQc}{VAL_t - \Sigma PcQc}$$

$$COV_s = \frac{PcQc}{VAL_s}, \qquad COV_t = \frac{\Sigma PcQc}{VAL_t}$$

$$\therefore \; PcQc = COV_s \cdot VAL_s, \quad \Sigma PcQc = COV_t \cdot VAL_t$$

$$CON = \frac{VAL_s}{VAL_t}$$

Where s & t denote section & total respectively.
substituting

$$PNC_s = \frac{VAL_s - COV_s \cdot VAL_s}{VAL_t - COV_t \cdot VAL_t}$$

$$= \frac{VAL_s(1 - COV_s)}{VAL_t(1 - COV_t)}$$

$$= \frac{CON\ (1 - COV_s)}{(1 - COV_t)}$$

Since the denominator is a constant for all sections, the PNC is a function of the product of contribution and non-coverage.

Table 3-4

Exports: PNC Distribution

Year	Σ(0-4)	Section 5	Section 6	Section 7	Section 8
1930	5	16	37	30	12
1931	4	21	39	30	7
1932	5	17	44	23	11
1933	4	15	36	26	19
1934	4	14	36	26	20
AAV	4	17	38	27	12
SD	0.5	2.7	3.4	3.0	5.0
1935	4	18	31	28	18
1936	3	10	18	25	43
1937	3	10	20	25	42
1938	2	3	8	20	66
1939	4	9	24	21	42
AAV	3	10	20	24	42
SD	0.5	5.3	8.4	3.3	17.0
1946	4	14	18	19	45
1947	1	16	16	28	38
1948	2	11	10	27	51
1949	14	19	8	32	28
1950	4	26	INV*	83	2
AAV	5	17	11	38	33
SD	5.2	5.7	8.2	25.7	19.2
1951	0.0	27	22	38	12
1952	1	48	21	24	6
1953	4	37	19	29	11
1954	6	48	4	30	12
1955	6	60	20	7	7
AAV	3	44	17	26	10
DS	2.8	12.5	7.5	11.5	2.9
1956	1	27	47	13	13
1957	2	41	22	17	19
1958	3	47	14	19	17
1959	5	40	31	15	8
1960	4	19	55	11	11
AAV	3	35	34	15	14
SD	1.6	11.5	17.0	3.2	4.4
1961	3	23	16	43	12
1962	3	23	13	46	10
1963	1	11	4	77	7
1964	1	18	3	58	20
1965	2	20	4	47	27
AAV	2	19	8	54	15
SD	1.0	4.9	6.0	14.0	8.2
1966	3	10	3	61	23
1967	2	27	16	28	28
1968	1	25	47	17	10
1969	0.0	21	65	10	4
AAV	2	21	18	27	16
SD	1.3	7.6	20.3	25.7	11.1
AAV	3	20	23	30	20
SD	2.5	12.5	16.3	17.7	16.0

Section 9 is omitted since, apart from 3 years, its share of PNC is either nil or negligible. The exceptions are 1960:1%, 1961:4%, 1962:6%.

*INV: See Table 3-15,Note 1, here read as 0.

Table 3-5

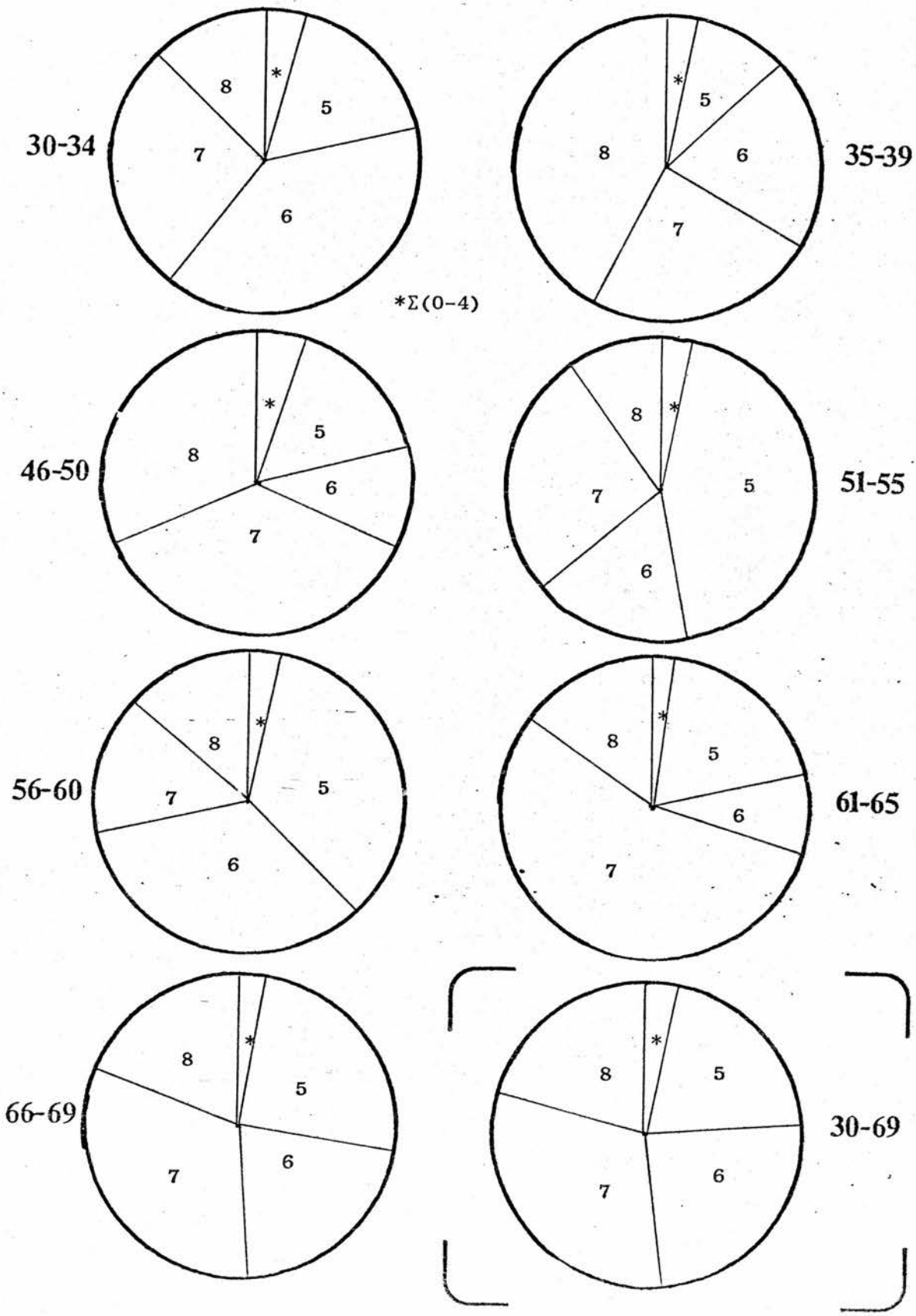
Coverage, Contribution & PNC for Export Sections 7 & 8

Year	Section 7			Section 8			THP
	CON	COV	PNC	CON	COV	PNC	COV
1930	20	74	30	3	37	12	83
1931	17	69	30	2	40	7	83
1932	20	82	23	3	35	11	85
1933	21	74	26	5	25	19	79
1934	23	79	26	5	22	20	81
1935	31	81	28	5	23	18	79
1936	23	70	25	13	8	43	73
1937	20	71	25	11	9	42	77
1938	32	72	20	31	2	66	55
1939	29	81	21	12	7	42	74
1946	22	67	19	18	2	45	61
1947	30	67	28	14	1	38	65
1948	40	71	27	22	0	51	58
1949	37	84	32	5	0	28	82
1950	28	76	83	0.2	0	2	92
1951	43	71	38	6	34	12	67
1952	14	89	24	1	72	6	94
1953	17	86	29	1	17	11	92
1954	16	74	30	4	55	12	86
1955	3	46	7	2	4	7	79
1956	9	64	13	3	0.0	13	75
1957	10	54	17	5	0	19	75
1958	15	87	19	2	1	17	90
1959	10	79	15	1	0	8	86
1960	12	86	11	2	0	11	84
1961	16	55	43	2	0	12	83
1962	16	56	46	2	0	10	85
1963	37	26	77	3	4	7	64
1964	36	45	58	8	8	20	66
1965	39	65	47	8	4	27	71
1966	46	45	61	10	2	23	59
1967	26	76	28	6	2	28	78
1968	10	33	17	4	0	10	60
1969	5	35	10	2	44	4	70

Fig: 3 - 3

EXPORTS: PNC DISTRIBUTION

(Average Annual Value)



See Table

with Section 8 that it is omitted from the sectional weighted indexes (see below). Imports from China pose no such danger. The only section in which we might expect any appreciable increase in technology component would be Section 8 again,[22] and then only from the mid-sixties with the emergence of goods like clocks, microscopes, etc. Despite the fact that it does not feature in the sample at all (i.e., coverage is nil) contribution is only 5 to 6 per cent during the later 60's and PNC is correspondingly low as well, its annual average value for the same period being 13 per cent (Table 3-6, Fig.3-4).

Coverage is low in the high-risk sections precisely because commodities with a large technology component tend not to appear in the sample. Sometimes it is a case of no quantity measure being given at all; scientific measuring instruments, for instance. Occasionally the quantity measure is dropped with changes in technology; radios used to be measured by number of valves but by the late 60's, with the shift to transistors, only the value is recorded. In other cases the commodity does not appear until after the base year.

We are thus left with a high degree of uncertainty about the existence of an export/import differential quality change. As far as the samples are concerned it is probably of no great importance, and almost certainly insufficient to counterbalance the general movement in terms of trade. It is when the sample indexes are used as estimates of the unit value movement of the total trade (see "Adjustment for incomplete coverage" below) that danger creeps in, but still not enough, we can be fairly confident, to seriously threaten the analyses in Part D.

Market Quality Change

There is a further possibility that there has been a shift up or down market in Sino-British trade as a whole, or more likely, in specific salient commodities. An important historical example of this is China's silk and tea trade. China lost its predominance in the raw silk export trade to Japan at the end of the nineteenth century because "...the

---

[22] Here combined with Sections 1, 3 and 9. These are virtually negligible; for detailed figures see *Dissertation*, Vol.II.

Table 3-6

Imports: PNC Distribution

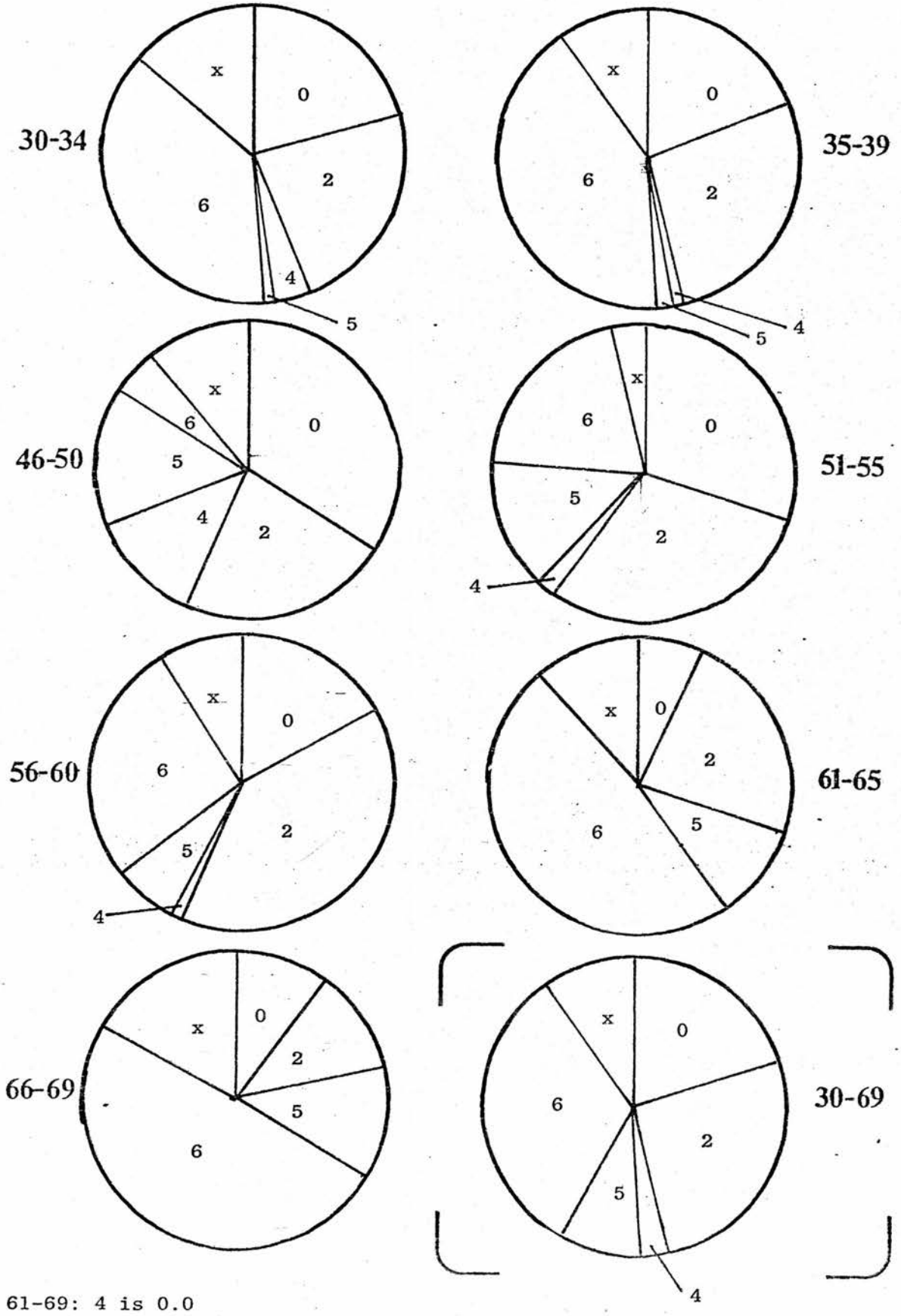
Year	Section 0	Section 2	Section 4	Section 5	Section 6	Section 1,3,8,9
1930	15	32	5	1	31	16
1931	21	17	8	1	39	13
1932	26	18	5	1	39	12
1933	19	25	2	1	40	14
1934	22	25	0.0	1	40	13
AAV	21	23	4	1	38	14
SD	4.0	6.1	3.1	0.0	3.8	1.5
1935	19	27	6	1	38	10
1936	21	26	0.0	1	45	6
1937	16	35	0.0	1	39	9
1938	14	28	0.0	3	41	14
1939	24	20	1	4	40	11
AAV	19	27	1	2	41	10
SD	4.0	5.4	2.6	1.4	2.7	2.9
1946	2	42	0	46	INV	14
1947	9	18	49	10	3	10
1948	24	33	10	8	11	13
1949	72	6	6	1	9	6
1950	63	13	0.0	12	2	10
AAV	34	22	13	15	5	11
SD	31.8	14.8	20.6	17.6	4.7	3.1
1951	41	22	INV	14	20	3
1952	49	30	0	1	15	6
1953	46	29	12	3	8	2
1954	11	36	INV	19	32	5
1955	5	35	0	34	24	2
AAV	30	30	2	14	20	4
SD	20.8	5.6	5.4	13.4	9.1	1.8
1956	9	44	0	11	25	11
1957	5	53	0	3	34	5
1958	28	23	3	12	27	7
1959	22	44	0	7	17	10
1960	19	37	0	4	31	10
AAV	17	40	1	7	27	9
SD	9.4	11.2	1.3	4.0	6.5	2.5
1961	7	22	0	8	58	5
1962	7	22	0	9	49	13
1963	4	25	0.0	11	45	14
1964	5	23	0.0	9	50	13
1965	10	21	0.0	12	40	16
AAV	7	23	0	10	48	12
SD	2.3	1.5	0	1.6	6.7	4.2
1966	13	16	0.0	14	41	17
1967	11	11	0.0	14	45	20
1968	8	12	1	8	54	17
1969	6	10	0.0	10	60	13
AAV	10	12	0.0	12	50	17
SD	3.1	2.6	0.5	3.0	8.6	2.9
AAV	20	26	3	9	32	10
SD	16.7	10.8	8.7	9.5	16.3	4.6

INV: See Table 3-15, Note 1: here read as '0'.

Fig: 3 - 4

IMPORTS : PNC DISTRIBUTION

(Average Annual Value)



61-69: 4 is 0.0

X: Section 1,3,8,9

Japanese government took a lively interest in maintaining and improving the quality of raw silk exported...",[23] and the Chinese government did not. Similarly, at the same period, China's tea exports lost out to those of India, Ceylon and Java. The best Chinese silk was better than the Japanese; so it was with tea - "While the finest teas in the world are still produced in China, it is unfortunately true that a large quantity of what can only be described as rubbish is also put on the market."[24] In the 'Classification of Major Sample Commodities', Appendixes A to E, movement in market quality, as measured by the relationship of the 'China unit value' to the 'Excluding China unit value' (see below), is one of the criteria for sample classification.

Whilst it is quite conceivable that there may have been a certain general decline in quality of imports from China during periods of upheaval such as the Cultural Revolution, or that particular commodities may have deteriorated in quality relative to that of competitors (cf. tea in Appendix A), there seems no reason to suppose that there has been any major, consistent, long-term change in market quality, either in imports or exports.

VISIBLE COMPOSITION CHANGES

This may be caused by the introduction of new commodities into Sino-British trade or, more rarely, by the deletion of old ones. The change may be either real, in that a completely new commodity (for example, TV equipment) is brought into the trade, or merely apparent, in that the volume of the trade is sufficient (or insufficient) for it to be reported. In either case the end result is the same in that, in year one we have data for commodity C, but not A and B, and in year two, data for commodities A and C, but not B, and so on (Fig.3-5).

---

[23] Remer, *Foreign Trade of China*, p.138.

[24] *Chinese Maritime Customs Returns of Trade and Trade Reports*, 1913, Pt.II, Vol.3, p.553, quoted by Remer, *ibid*, p.145.

Alternatively, commodities may be either split up or joined together. Commodity A may be split at some time into commodities B and C; subsequently commodity C may be again divided into D and E. This can happen in reverse, although less commonly, when two or more commodities are joined into one, either temporarily or permanently. For instance, referring back to Table 1-3 (Fig.3-6), it will be seen that 'Eggs, in shell' were split up, joined together, and then split up again during the thirties.

The matter is further complicated by the hierarchy of commodity descriptions. 'Eggs,in shell' is a higher level description which subsumes lower level descriptions such as 'Eggs, in shell, Poultry, between 14 and 17 lbs./120'. In this case the two levels are not used simultaneously, but often up to four levels are reported at the same time, so we have the pattern in Fig.3-7.

This is basically the result of the grouping hierarchy in the 'by-commodity' tables of Vols.II and III, which is illustrated here by Class III J, 1935-9: the various commodities are coded in Table 3-7 and the hierarchy is shown at the end of the table. In this particular case only the value is given, and no countries are specified, for the first degree commodity, so it is of no use for the unit value indexes and, of course, exports to China are not shown for all the commodities listed. The commodity hierarchy in Table 3-7, or rather the China aspect of it, is supplemented by the same information being presented in a different, *ad hoc*, hierarchy in the by-country table in Vol.IV (Fig.3-8).

It will be seen from Fig.3-9 that, in this case, the two groupings do have a high degree of correspondence, but often this is not the case.

The Vol.IV commodity descriptions, by definition, report trade with China, but this, of course, is not necessarily so with Vol.III (or II). So now we must fill in the figures for China to give us a picture of the availability of the data at the various levels (Table 3-8).

It can be seen that it has been possible to fill in some lacunae, although this is often of limited use, especially when the derived figure is for a combination of commodities, for such a combination may

Fig.3-7

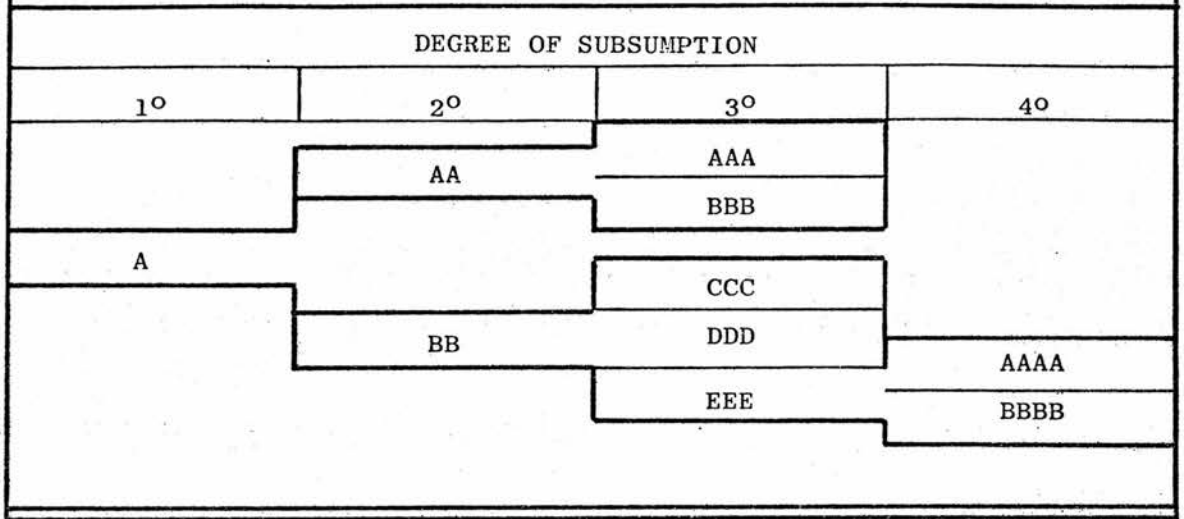


Fig.3-8

VOL.IV COMMODITY HIERARCHY
(WOOLLEN & WORSTED YARNS & MANUFACTURES)

1°	2°	3°
Woollen & Worsted Yarns & Manufactures:-		
"	Wool tops	
"	Woollen & Worsted Yarns	
"	Woollen & Worsted Manufactures (except apparel & embroidery)	
"	"	Tissues
"	"	Other sorts (value only)

Fig.3-9

COMPARISON OF VOL.IV AND VOL.III COMMODITY DESCRIPTIONS
(WOOLLEN & WORSTED YARNS & MANUFACTURES)

Vol.IV	Vol.III (see Table 3-7)
Wool tops	A and B
Woollen & Worsted Yarns	H (=D, E, F, G)
Tissues	I, J, K, L, W (=M to V) DD (=X to Z, BB & CC)
Other sorts (value only)	EE to MM

Table 3-7

Commodity Descriptions for Class III J, "Woollen and Worsted Yarns and Manufactures", 1935-9 (Exports)

COMMODITY DESCRIPTION	CODE
Wool Tops-	
" Merino	A
" Other	B
Wool Flocks	C
Woollen and Worsted Yarns-	
" Woollen (Carded only)	D
" Worsted (Combed)	E
" Alpaca and Mohair (including Cashmere)	F
" Hair or Wool, not elsewhere specified	G
Total of Woollen and Worsted Yarns	H
Woollen and Worsted Manufactures (except apparel & embroidery)-	
" Tissues-	
" Tissues wholly or mainly of Mohair, Alpaca and Cashmere (not being pile fabrics)	I
" Damasks, tapestries, brocades, etc.	J
" Wool and Mohair Plushes and other Pile fabrics	K
" Flannels and Delaines	L
Other Woollen Tissues-	
" All Wool-	
" " Woven*	
" " " *Weighing 16 oz. and over to the sq.yd.*	M
" " " *Weighing 12 oz. and under 16 ozs. to the sq.yd.*	N
" " " *Weighing 8 oz. and under 12 oz. to the sq.yd.*	O
" " " *Weighing under 8 oz. to the sq.yd.*	P
" " Knitted, netted or crocheted**	Q
" Of wool mixed with other materials, if known as 'Woollens'*	
" " Woven*	
" " " *Weighing 16 oz.and over to the sq.yd.*	R
" " " *Weighing 12 oz.and under 16 oz. to the sq.yd.*	S
" " " *Weighing 8 oz.and under 12 oz. to the sq.yd.*	T
" " " *Weighing under 8 oz.to the sq.yd.*	U

Table 3-7

Commodity Descriptions for Class III J, "Woollen and Worsted Yarns and Manufactures", 1935-9 (Exports)...cont'd.

COMMODITY DESCRIPTION	CODE
Other Woollen Tissues (cont'd.)	
" Of Wool mixed with other materials, ... (cont'd.)	
" " Knitted, netted or crocheted**	V
Total of Other Woollen Tissues	W
Other Worsted Tissues	
" All Wool-	
" " Linings, Lastings, etc.***	X
" " Other tissues-	
" " " *Weighing 12 oz.and over to the sq.yd.*	Y
" " " *Weighing under 12 oz.to the sq.yd.*	Z
" Of Wool mixed with other materials if known as 'Worsteds'-	
" " Linings, Lastings, etc.	AA
" " Other tissues-	
" " " *Weighing 12 oz.and over to the sq.yd.*	BB
" " " *Weighing under 12 oz.to the sq.yd.*	CC
Total of Other Worsted Tissues	DD
Blankets	EE
Shawls, other than knitted	FF
Travelling Rugs, Coverlets and Wrappers	GG
Wool Felt, not elsewhere specified	HH
Woollen and Worsted Manufactures, including small wares, etc., not elsewhere specified	II (value only)
Carpets, carpeting and floor rugs, floor mats and matting of wool (including carpets and rugs on a wool or jute basis)-	
" Printed Tapestry and Tapestry Velvet Carpets and Rugs	JJ
" Brussels and Wilton Carpets and Rugs, known as such	KK

Table 3-7

Commodity Descriptions for Class III J, "Woollen and Worsted Yarns and Manufactures", 1935-9 (Exports)...cont'd.

COMMODITY DESCRIPTION	CODE
Carpets, carpeting and floor rugs, floor mats and matting of wool ... cont'd.	
" Axminster (including chenille Axminster) Carpets and Rugs, known as such	LL
" Woollen Carpets and Rugs, not elsewhere specified	MM
Total Value- Woollen and Worsted Yarns and Manufactures - III J	NN
(Countries not specified)	(value only)

* Prior to 1936, included "Knitted, netted or crocheted tissues".

** Not shown separately prior to 1936

*** Not shown separately in 1936

Source: *Annual Statement*, Vol.III, 1939, pp.251-275.

COMMODITY HIERARCHY

1st degree	2nd degree	3rd degree
NN includes	H includes	D to G
	W includes	M to V
	DD includes	X to Z, BB & CC
	.....	.....Others

Table 3-8

British Exports of Woollen and Worsted Yarns and Manufactures to China, 1935-9

COMMODITY	1935	1936	1937	1938	1939
Vol.III A	7,310	9,393	84,393	11,827	77,212
B	305,358	776,494	575,668	31,567	186,277
Total of A & B	312,668	785,887	660,061	43,394	263,489
D	46,097	8,757	3,856	3,052	2,144
E	21,243	7,451	11,624	6,484	8,281
G	6,658	1,573	2,017	1,326	4,165
Total of D,E,G	73,998	17,781	17,497	10,862	14,590
H(subs D,E,G)	74,058	18,391	17,987	10,862	14,607
F (H-(D,E,G))	60	610	490	nil	17
K	2,437	6,143	15,865	6,409	22,558
L	2,431	2,294	3,193	2,151	2,486
M	7,276	4,715	7,479	2,528	11,400
N	11,466	10,225	11,507	7,011	11,192
O	47,845	22,037	26,992	16,110	39,130
P	31,727	10,527	11,503	11,536	15,445
R	4,361	4,596	5,404	2,667	7,991
S	7,479	6,406	7,076	1,694	6,042
T	13,667	5,125	11,768	3,973	24,219
U	28,709	11,989	12,629	11,639	17,154
Total of M to U	152,530	75,620	94,358	57,158	132,573
W (subs M to U)	152,530	75,683	94,358	57,158	132,573
Q & V (W-(M to U))	nil	63	nil	nil	nil

Table 3-8

British Exports of Woollen and Worsted Yarns and Manufactures to China, 1935-9...cont'd.

COMMODITY	1935	1936	1937	1938	1939
Vol.III (cont'd.) Y	3,777	2,410	4,652	2,600	6,070
Z	54,061	13,675	37,692	32,631	33,410
BB	1,567	2,323	7,629	1,034	2,338
CC	44,306	12,877	33,864	17,471	37,013
Total of Y,Z, BB, CC	103,711	31,285	83,837	53,736	78,831
DD (subs Y, Z, BB, CC)	104,107	31,982	83,931	54,070	78,831
X & AA (DD-(Y,Z,BB,CC))	396	697	94	334	nil
II	.....value only.....				
Vol.IV Wool tops (ie, A & B)	312,668	785,887	660,061	43,394	263,489
Woollen and Worsted Yarns (ie, H)	74,058	18,391	17,987	10,862	14,607
Tissues (ie, I,J,K,L,W,DD)	262,315	117,745	198,804	120,432	238,230
(I & J) Tissues - (K,L, W, DD)	810	1,643	1,457	644	1,782
Other sorts	.....value only.....				

Source: *Annual Statement*, 1939, Vols.III & IV.

not re-occur in other years.

Clearly, when constructing the index, we cannot use two, or more, levels simultaneously. We are then faced with a problem: the higher level usually gives greater coverage but is less homogeneous and hence more likely to contain 'invisible' composition changes, while the lower levels are more homogeneous but tend to shed coverage. In Table 3-9 we compare the different results obtained by using lower and higher level commodities for a Paasche unit value index for 'Other Woollen Tissues' between 1935 and 1939 (i.e., M to U in Table 3-7).

In this table we also introduce a further complication: there are two units of quantity given, hundredweight and square yards. By far the most usual measurement of quantity in the trade returns is weight,but occasionally other units are given, either alternatively or in addition. In this case, because of the structure of the commodity categorisation (over 16 oz/sq.yd., 12-16 oz/sq.yd., etc.), there will not be much difference, in the lower level commodities, between using weight or area. In other cases, for instance machine tools, where often weight and number are given, the divergence can be substantial. Conceptually, there is no advantage in using one quantity measure rather than another - they merely tell us different things. Moreover, in theory at least, a comparison using two (or more) different measurements can be informative. For instance, if the unit value per ton of a particular type of machine tools goes up less than the unit value per unit (number), then we know that these machine tools are getting heavier, and thus presumably bigger. From there we might reasonably infer that they are probably getting more complex,[25] with all that implies, although, as we have already argued, it would be a leap of faith to say that 'more complex' is better.

However, we could more easily have reached the same conclusion about the increasing weight of these particular machine tools by simply finding the average unit weight. Moreover, the movement of average unit weight in a commodity series is seldom, if ever, as unambiguous as this. The more usual pattern is a fluctuation that reflects the heterogeneity of

---

[25] Not necessarily, of course; a basic lathe can be made in different sizes.

Table 3-9

Paasche unit value indexes for Britain's exports of 'Other Woollen Tissues' to China, 1935-9

1935 = 100

a/ Lower levels, by weight

		1935	1936	1937	1938	1939
M	PcQc	7,276	4,715	7,479	2,528	11,400
	cwt	354	142	270	73	426
	PoQc	7,276	2,919	5,550	1,500	8,756
N	PcQc	11,466	10,225	11,507	7,011	11,192
	cwt	536	420	454	279	384
	PoQc	11,466	8,985	9,712	5,968	8,215
O	PcQc	47,845	22,037	26,992	16,110	39,130
	cwt	1,683	858	739	391	1,233
	PoQc	47,845	24,392	21,009	11,116	35,052
P	PcQc	31,727	10,527	11,503	11,536	15,445
	cwt	969	313	335	302	428
	PoQc	31,727	10,248	10,969	9,888	14,014
R	PcQc	4,361	4,596	5,404	2,667	7,991
	cwt	320	281	351	154	383
	PoQc	4,361	3,830	4,784	2,099	5,220
S	PcQc	7,479	6,406	7,076	1,694	6,042
	cwt	673	413	579	87	279
	PoQc	7,479	4,590	6,434	967	3,101
T	PcQc	3,667	5,125	11,768	3,973	24,219
	cwt	517	176	366	139	848
	PoQc	13,667	4,653	9,675	3,675	22,417
U	PcQc	28,709	11,989	12,629	11,639	17,154
	cwt	846	322	358	347	474
	PoQc	28,709	10,927	12,149	11,775	16,085
ΣPcQc		152,530	75,620	94,358	57,158	132,573
ΣPoQc		152,530	70,544	80,282	46,988	112,860
UVI		100	107	118	122	118

Table 3-9

Paasche unit value indexes for Britain's exports of 'Other Woollen Tissues' to China, 1935-9...cont'd.

1935 = 100

[b]/ Lower levels, by area

		1935	1936	1937	1938	1939
M	PcQc	7,276	4,715	7,479	2,528	11,400
	sq.yd	33,255	14,103	27,375	6,677	38,686
	PoQc	7,276	3,086	5,990	1,461	8,464
N	PcQc	11,466	10,225	11,507	7,011	11,192
	sq.yd	69,118	58,609	56,185	37,821	48,814
	PoQc	11,466	9,723	9,321	6,274	8,080
O	PcQc	47,845	22,037	26,992	16,110	39,130
	sq.yd	300,975	143,508	136,750	73,605	226,225
	PoQc	47,845	22,813	21,739	11,701	35,962
P	PcQc	31,727	10,527	11,503	11,536	15,445
	sq.yd	270,721	97,268	100,353	86,911	123,742
	PoQc	31,727	11,399	11,761	10,186	14,502
R	PcQc	4,361	4,596	5,404	2,667	7,991
	sq.yd	27,146	23,736	28,334	13,106	35,246
	PoQc	4,361	3,813	4,552	2,106	5,662
S	PcQc	7,479	6,406	7,076	1,694	6,042
	sq.yd	89,286	52,991	75,207	11,749	36,680
	PoQc	7,479	4,439	6,300	984	3,073
T	PcQc	13,667	5,125	11,768	3,973	24,219
	sq.yd	115,414	33,516	70,333	27,460	154,330
	PoQc	13,667	3,969	8,329	3,252	18,275
U	PcQc	28,709	11,989	12,629	11,639	17,154
	sq.yd	263,977	103,759	113,182	102,725	162,696
	PoQc	28,709	11,284	12,309	11,172	17,694
ΣPcQc		152,530	75,620	94,358	57,158	132,573
ΣPoQc		152,530	70,526	80,301	47,136	111,712
UVI		100	107	118	121	119

Table 3-9

Paasche unit value indexes for Britain's exports of 'Other Woollen Tissues' to China,1935-9...cont'd.

1935 = 100

c/ Higher level commodity group: 'Total of other Woollen Tissues' (W)

		1935	1936	1937	1938	1939
by weight	PcQc	152,530	75,683	94,358	57,158	132,573
	cwt	5,898	2,928	3,452	1,772	4,455
	PoQc	152,530	75,722	89,273	45,826	115,212
	UVI	100	100	106	125	115
by area	PcQc	152,530	75,683	94,358	57,158	132,573
	sq. yds.	1,169,892	527,988	607,719	360,054	826,419
	PoQc	152,530	68,839	79,234	46,944	107,748
	UVI	100	110	119	122	123

d/ Comparison of the UVI's

1935 = 100

Level	Measure	1935	1936	1937	1938	1939
Lower	weight	100	107	118	122	118
Lower	area	100	107	118	121	119
Higher	weight	100	100	106	125	115
Higher	area	100	110	119	122	123

e/ Using the Laspeyres & Fisher Formulae

Formula	Level	Measure	1935	1936	1937	1938	1939
Laspeyres	Lower	Weight	100	107	117	127	118
Fisher			100	107	117	124	118
Laspeyres		Area	100	107	115	126	117
Fisher			100	107	116	124	118
Laspeyres	Higher	Weight	100	100	106	125	115
Fisher			100	100	106	125	115
Laspeyres		Area	100	110	119	122	123
Fisher			100	110	119	122	123

the commodity, and this is something to which we will return later. For the moment it is clear that it is not possible to use two or more different quantity measurements in constructing the general unit value indexes; we must choose one. As a matter of policy, therefore, we have, in constructing these indexes, always opted for weight when the choice had to be made. This was partly for reasons of consistency, and partly because it was felt that weight was a more neutral measurement and less presumptive of quality change.[26] In the particular example with which we are dealing here, the two units of quantity are of equal neutrality, so there is no temptation to say that one is better than the other. What is important, however, is that the two lower level indexes:-

	1935	1936	1937	1938	1939
by weight	100	107	118	122	118
by area	100	107	118	121	119

are virtually the same, the two higher level ones differ considerably both from the lower level ones, and from each other:-

	1935	1936	1937	1938	1939
by weight	100	100	106	125	115
by area	100	110	119	122	123

Whilst there is no question of any particular index being 'the true index',[27] the lower level indexes seem preferable. This is so because the individual indexes for the lower level commodities tend more towards being price indexes because the commodities are more homogeneous, and their summation gives a more accurate weighting to the constituent indexes. To put it another way, the higher level indexes conceal invisible shifts in composition. Using the lower level, more homogeneous, commo-

---

[26] cf. Kindleberger, *Terms of Trade*, pp.357-358.

[27] cf. U.N., *Relative Prices:* "There can be no single 'true' index number of export or import prices. The impossibility of finding and presenting a single 'true' index number and therefore a single 'true' figure for changing terms of trade is not due to any deficiency in the statistical data used or the statistical techniques employed. It is a logical impossibility.", p.137.

dities enables us to at least partly identify these shifts. In Table 3-10a, for instance, we calculate indexes and weights for the same lower level commodities for 1936 (with 1935 as base year) and we can see that, whereas the higher level index remained constant, the constituent commodities all rose in unit value (column 4) except O ("Other Woollen Tissues, All wool, Woven, Weighing 8 oz. and under, 12 oz. to the sq.yd."), which dropped. Accounting as it did for 35 per cent of the total (column 5), this dampened the aggregate index. It may be, of course, that 'prices' did remain steady (or rise or fall), and that the changes in the unit values of the lower level commodities were merely due to shifts within the commodities themselves, but it is reasonable to assume that the more homogeneous the commodity, the less effect such shifts would have. This assumption is represented diagrammatically in Fig.3-10 where, as the commodity approaches homogeneity, so the degree to which variation in unit value can be ascribed to price change increases. If the commodity is 'perfectly' homogeneous, then any change in unit value is due entirely to change in price. On the other hand, as the heterogeneity of the commodity increases, so does the possible effect of composition shift.

In this example of "Other Woollen Tissues", the decision as to which commodities to use is easy: we choose the lower level ones and, presumably, gain in accuracy and the opportunity for analysis. Usually, however, the choice is not so easy, for by using the lower level rather than the higher, we invariably lose coverage. In this case we have only lost £63 (commodities Q & V) in 1936, which is of course negligible; but loss can be up to, say, about 90 per cent of the high level commodity. Therefore, in constructing the indexes (or rather, the export index; the problem does not arise with the import index), we have arbitrarily set a tolerance limit of 25 per cent. As long as the available constituent commodities total more than three quarters of the higher level commodity, they are used in preference. In Appendixes F and G, superseded data - data which is omitted from the sample in favour of data from another level - is indicated by 'S'.

Table 9-e gives the indexes produced in the Laspeyres and Fisher

Table 3-10 a

Individual UVI's and Weights for Exports of "Other Woollen Tissues" to China, 1935 & 1936

1935 = 100

1	2	3	4	5	6
COMMODITY (see Table 3-7)	PcQc £	PoQc £	Unweighted UVI ($^2/_3$)	Weights ($^3/_{\Sigma 3}$)	Weighted UVI (4 x 5)
1935					
M	7,276	7,276	1.00	4.77	4.77
N	11,466	11,466	1.00	7.52	7.52
O	47,845	47,845	1.00	31.37	31.37
P	31,727	31,727	1.00	20.80	20.80
R	4,361	4,361	1.00	2.86	2.86
S	7,479	7,479	1.00	4.90	4.90
T	13,667	13,667	1.00	8.96	8.96
U	28,709	28,709	1.00	18.82	18.82
Sum	152,530	152,530	8.00	100	100
1936					
M	4,715	2,919	1.62	4.14	6.71
N	10,225	8,985	1.14	12.74	14.52
O	22,037	24,392	0.90	34.58	31.12
P	10,527	10,248	1.03	14.53	14.97
R	4,596	3,830	1.20	5.43	6.52
S	6,406	4,590	1.40	6.51	9.11
T	5,125	4,653	1.10	6.60	7.26
U	11,989	10,927	1.10	15.49	17.04
Sum	75,620	70,544	9.49	100	107.25

formulae from the same data. In this particular case they are very similar to the Paasche indexes precisely because the commodities in the example display no very great changes in unit value or weight. However, it is easy enough to construct an imaginary case where this does happen and it can be seen then that differences between the indexes can be appreciable. Consider, in Table 3-10b, a sample with two commodities, A and B, over three years. A's unit value falls rapidly while its weight (in its statistical sense of a proportion, not to be confused with cwt. or lbs.) is increasing. In this particular example, and one could of course construct a number of variants, the other commodity has a constant unit value but a decreasing weight.

The Fisher formula is the geometric mean of the Paasche and Laspeyres formulae and its index, of course, lies between their's. The Paasche formula, by being sensitive to the increasing weight of commodity A, responds much more to its changing unit value and produces a much lower index than does the Laspeyres which, focusing on the base year when A's weight is small (20 per cent), is not much affected by its subsequent change in unit value. Had A's weight been greater in the base year, or had it been B which declined in unit value, the Laspeyres form would have given a lower index than the Paasche. In practice, fortunately, such fluctuations in weight and unit value are dampened by the relatively large number of commodities,and differences between the indexes would usually be more muted. Although, as we shall see below, the structure of the data rules out the Laspeyres and Fisher formulae, their ability to yield different results should be borne in mind.

Tolerance of Heterogeneity

So far we have talked of commodities being in a spectrum with heterogeneity at one end and homogeneity at the other. In fact, a 'perfectly'

Table 3-10b

Illustration of differing indexes

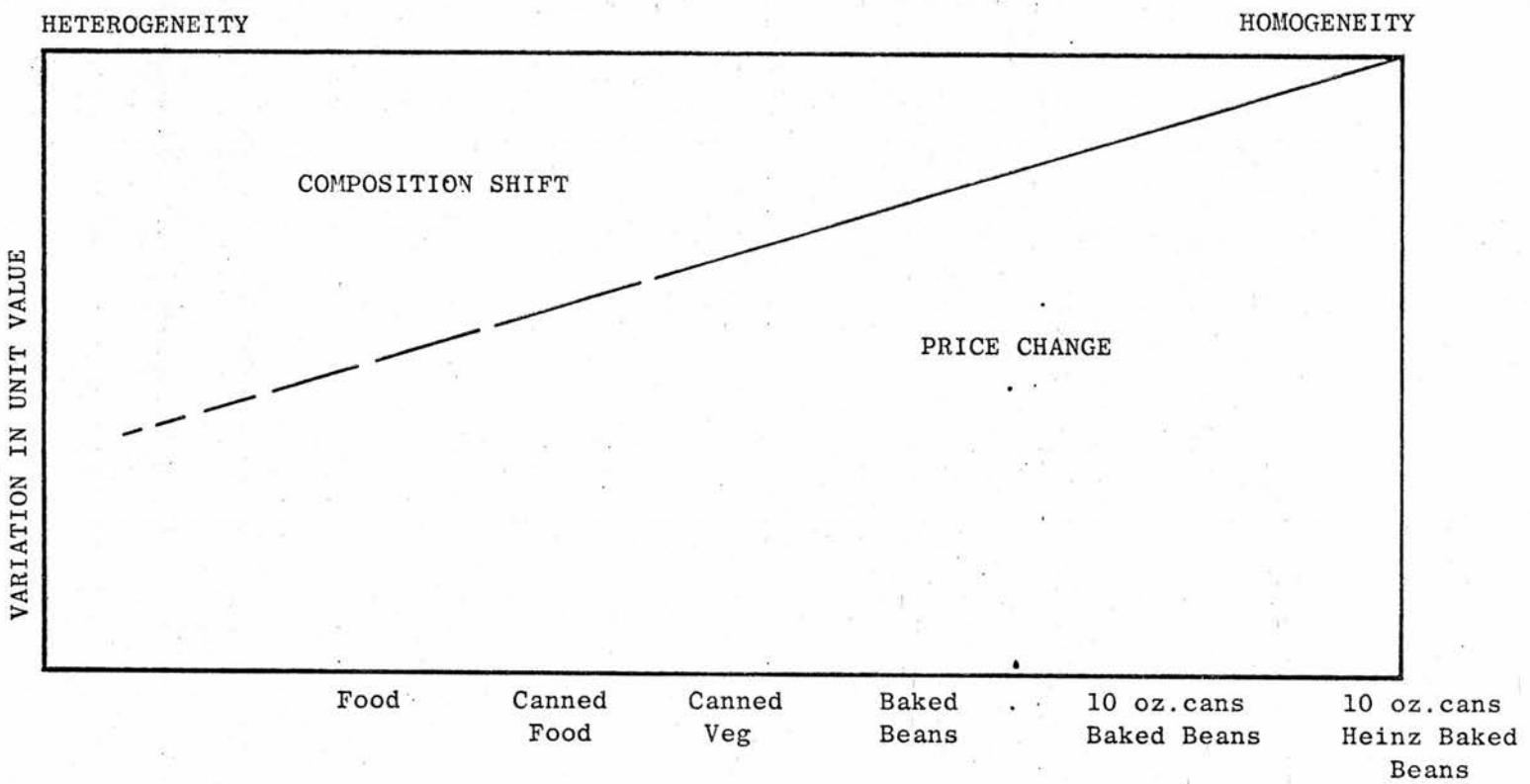
	Year	0	1	2
A	PcQc	1000	2000	400
	cwt	20	50	80
	UV	50	40	5
	PoQc	1000	2500	4000
	PcQo	1000	800	100
B	PcQc	6000	3750	1500
	cwt	80	50	20
	UV	75	75	75
	PoQc	6000	3750	1500
	PcQo	6000	6000	6000
Totals	ΣPcQc	7000	5750	1900
	ΣPoQc	7000	6250	5500
Paasche UVI		100	92	35
Totals	ΣPcQo	7000	6800	6100
	ΣPoQo	7000	7000	7000
Laspeyres UVI		100	97	87
Fisher UVI		100	95	55

$$\text{Paasche UVI} = \frac{\Sigma PcQc}{\Sigma PoQc} \cdot 100$$

$$\text{Laspeyres UVI} = \frac{\Sigma PcQo}{\Sigma PoQo} \cdot 100$$

Fisher UVI = geometric mean of Paasche + Laspeyres.

Fig. 3-10



Note: If the commodity is 'perfectly homogeneous' (e.g., 10 oz.tins of Heinz baked beans) then all the variation in unit value is due to change in price; however, we cannot talk of a 'perfectly heterogeneous' commodity since that would be a contradiction in terms. All we can say is that as the commodity becomes more heterogeneous so the combination of price/ composition shift becomes more uncertain.

heterogeneous' commodity is a contradiction in terms and the trade returns we are using do not deal with commodities precisely defined enough (e.g., 10 oz. tins of Heinz baked beans) to be termed 'perfectly homogeneous'.[28] So, virtually all the commodities with which we are dealing, even the preferred lower level ones when we have a choice, are both potentially intolerably heterogeneous and bunched somewhat in the middle of the spectrum.

There are two quantitative indicators of heterogeneity: (1) relationship between quantity measures and (2) unit value fluctuations.

Relationship between quantity measures

Occasionally, as has been noted, commodities are given with two or more quantity measures - weight, area, number, etc.. In this case the relationship between the measures gives an indication of heterogeneity. In the textiles example we have been using, the measures were often tied together by definition, but two which were not were "Wool and Mohair plushes and other Pile fabrics" (K) and "Flannels and Delaines" (L). In Table 3-11 we take these two commodities and calculate the index of the weight/area ratios, and in Table 3-12, in order to extend the example, we do the same for a completely different type of commodity, gear-cutting machine tools.

These three commodities illustrate the range of relationships between quantity measures. For commodity K the weight/area ratio is very stable, and for L it fluctuates by a quarter. However, it is the machine tools that shows by far the greatest fluctuation: the average weight doubles and then drops to a twelfth of the base year average before returning, in 1962, to virtually the same average weight as in 1959. This fluctuation would not matter if it had no effect on the unit-value indexes but, by definition, the movement of the cross-measure index (here, average weight per unit) is directly proportional to the divergence between the

---

[28] The primary statistics are in fact coded in far greater detail than are published in the *Annual Statement*, etc. See *Guide to the Overseas Trade Classification*.

Table 3-11

Weight/Area Ratios for Selected British Exports to China

	1935	1936	1937	1938	1939
K					
Value £	2,437	6,143	15,865	6,409	22,558
sq.yds.	8,836	25,019	61,529	22,724	78,228
cwt	92	242	562	227	760
ozs.	164,864	43,664	1,007,104	406,784	1,361,920
oz/sq.yd.	18.66	17.3	16.37	17.90	17.41
Index	100	93	88	96	93
L					
Value £	2,431	2,294	3,193	2,151	2,486
sq.yds.	23,930	23,678	26,260	17,341	21,155
cwt.	145	107	153	82	92
ozs.	259,840	191,744	274,176	146,944	164,864
oz/sq.yd.	10.86	8.10	10.44	8.47	7.79
Index	100	75	96	78	72

Table 3-12

Average Weight of Britain's Exports of "Machine Tools, New, Complete, Gear-cutting" to China, 1959-62

	1959	1960	1961	1962
Value £	49,470	225,284	16,759	95,834
number	1	3	2	2
cwt.	1,222	7,589	204	2,369
ave.wt.	1,222	2,530	102	1,185
$Index_{wt}$	100	207	8	97
Value/unit	49,470	75,095	8,380	47,917
$Index_{unit}$	100	152	17	97
Value/cwt.	41	30	82	41
$Index_{cwt}$	100	73	200	100

individual unit-value indexes:-

$$\text{i.e.,} \quad I_{cm} = \frac{I_{m1}}{I_{m2}} \times 100$$

where I_{cm} is the index of the relationship between the quantity measures, m_1 and m_2, and I_{m1}, I_{m2} are their respective unit-value indexes. In this case:-

	1959	1960	1961	1962
I_{cm} (cwt/unit index)	100	207	8	97
I_{m1} (U.V.I. by unit)	100	152	17	97
I_{m2} (U.V.I. by cwt.)	100	73	200	100

(The figures do not fit exactly because of rounding.)

Thus, if we are talking in terms of units, the 'price' of these gear-cutting machines would seem to rise by half in 1960, and drop to less than a fifth of its 1959 level in 1961, but in terms of 'price' per hundredweight, the movement is reversed - they are cheaper in 1960 and more expensive in 1961. So, depending on which unit of measurement we use, we get radically different results.[29]

Unit value fluctuation

Usually there is but one unit of quantity and the question of divergent unit-value indexes does not arise. However, there may be violent fluctuations in the single index as is illustrated, for instance, by Table 3-13.

It seems that in cases like these the primary cause of UV fluctuation is composition change. That is, the lenses that were exported to China in 1955 and 1957 were not the same sort, on average, that were exported

---

[29] Incidentally, it is worth noting that the by-weight UVI is more stable than the by-unit one. See also Kindleberger, *Terms of Trade*, pp.357-358.

Table 3-13

Two examples of violent unit value fluctuation

(Exports; 1958 = 100)

	1955	1956	1957	1958
A "Precision balances for use in assay, laboratory & similar work"				
Value £	-	61	1,904	5,329
number	-	4	25	19
unit value £	-	15.25	76.16	280.47
UVI	-	5	27	100
B "Photographic & cinematograph lenses, separately consigned"				
Value £	866	-	128	18,174
number	27	-	4	155
unit value £	32.07	-	32.00	117.25
UVI	27	-	27	100

in 1958. With only one unit of quantity we cannot be sure, of course, but in general violent fluctuation in unit value must throw doubt on the commodity's role as indicator of price change.

We will return to these two indicators of heterogeneity in a moment, but let us look first at another aspect of heterogeneity.

Commodity description variation

This is by no means as unambiguous as it might appear. We have seen that the 'real' commodity can change even though the description of it remains unaltered. There are, on the other hand, innumerable cases where the description varies but it seems that the commodity actually traded remains reasonably constant. This involves an assumption of continuity which may be defined thus:

> *It is assumed that the commodity actually traded tends towards continuity despite changes in commodity description.*

This assumption is illustrated by Table 3-14, Fig.3-11, which traces Britain's imports of 'hat bodies' from China from 1930 to 1969. Despite a bewildering kaleidoscope of commodity descriptions, it will be seen that there is an unbroken thread of imports from China, and although we cannot be sure, it seems likely that this thread may represent a reasonably homogeneous commodity.

Part of the ambiguity in this case arises because the commodity(ies) from China is usually negatively defined - defined in terms of what it is not. Many commodities are so described. At the one extreme there is the "other description, not elsewhere specified" type which is often a rag-bag of odds and ends that have not been fitted in anywhere else and so tends to be heterogeneous. On the other hand it is by no means unusual for quite tight commodities to be negatively defined. The determining factor is often the context, and even when a commodity appears to be positively defined, it is also invariably contextually defined as well. That is, few commodities, especially amongst manufactures, stand alone,

Table 3-14

Britain's imports of 'Hat bodies' from China, 1930-69

COMMODITY DESCRIPTION	CODE*
Hats, Caps and other Headgear, Trimmed and Untrimmed-	
" Of Straw	1
" Of Felt (including bodies)-	
" " Wool Felt	2
" " Fur Felt	3
" Of Cloth	4
" Other	5
Hats, Caps and other Headgear (including Hoods)-	
" Hats, Caps, Bonnets, Hoods, Hat shapes, Brims, Crowns and similar articles, not made wholly or partly of Felt or Wool (excluding Rubber Bathing Caps and Toy Paper Hats and Caps) which have been lined, trimmed or decorated in any manner, or of which the edges have been cut to shape, hemmed or bound-	
" " Of Straw	6
" " Other	7
" Loosely felted Hat Forms and cone-shaped Felt Hat Bodies-	
" " Of Wool Felt	8
" " Of Fur Felt	9
" Other Hats, Caps, Bonnets, Hoods, Hat Shapes, Brims, Crowns and similar articles, wholly or partly of Felt or Wool-	
" " Of Wool Felt	10
" " Of Fur Felt	11
" " Of Cloth	12
" " Other	13
" Other descriptions	14
Hats, Caps and other Headgear (including Hoods but excluding rubber bathing caps and toy paper hats and caps)-	
" Not made wholly or partly of Felt or Wool-	
" " If lined, trimmed or decorated in any manner, or if the edges have been cut to shape, hemmed or bound-	

*See Fig. 3-11

Table 3-14

Britain's imports of 'Hat bodies' from China, 1930-69... cont'd.

COMMODITY DESCRIPTION	CODE
" " " *Of Straw*	15
" " " *Other*	16
" " Not lined, trimmed, etc.	17
" Made wholly or partly of Felt or Wool-	
" " Loosely felted Hat Forms and cone-shaped Felt Hat Bodies-	
" " " *Of Wool Felt*	18
" " " *Of Fur Felt*	19
" " Others made wholly or partly of Felt-	
" " " *Of Wool Felt*	20
" " " *Of Fur Felt*	21
" " Others made wholly or partly of Wool but not of Felt-	
" " " *Of Cloth*	22
" " " *Other (including knitted)*	23
" Not made wholly or partly of felt or wool-	
" " If lined, trimmed or decorated in any manner, or if the edges have been cut to shape, hemmed or bound	24
" Made wholly or partly of felt or wool-	
" " Loosely felted hat forms and cone-shaped felt hat bodies	25
" " Others made wholly or partly of felt-	
" " " *Of fur felt-*	
" " " " With a raised or laid pile finish	26
" " " " Other	27
Hat bodies, hoods and shapes, not trimmed, blocked to shape or tip-stretched (excluding rubber bathing caps and toy paper hats and caps)-	
" Loosely felted hat forms and cone-shaped felt hat bodies, made wholly or partly of felt or wool	28
" Other, not made wholly or partly of felt or wool, not lined, trimmed or decorated in any manner and excluding headgear with the edges cut to shape, hemmed or bound	29

Table 3-14

Britain's imports of 'Hat bodies' from China, 1930-69... cont'd.

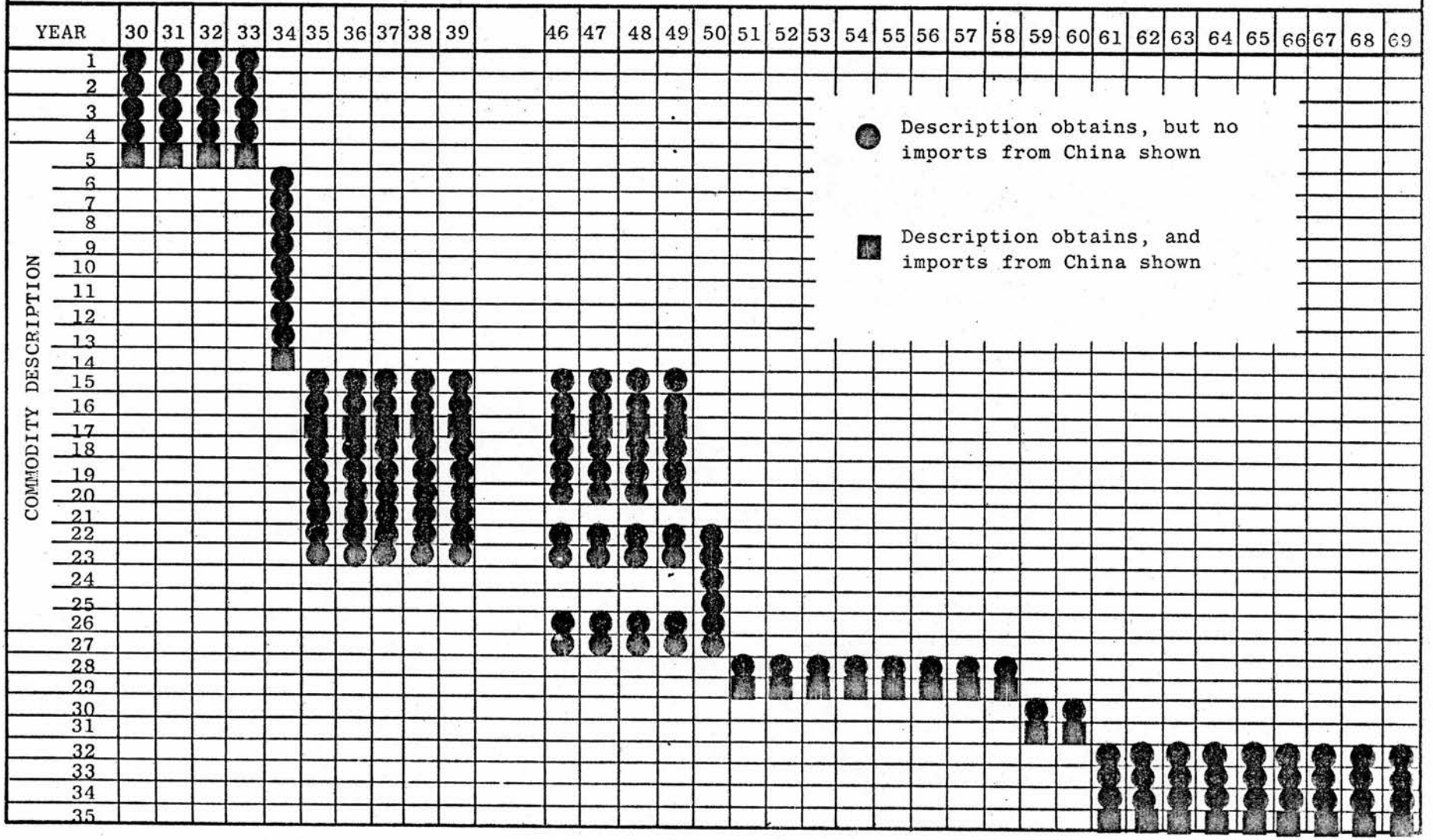
COMMODITY DESCRIPTION	CODE
Hat bodies, hoods, shapes and similar articles, not blocked to shape, lined, trimmed or decorated in any manner and excluding headgear with edges cut to shape, hemmed or bound and rubber bathing caps and toy paper hats or caps-	
" Hat forms, hat bodies, hoods, manchons and plateaux of felt	30
" Other	31
Hat forms, hat bodies, and hoods of felt, neither blocked to shape nor with made brims, plateaux and manchons (including slit manchons), of felt-	
" Hat bodies (other than cone-shaped) and hoods-	
" " Of wool felt	32
" " Of fur felt	33
" Other	34
Hat shapes, plaited or made from plaited or other strips of any material, neither blocked to shape nor with made brims	35

NB: - Commodities 15 & 16 and 18 & 19 are joined together in 1950.

- The following small imports from China of commodity 1 have been omitted from the table for clarity:-

	1930	1931	1932	1933
Straw hats, etc.	£ 373	£3,013	£12,760	£9,102

Fig.3-11 CHANGING COMMODITY DESCRIPTIONS: HAT BODIES



unrelated to other commodities. Thus,to determine that there is a *prima facie* indication of continuity despite changes in nomenclature involves judgments informed by the context.

This combination of contextual evaluation and assumption of continuity is also used in the common case where a commodity is split into two, or more, but the trade with China only continues in one of the new commodities, and at roughly the same level as before. This is illustrated by Table 3-16, where the commodity is split up into two in 1938 and exports to China are only reported for one of the new commodities, diesel engines, and at a similar level.

Had the exports to China dropped from 83 tons in 1937 to, say, 10 tons in 1938, then it might be presumed that the 1937 engines contained a large proportion of paraffin engines. However, since the volume actually rose in 1938, and no exports of paraffin engines are specified, it can be assumed that diesel engines formed the bulk of the exports in the previous period and so, instead of having two commodities, one from 1930 to 1937 and the other for 1938 and 1939, it seems likely that there was basically one commodity, diesel engines, throughout the whole of the period.

Although this joining together of differing commodity descriptions increases the chances of the resulting commodity becoming more heterogeneous, it does no more than that. All commodities, whether their descriptions remain unchanged or not, display a certain amount of fluctuation in what we have termed the quantitative indicators of heterogeneity and the question of goodness of fit between differing descriptions is but a particular aspect of the general problem.

RESPONSES TO HETEROGENEITY

Arbitrary Tolerance and Exclusion

The most common solution is to apply a specific tolerance limit to unit value fluctuation. In Nankai University's *Price, Quantity and Value Index of China's Imports and Exports*, for example, commodities whose unit values

Table 3-16

Exports of certain Internal combustion engines to China, 1930-9

	COMMODITY DESCRIPTION		1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
A	Internal combustion engines, Other than marine, Oil, including diesel.	tons	349	187	260	178	153	NC	NC	NC	NC	NC
		£	43,464	25,275	26,585	19,929	18,370					
B	Internal combustion engines, Other than marine, Oil.	tons	NC	NC	NC	NC	NC	253	40	83	NC	NC
		£						27,164	6,877	12,481		
C	Internal combustion engines, Other than marine, Compression & surface ignition (diesel & semi-diesel & similar engines)	tons	NC	NC	NC	NC	NC	NC	NC	NC	109	25
		£									14,601	7,447
D	Internal combustion engines, Other than marine, Other oil engines (paraffin, etc.)	tons	NC	NC	NC	NC	NC	NC	NC	NC	NS	NS
		£										

NC: Commodity not classified. NS: No exports to China specified.

Note: Commodities A and D are clearly the same despite a slight change in description.

were 40 per cent higher or 30 per cent lower than in the previous year were excluded.[30] Kindleberger, using less detailed commodities (in fact commodity groups) applied a tolerance of 100 per cent.[31] A far more satisfactory approach, but one unfortunately beyond our resources, is the use of a "Multiple Constrained Unit Value Index" developed by Edward A. Hewlett in his study of *Foreign Trade Prices in the Council for Mutual Economic Assistance*:

> In this approach, indices are calculated first on the basis of all available unit values for goods sold in every year during the period being indexed. Then progressively tighter constraints are imposed on the absolute value of the annual percentage unit value changes which a commodity can exhibit in any given year and still remain in the sample. If, after the elimination of obviously 'bad' unit values (e.g. a 100% change in some year) the index proves insensitive to further constraints within some reasonable range (80% to 20%), then evidently the specific set of commodities included in the index does not matter, and there is no need to agonize over what commodities should or should not be in the index. In those cases where the index is sensitive to constraints in the 'reasonable' zone, guesses are made on which commodities are exhibiting commodity composition changes and thus which constraint to use. The MCUVI technique is much less time-consuming than the a priori elimination technique because, instead of enormous amounts of man-hours, MCUVI only requires a few 'computer-minutes'. Also MCUVI is as good as the a priori elimination technique because it forces the researcher to make a priori-type decisions, but only when those decisions will make a difference, i.e. only when eliminating some products from an index will significantly change the value of an index.[32]

---

[30]This description of Nankai University's *Price, Quantity and Value Index of China's Imports and Exports* (Tientsin, 1930) comes from Ch'en and Liu, *Foreign Trade Statistics*, pp.319 - 324.
These Nankai indexes are clearly the work of the team headed by Professor Franklin L. Ho whose report of their work, *Index Numbers of the Quantities and Prices of Imports and Exports and the Barter Terms of Trade in China, 1867-1928*, was published by the university that year. Ho, in this report, does not specify a percentage, he merely mentions "excluding those with abnormal price fluctuation".

[31]Kindleberger, *Terms of Trade*, p.354.

[32]Edward A. Hewlett, *Foreign Trade Prices in the Council for Mutual Economic Assistance* (Cambridge University Press, 1974), pp.63-64.

An Alternative Approach

Concentration on major commodities

Somewhat the same result can be obtained by using a different, and admittedly more rudimentary, approach. It will be apparent that fluctuations in the unit value of individual commodities only affect the general index in proportion to their importance in the sample. Thus, a 100 per cent rise in a commodity accounting for 1 per cent of the sample only produces a .01 increase in the index. Furthermore it may be safely assumed that with a large number of commodities, none of which is big enough to seriously affect the index on its own, distortions caused by heterogeneity will tend to cancel each other out, revealing the underlying price movement. That is, there is no reason to suppose that composition change within the commodities has any inherent bias. If this 'assumption of neutrality' (to use Hewlett's phrase) is accepted, then we need only 'agonize' over large commodities. The Nankai study, on the other hand, did not distinguish the size of commodities and in the two years we are given as an example, the excluded commodities only account for 2 million haikuan taels out of respective totals of 1,124 and 1,103 million.[33] If a constraint only affects 0.2 per cent of a sample it is either not tight enough or it is pointless.

In this study only those commodities which account for 5 per cent or more of the sample in any particular year have their unit value fluctuations tested.[34] This use of an arbitrary limit is of course less satisfactory than a flexible constraint,but it is not likely to make much difference to the result. As Table 3-17 indicates, this 5 per cent rule means that only some dozen commodities need to be looked at, rather than, in exports 1936, say, 149.

Whether we test all, or only some, of the commodities we are still

---

[33] Ho, *Index Numbers*, p.8 and quoted in Ch'en and Liu, *Foreign Trade Statistics*, pp.322-323.

[34] Apart from a few obviously erratic export commodities such as those illustrated in Table 3-7. Technically the constraint is defined as 5.0 weight in series XS5 (exports) and MS3 (imports).

Table 3-17

Distribution of Commodities within the Samples for Three Years

Commodities accounting for following weights	1936		1956		1966	
	NO	%	NO	%	NO	%
Exports (XS5)						
10% +	3	2	3	8	1	1
5-10%	2	1	0	0	3	3
1-5 %	7	5	2	5	6	7
< 1 %	137	92	35	88	79	89
Total	149		40		89	
Imports (MS3)						
10% +	2	8	1	3	1	2
5-10%	4	16	5	16	4	10
1-5 %	8	32	3	9	9	22
< 1 %	11	44	23	72	27	66
Total	25		32		41	

faced with the problem of fixing some limit to unit value fluctuation. Kindleberger's 100 per cent, whilst it has the virtue of simplicity, seems far too large, while the Nankai study's 30 or 40 per cent is equally arbitrary. Without more detailed knowledge of a commodity one does not know what is the 'reasonable' range of unit values to expect; and, of course, different commodities will have different reasonable ranges. That is, a certain fluctuation in the unit value of one commodity will indicate heterogeneity, but the same fluctuation in another commodity will largely be the result of price variation. Similarly, the reasonable range will vary from period to period: a commodity may move from a period of price stability to one of price volatility. Thus, a single arbitrary exclusion limit (i.e., when the unit value of a commodity differs more than x per cent from the previous year's that commodity is excluded from the sample) suffers both from being pretty much a guess and also being almost certainly inappropriate for different commodities and different periods.

Classification

Since deriving tailor-made exclusion limits is out of the question for such a large number of commodities and years, a different approach has been adopted. It was decided not to exclude any commodities which had reached this stage (export commodities, it will be recalled, had already been fairly drastically reduced) but rather to classify them as to their 'trustworthiness' as price indicators.

There were two reasons for this. Firstly, whilst the unit value is used as an estimate for price, it also has a certain legitimacy in its own right. For example, China's production of tea is affected by bad weather; the amount exported is the same, but a lot of it is low quality. The prices on the world market are unchanged but the China unit value, and receipts, have fallen. It is of no consolation to China that the net barter terms of trade have remained constant. Indeed, in the case of tea, where China is an important supplier, with a shortfall in the amount of high-quality tea reaching the market, the terms of trade might actually have risen, but what is of importance to China is that for the same input of factors of production she has received less. The unit value

terms of trade may thus, in a sense, incorporate the factorial terms of trade.

Secondly, without access to, and rigorous examination of, price data, we can never be sure about the respective roles of price and non-price factors in unit value change. Whatever the tests applied, we remain in the realm of likelihood rather than certainty, and classification rather than exclusion is the consistent extension of this.

So far, then, it has been decided:

a. Only to test those commodities which have a weight in the total sample, in any one year, of 5 per cent or more. These are called 'major' commodities; the others are termed 'residual' commodities.

b. To classify major commodities into two categories, A and B, according to the degree their unit value seems to be indicative of price. All residual commodities are automatically classified A.[35]

Classification rule formulation

It now remains to formulate some simple tests.[36] The actual testing is implemented in Appendixes A (imports) and D (exports) and a diagram of the decision process is shown by Figure 3-12.

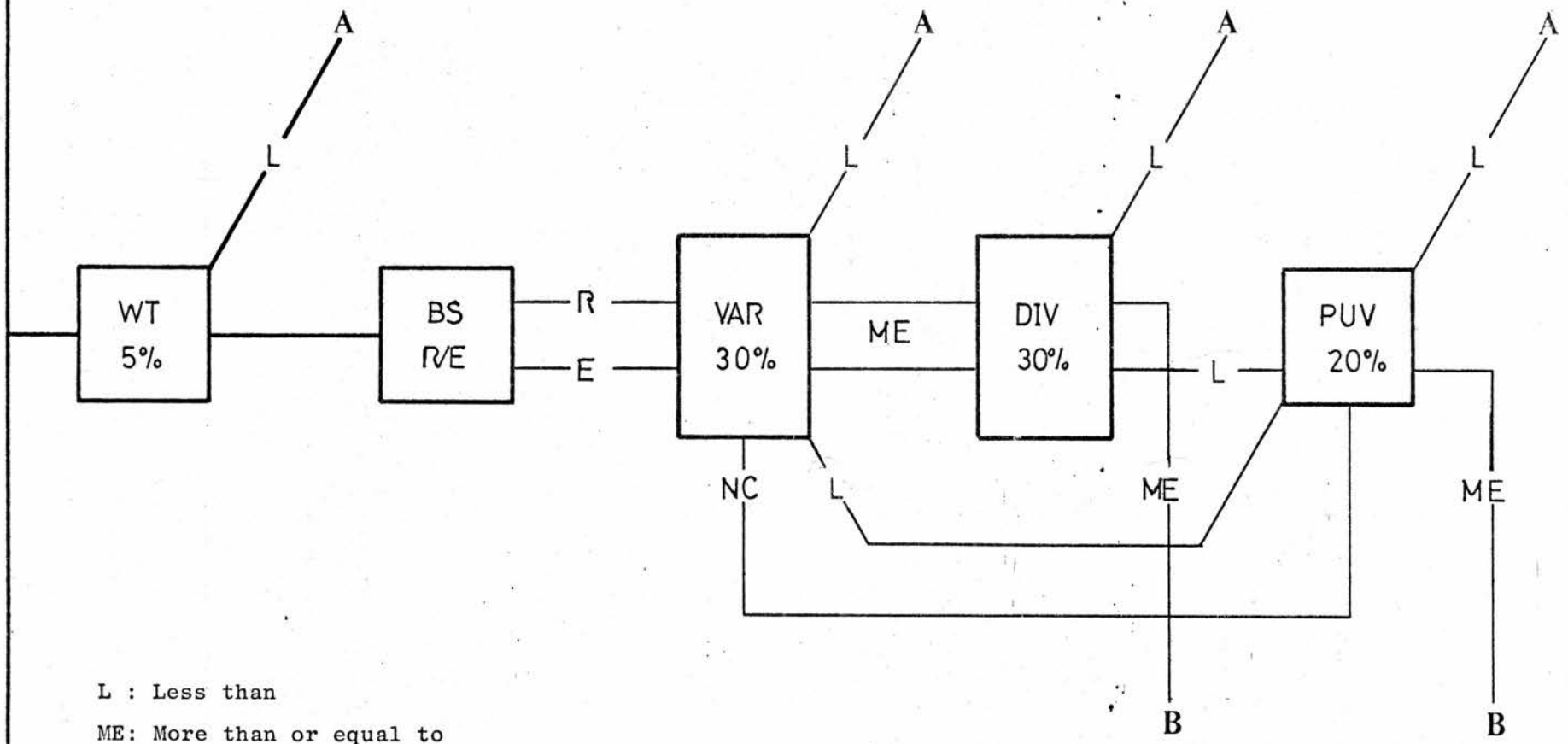
Annual unit value variation.- Following usual practice (e.g., Ho, Kindleberger), the rate of change of unit value over the previous year is initially examined. An arbitrary,but quite low, limit of 30 per cent is set. Since even the most important commodities may rise from, or fall

---

[35]This meant the inclusion of some highly suspect commodities, such as X380, whose calculated UVI moves from 99 in 1964 to 12,671 in the following year. Whether this is merely due to a misprint or whether there was some extraordinary change in composition is immaterial,since the effect on the index is negligible.

[36]Without computer facilities, simplicity is of course a prime consideration.

Fig.3-12 CLASSIFICATION OF COMMODITIES



L : Less than

ME: More than or equal to

NC: No preceding year for comparison

Others as in text

into, obscurity, only rate of change into 'critical years' (years in which the weight is 5 per cent or more) is considered relevant. Nevertheless, as will be seen in the respective Appendixes (A for imports, D for exports), it is usually important to take other years into account, especially of course, the base year, and often the run from base year to critical year(s) will be shown. If the critical year is isolated - that is, if there is no China data for the preceding year, or if the critical year is on the leading edge of the period (i.e., 1930 or 1946) - then this initial test is not possible and we proceed directly to the PUV test, which is described in paragraph three (examples of this are X18 or X34). If the variation is less than 30 per cent, the commodity is usually classified A without further testing. Occasionally, when there is reason to suppose that the China unit value (CUV) differs appreciably from the 'Excluding China unit value' (XCUV)[37] either in movement (i.e., the DIV test, paragraph two) or actual value (the PUV test), the commodity is tested further, even though the unit value variation is within tolerance. One example of this is X53, "Man-made fibres, Cut staple fibre". The preceding commodity, X52, is also man-made fibres and its CUV for the critical years is half the XCUV. It was thought likely that the same might happen with X53, so its PUV was tested and the suspicion proved correct.

Difference in variation.- The next test involves comparing the movement of the CUV with that of the XCUV, which gives the Difference in Variation (DIV):-

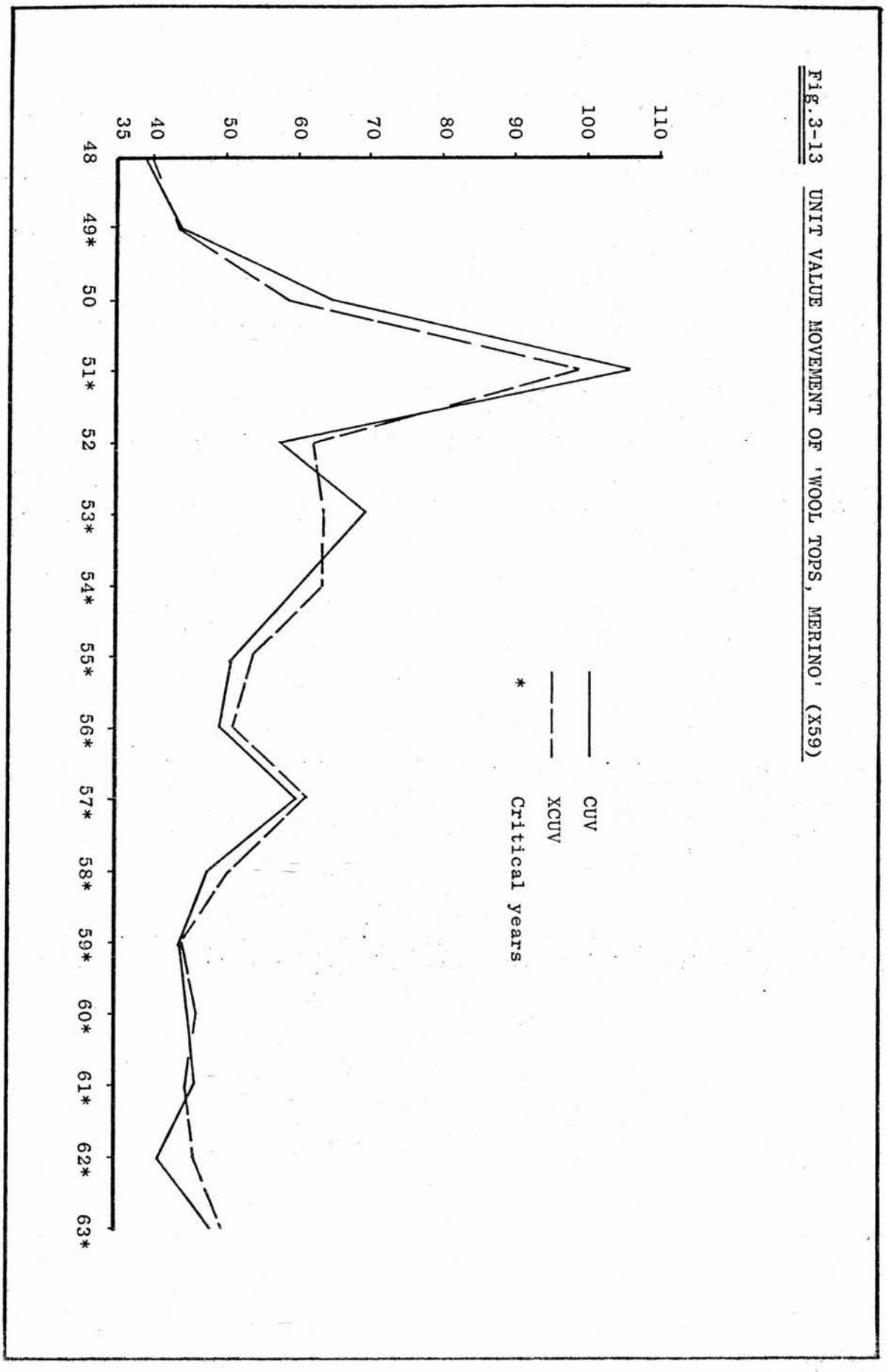
$$DIV = \frac{CUV_c}{CUV_{c-1}} - \frac{XCUV_c}{XCUV_{c-1}}$$

where c is the critical year and c-1 the preceding one. It is assumed that changes in XCUV are due primarily to price rather than composition. The validation of sharp fluctuation in CUV by comparing it with XCUV movement is illustrated by Fig.3-13 which charts both for exports of

---

[37] XCUV: The general unit value of the commodity traded after the China data has been excluded. If the trade with China is but a small part of the total trade (or if CUV = XCUV) this exclusion will not make much difference. However, with major commodities, the China portion is likely to be reasonably substantial.

Fig.3-13 UNIT VALUE MOVEMENT OF 'WOOL TOPS, MERINO' (X59)



"Wool tops, Merino" (X59; full data is given in Appendix D). The sharp rise and fall of CUV from 1949 to 1952 (+18%, +48%, +66%, -46%) is closely paralleled by the XCUV (+16%, +32%, +68%, -37%). As a result, the DIV is small (+2%, +16%, -2%, -9%) and the movement of the CUV is seen to be mainly the result of price change. Indeed, what we have here, of course, is the Korean War boom, which manifests itself time and again in this study. This test also uses a limit of 30; if the difference between the two variations is 30 or greater, the commodity is classified B.

Proportional unit value.- The final test concerns the Proportional Unit Value, PUV, which is the CUV as a percentage of the XCUV. This test is used when either:-

a. Calculation of the variation of the CUV on the preceding year is not possible (shown as NC in Fig.3-12).

b. The 'base year status' of the commodity is E. This means that no trade with China is reported for the commodity in the base year, 1958, so the general unit value for the total trade in that commodity is used instead. Although, as Appendix H shows, this is statistically quite acceptable in general, probability provides no guarantee that any particular commodity is safe. It is therefore reasonable prudence to check major commodities in their critical years. The PUV indicates whether the commodity traded with China has roughly (a rather tighter constraint of 20 per cent is used here) the same unit value as the commodity in general in the critical years, and hence, presuming continuity, whether the latter provides a reasonable substitute for the CUV in the base year.

For case 'a', the PUV is an alternative test, but for case 'b' it is additional to the others.

Limitations and application of the classification procedure:- There are, of course, other ways of investigating whether the unit value movement is plausibly due to price change. One obvious way, which would be principally applicable to imports, would be to correlate unit value on quantity. Where China is a major supplier (and perhaps in the occasional case where she is a major purchaser), we may find a high negative correlation between unit value and quantity, which would strongly indicate price movement.

It could also be argued that we might as well dispense with the initial test (VAR) and move straight on to the second (DIV) since the absence of violent unit value fluctuation proves nothing on its own. Just as Sherlock Holmes found it suspicious that the dog didn't bark, so a stable CUV during the Korean War boom, for instance, would be cause for alarm. This is quite true, and the only defence is that more rigorous testing takes more work, to a degree not justified by the objective. In the end, just over a third of the major commodities are classified B, which seems quite a satisfactory proportion.

There is, moreover, a safety device that makes it unlikely that any commodity has been grossly mis-classified. One advantage of concentrating on the relatively small number of important commodities, and doing the job by hand rather than computer, is that the rules can be applied with discretion. On the one hand, one can easily pick up suspicious cases such as X53 (man-made fibres) which for a computer to do would require a very much more complicated rule formulation; on the other hand, there are occasions when the rules can, with justification, be waived. As a result the decision process is kept simple, although this is done, it must be admitted, at the cost of a certain amount of inconsistency.

The most common case when the rules are explicitly overridden occurs when the CUV and XCUV are 'out of phase' with each other. This usually happens in times of rapid price change (especially Korean War boom) and it is not surprising that new prices should appear in different recording years. (It would have been interesting to examine the monthly returns for the Korean War period.) This is illustrated by Table 3-18 and Figs.3-14, 3-15. In the table, the unit value movements are smoothed by two- and three-year moving averages and the correlation coefficients (r) calculated.

Table 3-18

Smoothing of 'out of phase' unit value movements

	Year	CUV Actual	CUV 2 yr.MAV	CUV 3 yr.MAV	XCUV Actual	XCUV 2 yr.MAV	XCUV 3 yr.MAV
M46	1946	12.15			11.16		
	1947	12.19	12.17	10.76	9.66	10.41	8.92
	1948	7.95	10.07	9.07	8.55	9.11	8.23
	1949	7.07	7.51	8.29	7.58	8.07	8.71
	1950	9.86	8.47	9.16	9.99	8.79	10.27
	1951	10.56	10.21	11.07	13.25	11.62	11.99
	1952	12.79	11.68	9.91	12.73	12.99	11.54
	1953	6.37	9.58	8.45	8.64	10.69	9.22
	1954	6.20	6.29	7.08	6.30	7.47	8.04
	1955	8.66	7.43	8.08	9.19	7.75	8.13
	1956	9.39	9.03	8.74	8.90	9.05	8.62
	1957	8.18	8.79	7.57	7.77	8.34	7.27
	1958	5.15	6.67	6.38	5.15	6.46	6.16
	1959	5.80	5.48		5.57	5.36	
	r		0.87				
				0.90			
					0.82		
X60	1946	15.29			15.85		
	1947	17.55	16.42	16.94	18.40	17.13	18.11
	1948	17.99	17.77	18.38	20.09	19.25	20.16
	1949	19.59	18.79	26.58	21.98	21.04	24.71
	1950	42.15	30.87	43.22	32.07	27.03	40.48
	1951	67.91	55.03	47.55	67.39	49.73	46.53
	1952	32.60	50.26	47.14	40.14	53.77	50.30
	1953	40.91	36.76	37.25	43.36	41.75	42.24
	1954	38.24	39.58	38.75	43.23	43.30	42.58
	1955	37.10	37.67	36.85	41.15	42.19	41.51
	1956	35.20	36.15	38.23	40.14	40.65	42.11
	1957	42.39	38.80	37.00	45.04	42.59	40.69
	1958	33.40	37.90	35.82	36.88	40.96	39.08
	1959	31.66	32.53	35.48	35.32	36.10	36.91
	1960	41.37	36.52		38.53	36.93	
	r		0.95				
				0.96			
					0.97		
X42	1958	381			390		
	1959	387	384		209	300	
	1960	188	288		202	206	
	1961	180	184		230	216	
	r		0.52				
				0.80			

Fig. 3-14

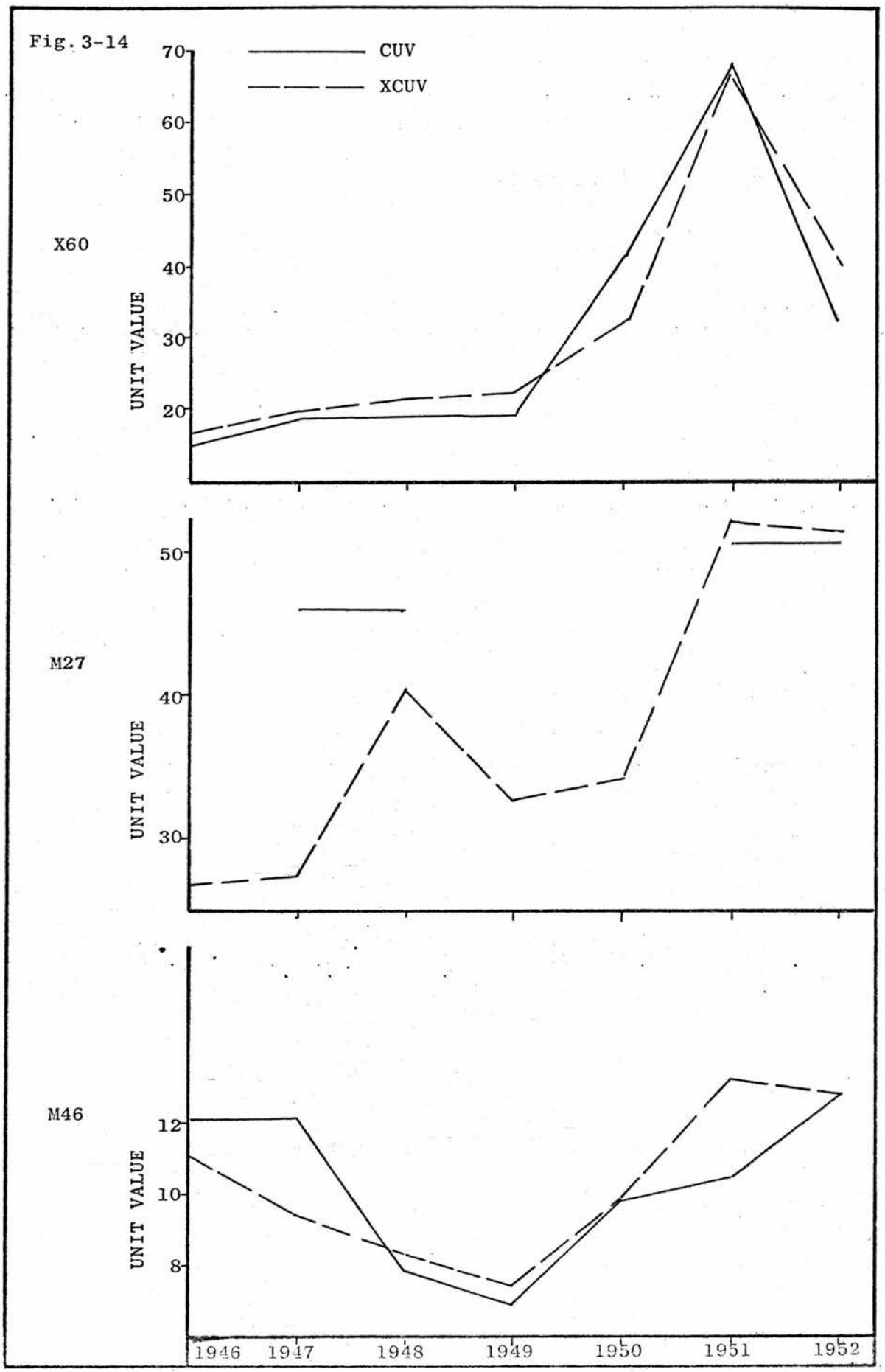
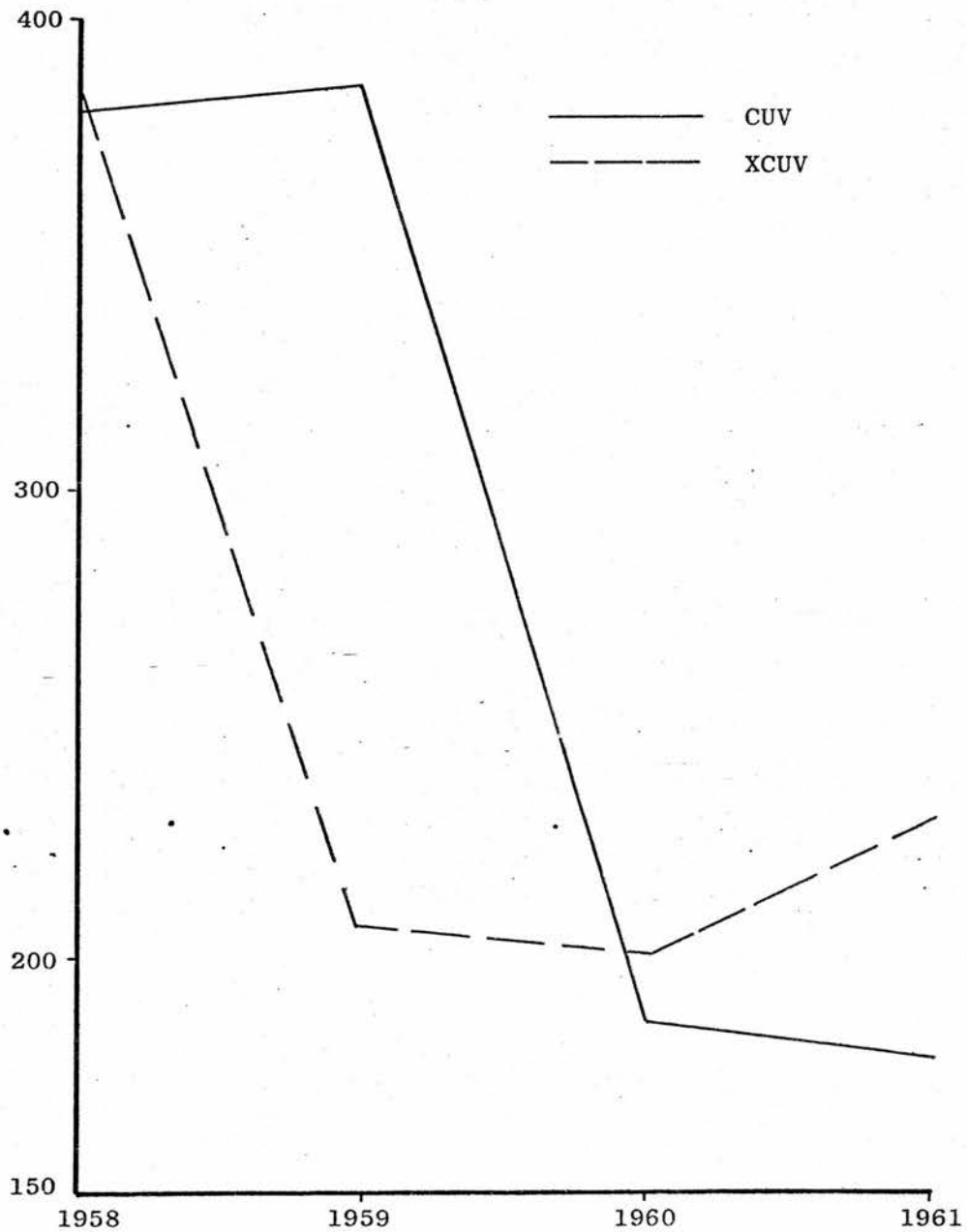

CUV
XCUV
X60
UNIT VALUE
70
60
50
40
30
20
M27
UNIT VALUE
50
40
30
M46
UNIT VALUE
12
10
8
1946
1947
1948
1949
1950
1951
1952

Fig.3-15

COMPARISON OF CUV WITH XCUV FOR X42



It will be seen that in all three cases at least one of the moving averages gives a better fit than the actual unit value. This is especially so for X42 which, for the same reason, produces the most graphic shift. No moving averages have been calculated for M27 because of the gaps in the China data. Further details of these commodities will be found in the classification appendixes A and D and, of course, in F and G.

One further point remains to be mentioned. It was decided to ignore unit value fluctuation in 'residual' commodities and concentrate on major commodities because it was considered that no individual residual commodity could, by definition, have much effect on the unit value indexes and that, en masse, erratic unit value movements would cancel themselves out to reveal general price movement. Appendixes A and D suggest that this also tends to apply to individual commodities. At small quantities, unit values are often erratic[38] in terms of both value in particular years and movement over time. As the quantity increases, so the CUV tends towards a more stable pattern, and often that of the XCUV. The reason for this is not far to seek. What we describe as a 'commodity' is a conglomerate of 'sub-commodities': the fewer the units of the commodity, the more likely it is that its unit value will be affected by the composition balance of sub-commodities. With larger quantities the composition becomes more consistent. It also, not surprisingly, comes close (gauging by the unit value) to the XCUV. One effect of this in classifying major commodities is that VAR, DIV and PUV are often large for non-critical years, and if we were to take those into account, we would either have to loosen the rules or end up classifying virtually all majors as B. By focusing on critical years this problem is avoided. We are able to apply fairly strict tests to instances where it matters (i.e., major commodities in critical years) rather than dissipate the classification over the unimportant (rather as Ho appears to have done). One instance of the relationship between quantity and unit value stability is illustrated by X674,(Table 3-19). Similar instances are afforded by X680 and X697 (Appendix D).

---

[38] So much so that,when the quantity drops to two or three units,the commodity is usually,for convenience, read as nil for that year. This has to be done, of course, when a value is given but the quantity is shown as nil (i.e., it is less than half a unit). These cases are indicated by 'N' in the tables of Appendixes F and G.

Table 3-19

Other Machinery, nes (X674)

Year	CHINA QUANTITY		Weight in XS5	CUV	XCUV	PUV
	cwt	% of total				
1958		NS			36.38	-
1959		NS			34.56	-
1960		NS			36.28	-
1961		NS			37.75	-
1962		NS			39.07	-
1963		NS			44.42	-
1964	589	0.2	0.2	91.27	47.43	192
1965	57,283	12.8	15.2	49.34	45.24	109
1966	12,698	1.3	2.9	95.23	50.27	189
1967	17,673	2.0	2.3	101.31	58.97	172
1968	302	0.0	0.1	113.75	64.05	178

See also Appendix D.

Correlation coefficient of PUV on China cwt is -0.95.

CHOICE OF INDEX FORMULAE

Despite all attempts at constructing continuous commodities there remain innumerable gaps in the data caused by the non-existence or non-reporting of trade and the non-classification of commodities in particular years. This is especially true of the export data.

Since we are examining here the specific terms of trade; that is, the combination of price and composition change in the trade of two countries, these data gaps are, in a limited and negative sense, informative. Having made the necessary simplifying assumption that non-reported means nil (or negligible) these gaps become definite statements about the composition of the trade. However, they are clearly a major hindrance to the construction of the unit-value indexes.

The problems of constructing indexes over long periods of time are both formidable and familiar. One solution is to use a chained index, but this, in automatically adjusting to composition changes, is of no use in analysing them over time.[39] For this we need a fixed base index, and the usual combination of a Laspeyres base-~~weighting~~ weighted quantum index and a Paasche current-weighted unit-value index would seem to be the best solution. Moreover, from the same data, one could also calculate a Laspeyres unit-value index, the comparison of which with the Paasche form is a useful indication of composition change.[40]

The scattered nature of the data, however, means that the resulting indexes would cover only a small proportion of the total trade. The value of commodities which are reported in the three years 1930, 1958 and 1969, and their percentage of the total trade, for instance, are shown in Table 3-20. When it is considered that coverage in country/rest of the

---

[39]For a recent and comprehensive coverage of the problems of index numbers see R.D.G. Allen, *Index Numbers in Theory and Practice*. Chapter 5 deals with chain indexes and he suggests that the chained Laspeyres form gives the best measure for a price index.

[40]If the Paasche price index is greater than the Laspeyres this indicates that the composition has shifted towards commodities with above average price increases, and vice versa if it is smaller. See U.N., *Relative Prices*, p.137.

Table 3-20

Commodities directly reported in selected years

	1930	1958	1969
Exports			
Value (£m)	1.4	24.1	21.7 *
as % of THP	17	90	42
Imports			
Value (£m)	3.7	16.0	9.4
as % of TSM (ie, excluding bullion)	37	86	25

*Over £18m of this is comprised of just three commodities

world indexes (i.e., the types usually constructed by national and international agencies) usually runs from 50 per cent to 95 per cent,[41] it is apparent that the coverage indicated in Table 3-20 is unsatisfactorily low.[42]

IMPROVING COVERAGE

Clearly the coverage had to be improved. There were two steps in doing this. Firstly, it was important to select a base year that maximised the chances of obtaining coverage. It was considered that somewhere in the middle of the period would be more likely to have commodities that ran to either end of the period than a year at either the beginning or the end. Thus it might be expected that Britain had exported, say, radio sets to China in the 30's, 40's and 50's but not 60's (when they had been superseded by TV sets), and television sets in the 50's and 60's but not 30's. (This is also suggested by Table 3-20.) Following this assumption, 1958 was chosen because it was also a year when trade was high but one which avoided the distorting effects of the Chinese depression of 1959-62.[43] 1958 had the additional advantage that it was an end year in the four-year cycles in which the *Annual Statement* was then published and it thus tended to report trade in those commodities which, although small in 1958, had been large enough to be included in any of the preceding three years.

Having selected 1958 as base year, the next step was to see if an estimate could be made of the unit-value of those commodities which featured in other years but for which no trade was reported in 1958. If

---

[41] R.D.G. Allen, "Index Numbers of Volume and Price", *International Trade Statistics*, ed.by R.D.G.Allen and J.E.Ely (N.Y.,John Wiley,1953), p.199. See also UNCTAD, *Long Term Changes in the Terms of Trade, 1954-1971*, p.102 where coverage is in the eighties for over two-thirds of the countries examined.

[42] It will be appreciated that the utilisable coverage would be considerably lower since commodities directly reported in the various years are not necessarily the same commodities (cf. Table 3-1).

[43] Exports and imports were both higher in 1960 but that was the year when large imports of silver bullion commenced.

as seemed likely, the 'China' unit-values were, in general, average unit-values for the respective commodities, then the mean unit-value could be used as an estimate for those commodities in which there had been no trade reported with China in the base year. Appendix H tests this assumption and, as the results in Table 3-21 show, the two sets of unit-values are acceptably close, at the 1 per cent significance level, for both imports and exports. Nevertheless, this is no guarantee that the 'China' unit-value will conform to the average in any particular commodity and so the major commodities are tested in their critical years (i.e., the PUV test).

This use of estimated unit-values considerably enlarges the coverage. Export coverage rises from 17 per cent in 1930 to 83 per cent, and 42 per cent in 1969 to 69 per cent (1958 is, of course, unaffected) and similarly import coverage increases from 37 per cent in 1930 to 79 per cent, and from 25 per cent in 1969 to 59 per cent. The coverage for each year of the period, together with the number of commodities used and the number of major commodities, is given in Table 3-15. However, the use of estimated unit-values unfortunately rules out the Laspeyres form since we no longer have the component PcQo (i.e., current unit-values for base year quantities). Thus we are limited to the Paasche form for both quantum and unit-value indexes.

ADJUSTMENT FOR INCOMPLETE COVERAGE

Coverage, of course, can never in practice be complete, and the UVI's must be adjusted for this. There are three ways of making the jump from the sample to the whole:-

1. Undifferentiated index
2. Section-weighted index
3. Dichotomous index

There is a fourth alternative, which is not to make the jump at all but merely to say that the UVI is the UVI of the sample only and not of

Table 3-21

Results of Appendix H

	CUV	XCUV
Exports: 98 commodities		
mean unit value	59.97	58.47
standard deviation	98.13	108.90
critical value of Z* :	±2.57	
Z (calc)** :	0.10	
correlation co-efficient:	0.9669	
Imports: 78 commodities		
mean unit value	26.61	23.17
standard deviation	43.52	35.55
critical value of Z :	±2.57	
Z (calc) :	0.54	
correlation co-efficient:	0.8789	

*Two-tail test at 1% significance level

**$$Z\,(\text{calc}) = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\left(\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right)}}$$

the whole trade. This is done by some countries[44] but, since the sample here varies from year to year, the UVI's would lack any historical coherence. Moreover, their combination in the Terms of Trade index would have no constant definition.

The undifferentiated index assumes that the aggregate UVI of the commodities not directly covered is the same as the aggregate UVI of the commodities directly covered. Thus, the UVI of the sample becomes, without further ado, the UVI for the whole trade. This is done by some countries[45] and, for instance, the Nankai indexes.[46] Full data for the undifferentiated indexes (and the others) is given year by year in Table 3-15 and is here presented longitudinally and synoptically as follows:-

Imports	Table 3-22	Samples and totals (MS2, MS3)
	Fig. 3-16	Sample (MS2) and TSM
	Overlay 3-16	Bullion sample (MS3) and TSMb

Coverage has already been given in Table 3-2 and Fig.3-2. (The final unit value indexes are coded MS1 to 9 for imports and XS1 to 15 for exports; see Fig.3-26, Table 3-36.)

Exports (XS5)	Table 3-23	Sample and totals
	Fig.3-17	Sample and THP
	Overlay 3-17	Sample and TEX

Coverage has again been given in Table 3-2 and Fig.3-2.

The section-weighted (or sectional) index makes a similar assumption but this time by commodity groups or, in SITC(R) nomenclature, sections;

---

[44] Allen, "Index Numbers of Volume and Price", p.201 quotes France and Italy.

[45] *Ibid*, p.199.

[46] Ch'en and Liu, *Foreign Trade Statistics*, pp.321-322.

Table 3-22

Imports: Sample & Totals

£m

Year	Sample	TSM	MKSB	TLS	IB	BMC	XB	TOTB	TSMB	Bullion Sample	Via HK
1930	7.8	9.8	-	TSM	-	TSM	0.1	0.1	10.0	7.9	na
1931	6.1	7.8	-	TSM	-	TSM	-	-	anb	anb	0.2
1932	4.8	6.2	-	TSM	-	TSM	-	-	anb	anb	0.1
1933	4.8	5.9	0.8	5.1	-	TLS	3.7	3.7	9.5	8.5	0.2
1934	5.8	7.1	1.0	6.1	-	TLS	14.7	14.7	21.9	20.8	0.2
1935	5.7	7.1	0.9	6.3	-	TLS	3.6	3.6	10.7	9.3	0.4
1936	6.5	8.1	0.5	7.6	-	TLS	3.0	3.0	11.1	9.4	0.4
1937	7.3	9.0	0.8	8.2	-	TLS	3.3	3.3	12.4	10.6	0.7
1938	6.0	7.0	0.6	6.4	-	TLS	0.4	0.4	7.4	6.5	0.8
1939	4.6	5.4	0.2	5.1	-	TLS	-	-	anb	anb	0.7
1946	2.5	2.7	-	TSM	-	TSM	-	-	anb	anb	0.2
1947	6.0	7.2	-	TSM	-	TSM	-	-	anb	anb	0.5
1948	7.6	8.2	-	TSM	-	TSM	-	-	anb	anb	1.0
1949	2.8	3.6	-	TSM	-	TSM	-	-	anb	anb	2.1
1950	8.1	10.3	-	TSM	-	TSM	-	-	anb	anb	2.4
1951	5.7	7.7	-	TSM	-	TSM	-	-	anb	anb	2.5
1952	2.1	3.0	-	TSM	-	TSM	-	-	anb	anb	0.9

Table 3-22

Imports: Sample & Totals ....cont'd.

£m

Year	Sample	TSM	MKSB	TLS	IB	BMC	XB	TOTB	TSMB	Bullion Sample	Via HK
1953	8.8	10.2	-	TSM	-	TSM	-	-	anb	anb	0.7
1954	8.1	9.0	-	TSM	-	TSM	-	-	anb	anb	0.5
1955	10.6	12.3	-	TSM	-	TSM	-	-	anb	anb	0.7
1956	10.5	12.5	-	TSM	-	TSM	-	-	anb	anb	0.9
1957	12.1	14.2	-	TSM	-	TSM	-	-	anb	anb	0.7
1958	15.4	18.5	-	TSM	-	TSM	-	-	anb	anb	0.7
1959	13.9	18.8	-	TSM	0.9	19.7	-	0.8	19.7	14.8	N
1960	15.0	22.3	-	TSM	2.5	24.7	-	2.5	24.7	17.4	N
1961	10.6	15.3	-	TSM	15.5	30.9	0.5	16.0	31.3	26.5	N
1962	9.9	13.3	-	TSM	9.9	23.2	-	9.9	23.2	19.8	N
1963	13.0	18.4	-	TSM	0.1	18.5	-	0.1	18.5	13.2	N
1964	15.8	24.6	-	TSM	-	TSM	-	-	anb	anb	N
1965	21.0	29.7	-	TSM	-	TSM	-	-	anb	anb	N
1966	23.6	33.8	-	TSM	-	TSM	-	-	anb	anb	N
1967	19.9	29.6	-	TSM	-	TSM	-	-	anb	anb	N
1968	21.3	34.3	-	TSM	-	TSM	-	-	anb	anb	N
1969	22.4	37.7	-	TSM	-	TSM	-	-	anb	anb	N

Fig.3-16 IMPORTS: SAMPLE & TSM

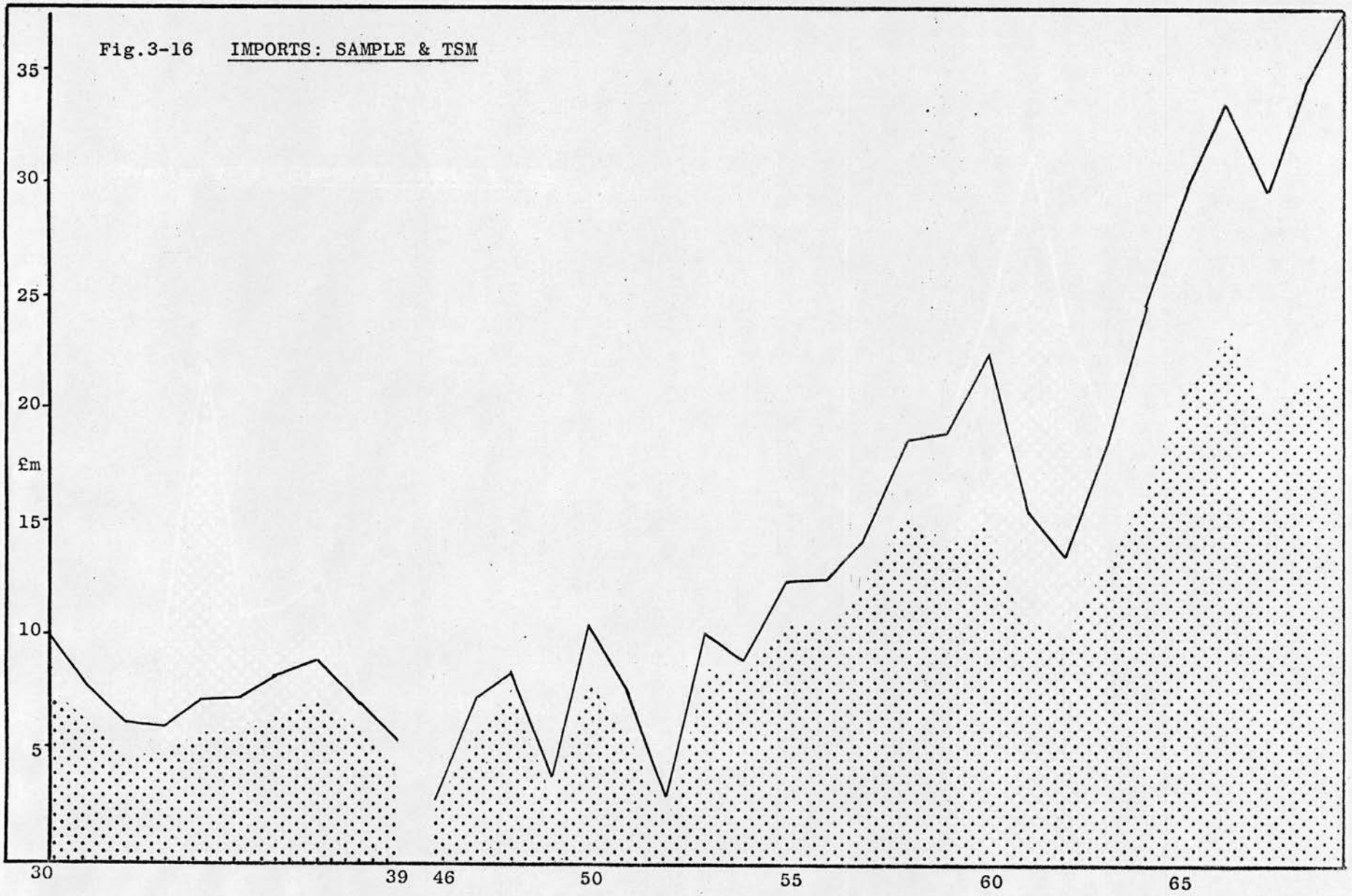


Fig.3-16 IMPORTS: SAMPLE & TSM

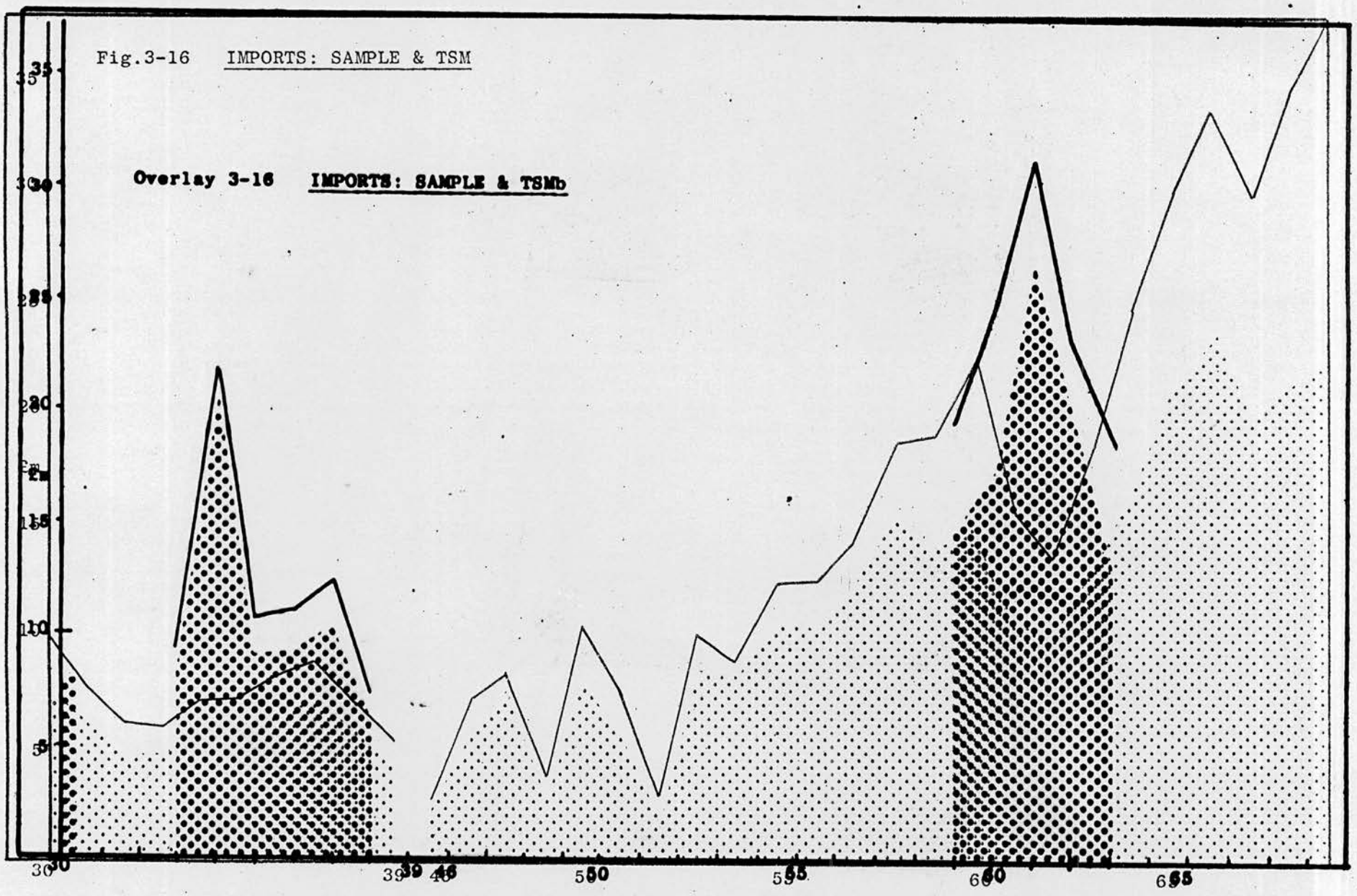


Table 3-23

Exports: Sample & Totals

£m

Year	Sample (PcQc)	THP	TDX	Bullion	Via HK	TEX
1930	7.1	8.6	8.7	0.1	2.1	10.9
1931	6.5	7.9	8.0	0.7	1.9	10.6
1932	6.6	7.8	7.9	0.5	2.5	10.5
1933	5.0	6.3	6.4	0.1	1.8	8.3
1934	5.3	6.5	6.6	-	1.2	7.8
1935	4.0	5.0	5.1	-	1.1	6.2
1936	4.2	5.8	5.8	-	0.8	6.6
1937	4.5	5.9	6.0	-	1.2	7.2
1938	2.2	4.1	4.1	-	1.5	5.6
1939	2.6	3.6	3.7	-	0.5	4.2
1946	4.8	7.8	7.9	-	1.3	9.2
1947	8.2	12.8	12.8	0.5	2.2	15.5
1948	5.0	8.6	8.7	-	3.1	11.8
1949	1.9	2.3	2.4	0.9	6.5	9.8
1950	3.3	3.6	3.6	-	10.5	14.1
1951	1.8	2.7	2.7	-	15.4	18.1
1952	4.3	4.5	4.6	-	5.1	9.7
1953	5.7	6.2	6.2	-	5.2	11.4
1954	5.9	6.8	6.9	-	3.2	10.1
1955	6.2	7.9	7.9	-	1.7	11.6
1956	8.0	10.7	10.8	N	1.2	12.0
1957	9.0	12.1	12.2	N	1.2	13.4
1958	24.1	26.6	27.2	N	1.0	28.2
1959	20.9	24.4	24.8	-	1.0	25.8
1960	26.4	31.4	32.1	N	N	32.1
1961	10.7	12.9	13.1	-	N	13.1
1962	7.1	8.4	8.6	-	N	8.6
1963	8.4	13.2	13.3	-	N	13.3
1964	11.7	17.7	17.8	N	N	17.8
1965	17.7	24.9	25.8	40.6	N	66.4
1966	18.7	32.0	33.5	13.3	N	46.8
1967	29.5	38.0	38.8	-	N	38.8
1968	17.1	28.5	29.1	26.9	N	56.0
1969	36.4	51.7	54.7	7.9	N	62.6

TDX: Total direct exports - Total Exports (United Kingdom + Imported Merchandise)
Via HK: Estimate of trade via Hong Kong - see Chapter 2
TEX: Total estimated exports - total of other columns, but excluding separate trade with Kuantung Peninsula & Manchuria
N : Negligible

Fig. 3-17 EXPORTS: SAMPLE & THP

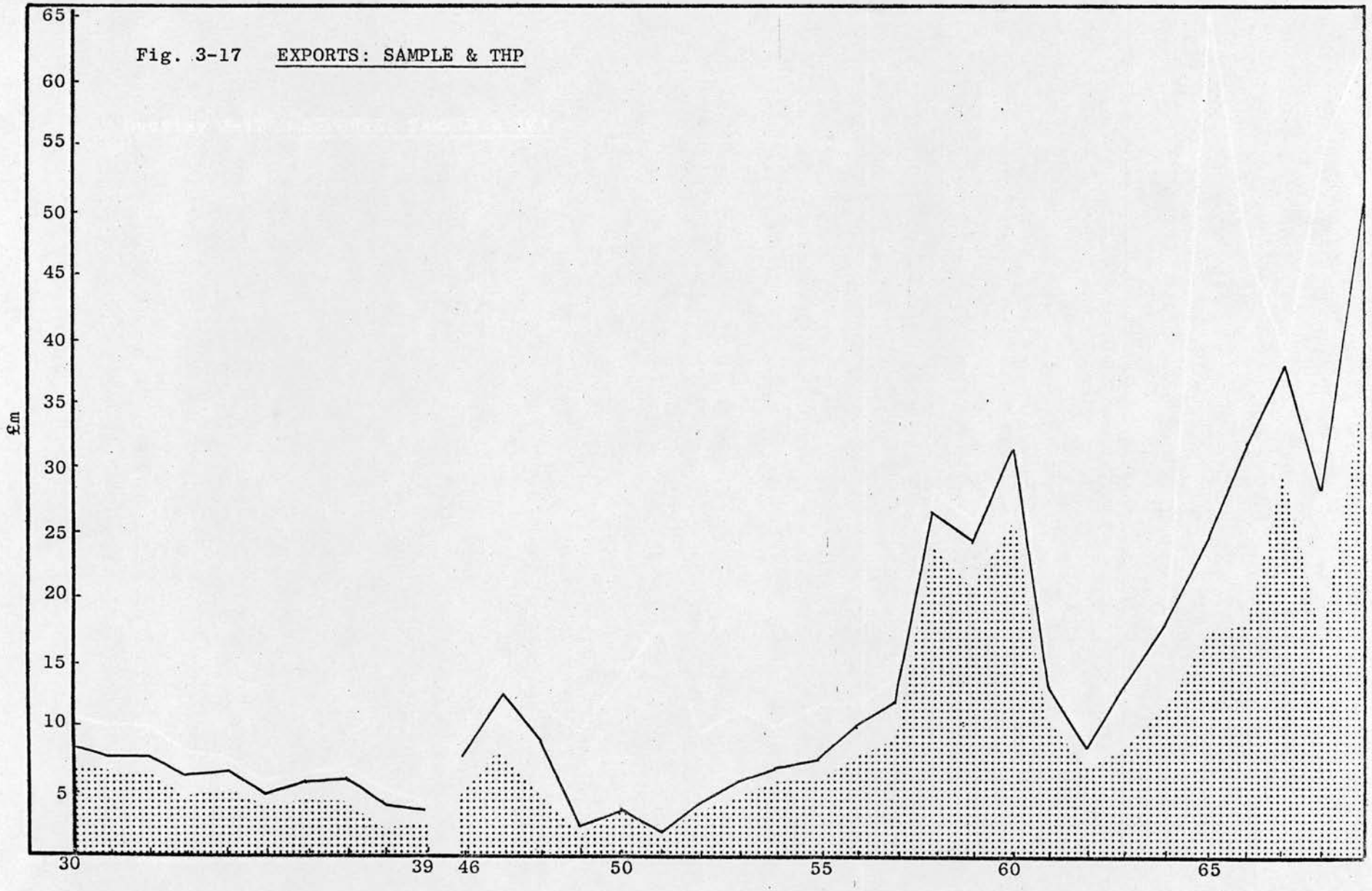
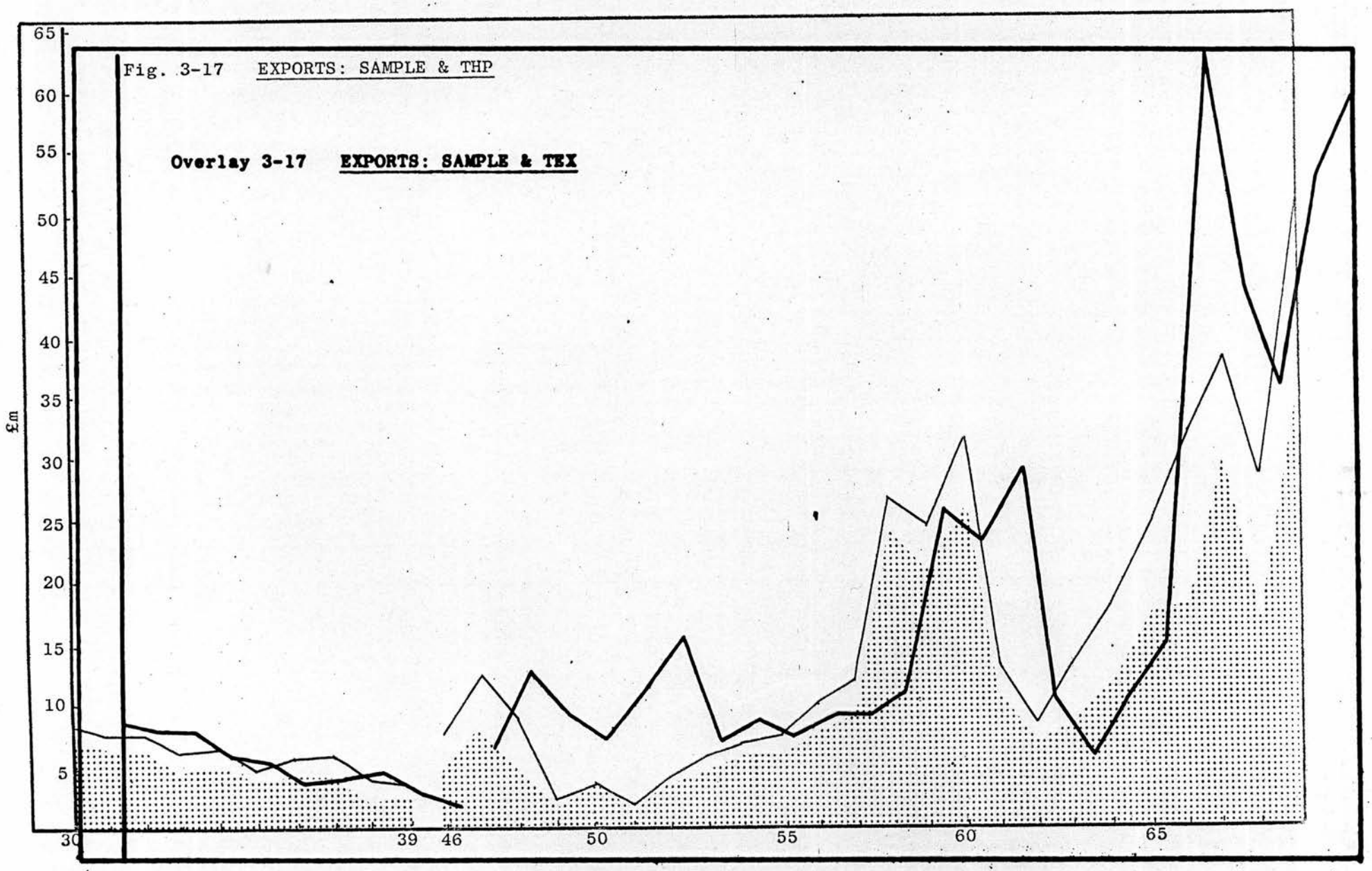


Fig. 3-17 EXPORTS: SAMPLE & THP

Overlay 3-17 EXPORTS: SAMPLE & TEX



that is, the UVI of the aggregate of commodities not directly covered is assumed to be the same as that of the commodities directly covered *in that section*, rather than the general aggregate of exports or imports. Commodities, in theory at least, could be further differentiated into divisions, but this is not feasible here because of changes in classification over the period.[47] Even at section level it is sometimes impossible to satisfactorily fit the different classification systems together; no exports, for instance, are ascribed to Section 4 prior to 1951. There is also the problem of low coverage. With the undifferentiated adjustment this is spread uniformly over the sample, but with the section-weighted index, each section becomes responsible for its own coverage. This is particularly devastating for exports Section 8 (Tables 3-4, 3-5; Fig.3-3). The contribution column (CON) in Table 3-5 shows what Section 8's sectional weight would have been had it been included in these indexes.[48] However, since coverage was so low, and contribution at times high, it was considered that the risk of unrepresentative commodities wildly distorting the index was unacceptably high. Consider, for instance, 1938. From Table 3-5 it can be seen that coverage is but 2 per cent, while contribution is 31 per cent (leaving 66 per cent of the trade not covered by the sample in that section). From Part C it will be seen that eleven commodities produce a sectional UVI of 39. In Table 3-24 we examine the effect on the section-weighted index (XS10) these eleven commodities (value £25,587 out of total exports of over £4 million) would have had had they been included in this index. The final index number, the SWUVI, would have been over 20 per cent higher at 27 against 22. Fig.3-18 shows that this is quite outside the range of the other export UVI's for that year. Thus including Section 8 would have produced markedly different SWUVI's. Regretfully, then, it was excluded and the (export) section weights are calculated as proportions of 'total exports of Home Produce less Section 8' (in Table 3-15x, TSX rather than THP). This is

---

[47] An attempt at arranging post-war Sino-British trade into SITC(R) divisions is made in my *Dissertation*, Vol.II.

[48] For imports, CON and SW are identical, but are shown separately for consistency.

Table 3-24

Effect on SWUVI* of including Section 8

SECTION	UVI	SECTIONAL WEIGHT		SWUVI	
		Exc.8	Inc.8**	Exc.8***	Inc.8
0	51	1.3	0.9	0.7	0.5
1	34	2.9	2.0	1.0	0.7
2	24	2.7	1.9	0.6	0.5
3	-	0	0	-	-
4	NI				
5	23	5.2	3.6	1.2	0.8
6ABTIS	24	41.1	28.6	10.2	6.9
7	18	45.6	31.7	8.3	5.7
8	39	-	30.5	-	11.9
9	38	1.2	0.8	0.4	0.3
			TOTAL	22.2	27.2

* XS10

** i.e., CON

*** This is a reduction to one decimal place of the more accurate calculations of Part C. This produces a slightly different result than would have been obtained by direct calculation from cols.2 & 3 here (22.2 rather than 22.0).

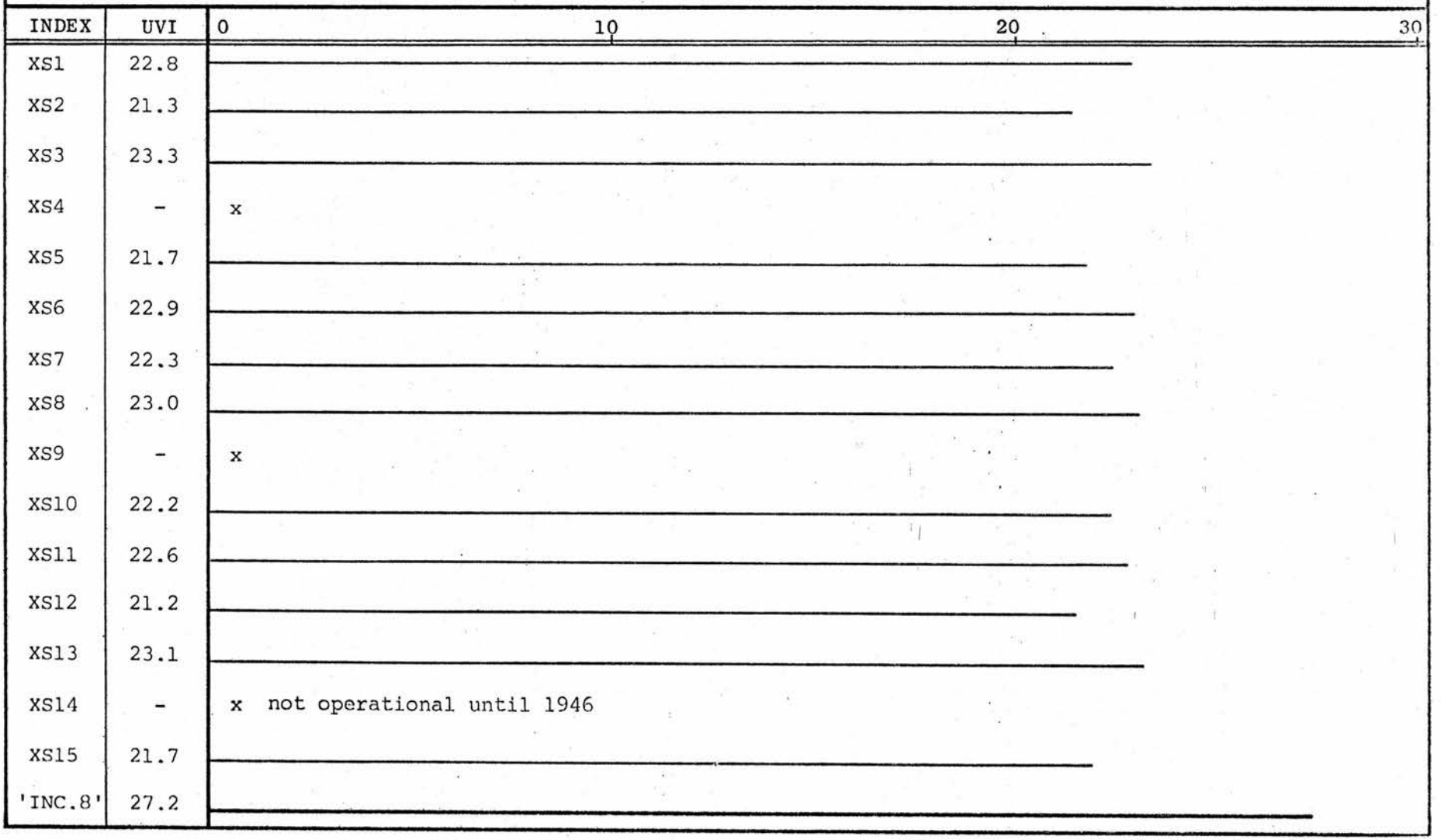
Table 3-28

Sectional Contribution: Imports (Bullion years)

(%)

Year	Sect.0	Sect.2	Sect.4	Sect.5	Sect.6	Sect. 1,3,7,8,9	Bullion
30	51	33	3	0.0	9	3	1
31-2	anb	anb	anb	anb	anb	anb	anb
33	32	19	2	0.0	7	2	38
34	17	11	1	0.0	4	1	67
35	29	23	4	0.0	9	1	33
36	34	22	4	0.0	12	1	27
37	30	27	3	0.0	12	1	27
38	47	25	5	0.0	14	2	6
39	anb	anb	anb	anb	anb	anb	anb
46-58	anb	anb	anb	anb	anb	anb	anb
59	16	55	1	4	17	2	4
60	17	50	4	2	14	3	10
61	7	24	1	2	14	1	51
62	6	28	1	4	16	2	43
63	12	53	2	5	23	4	1
64-9	anb	anb	anb	anb	anb	anb	anb

Fig. 3-18 EFFECT OF INCLUDING SECTION 8 IN SECTION-WEIGHTED INDEXES (1938)



regrettable for two reasons. Firstly, it makes matters more complicated, never a good thing; and secondly, it means that the section-weighted indexes are not strictly compatible with the other two sets. There are excluded sections in imports as well, but in a different way. Sections 1, 3, 7, 8 and 9 do not feature in the sample at all (whereas exports Section 8 did, of course) and so are automatically absent from all three sets. As Table 3-25 shows, this has but a slight effect on the representativeness of the sample. Even at their height, at the end of the sixties, they still only account for 6 per cent of (non-bullion) imports, and their average for the period is 2 per cent, and their contribution in the bullion years (i.e., CONB) is, of course, even less.

Longitudinal data for this weighting is presented as follows:-

Imports	Table 3-26	
	Fig. 3-19	Sectional coverage (MS5, MS6)
	Overlay 3-19	
	Table 3-27	Sectional contribution (excluding bullion)
	Fig. 3-20	(MS5)
	Table 3-28	Sectional contribution (including bullion)
	Overlay 3-20	(MS6)

Since bullion is considered a *de facto* section, its inclusion does not affect the coverage of the other sections, but it does affect (and dramatically) their contributions. Sectional PNC has already been given in Table 3-6 and Fig.3-4.

Exports (XS10)	Table 3-29	
	Fig. 3-21	Sectional coverage
	Overlay 3-21	
	Table 3-30	Contribution by
	Fig. 3-22	Sections

Table 3-25

Contribution of Absent Import Sections (1,3,7,8,9)

Year	VAL	TSM	TSMb	CON	CONB	AAV
1930	323,252	9,888,819	9,988,603	3	3	
1931	223,707	7,773,074	anb	3	anb	
1932	166,222	6,163,025	anb	3	anb	
1933	150,298	5,866,816	9,529,858	3	2	
1934	170,749	7,147,010	21,893,449	2	1	3
1935	138,892	7,138,318	10,689,238	2	1	
1936	106,374	8,133,374	11,084,878	1	1	
1937	158,743	9,022,818	12,363,142	2	1	
1938	134,692	6,991,388	7,428,065	2	2	
1939	86,525	5,360,213	anb	2	anb	2
1946	33,334	2,696,823	anb	1	anb	
1947	121,484	7,172,090	anb	2	anb	
1948	72,130	8,201,085	anb	1	anb	
1949	47,051	3,622,320	anb	1	anb	
1950	214,076	10,324,328	anb	2	anb	1
1951	59,290	7,669,804	anb	1	anb	
1952	55,160	3,011,897	anb	2	anb	
1953	26,435	10,222,182	anb	0.0	anb	
1954	46,626	8,958,694	anb	1	anb	
1955	31,500	12,302,063	anb	0.0	anb	1
1956	222,469	12,549,349	anb	2	anb	
1957	104,995	14,224,536	anb	1	anb	
1958	232,010	18,540,937	anb	1	anb	
1959	491,689	18,823,110	19,687,907	3	2	
1960	714,569	22,260,373	24,719,428	3	3	2
1961	241,072	15,342,357	31,310,126	2	1	
1962	422,749	13,296,601	23,168,852	3	2	
1963	764,090	18,385,117	18,513,389	4	4	
1964	1,131,912	24,599,204	anb	5	anb	
1965	1,409,536	29,698,326	anb	5	anb	4
1966	1,702,341	33,787,116	anb	5	anb	
1967	1,890,121	29,625,713	anb	6	anb	
1968	2,182,114	34,273,767	anb	6	anb	
1969	2,000,029	37,719,005	anb	5	anb	6

AVERAGE ANNUAL VALUE: 2

Table 3-26

Imports: Sectional Coverage

Year	Section 0	Section 2	Section 4	Section 5	Section 6
1930	94	80	66	0	31
1931	92	86	52	0	21
1932	91	84	71	0	21
1933	93	85	89	0	37
1934	92	86	99	0	35
1935	91	85	80	0	46
1936	90	82	99	0	43
1937	92	81	100	0	52
1938	96	86	100	0	63
1939	93	87	97	0	70
1946	97	93	100	0	170*
1947	90	93	78	0	61
1948	96	92	97	15	14
1949	74	92	93	37	26
1950	80	82	99	58	71
1951	77	86	105*	27	28
1952	78	50	100	53	36
1953	86	87	90	69	64
1954	97	91	102*	50	49
1955	98	90	100	30	68
1956	94	85	100	64	67
1957	98	80	100	88	76
1958	88	86	86	68	80
1959	66	80	100	56	75
1960	67	78	100	52	37
1961	85	86	100	44	36
1962	83	88	100	67	55
1963	90	86	100	40	44
1964	76	85	95	40	28
1965	79	88	99	43	33
1966	80	89	99	43	29
1967	82	91	99	41	26
1968	86	88	88	54	23
1969	85	89	98	47	17

*See Table 3-15, Note 1; read here as '100'.

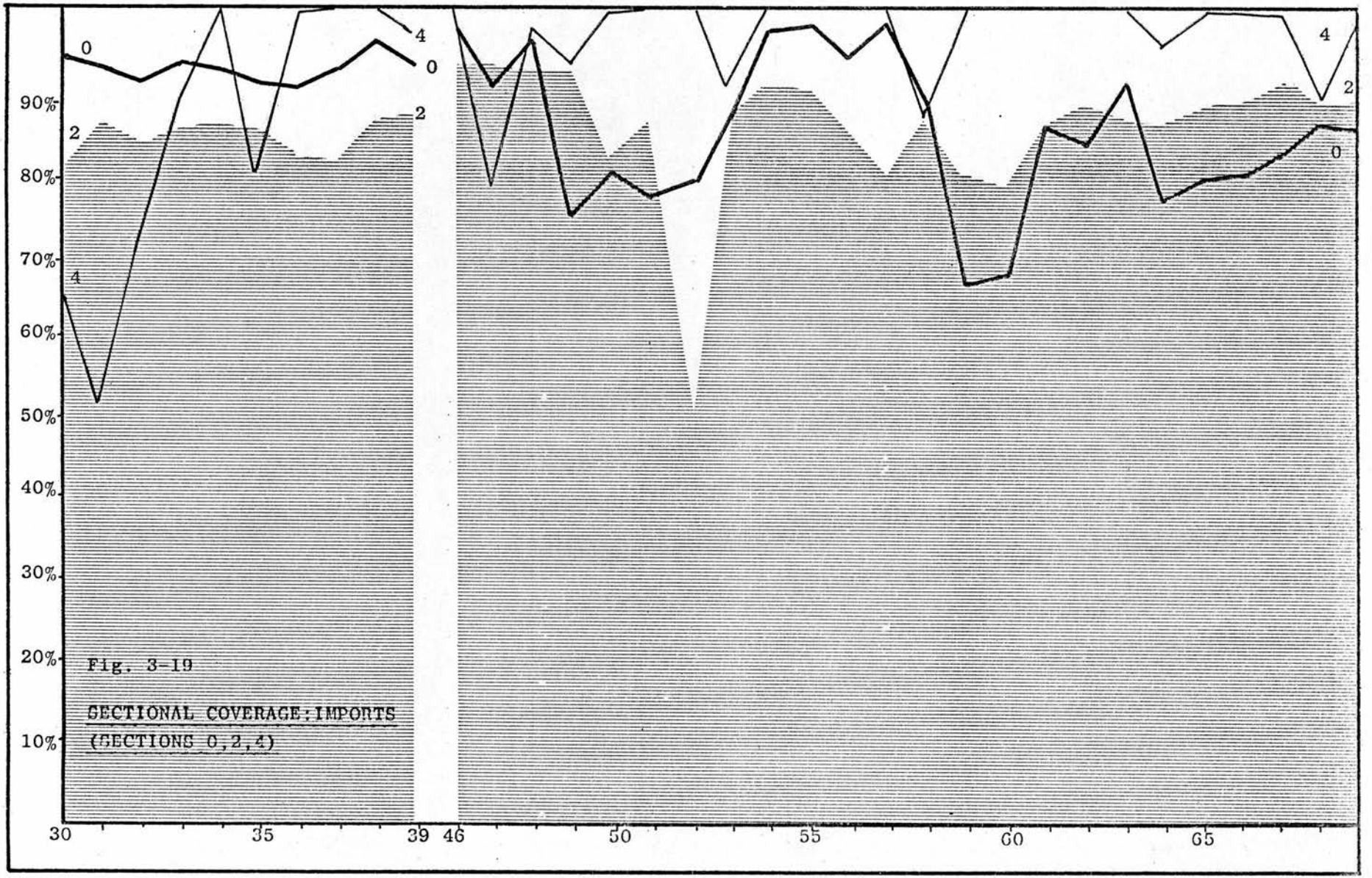


Fig. 3-19

SECTIONAL COVERAGE: IMPORTS
(SECTIONS 0,2,4)

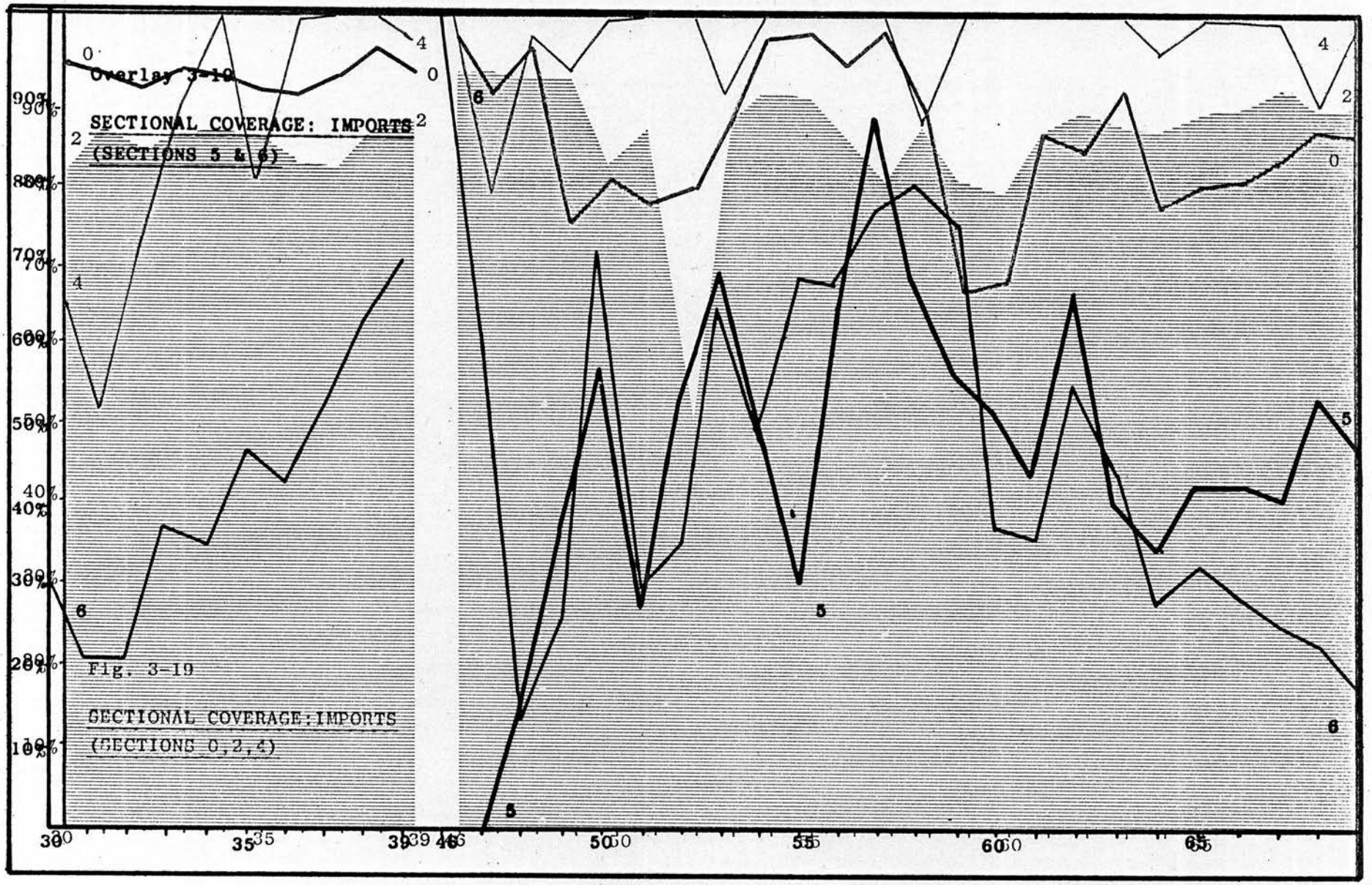


Fig. 3-19

SECTIONAL COVERAGE: IMPORTS
(SECTIONS 0,2,4)

Table 3-27

Sectional Contribution: Imports (excluding bullion)

(%)

Year	Section 0	Section 2	Section 4	Section 5	Section 6	Section 1,3,7,8,9
1930	51	33	3	0.0	9	3
1931	58	25	4	0.0	11	3
1932	59	24	4	0.0	11	3
1933	51	31	3	0.0	12	3
1934	51	33	2	0.0	11	2
1935	43	35	6	0.0	14	2
1936	46	30	6	0.0	16	1
1937	41	36	5	0.0	16	2
1938	50	27	6	0.0	15	2
1939	49	23	6	1	20	2
1946	8	51	35	4	1	1
1947	15	45	36	2	1	2
1948	43	30	24	1	1	1
1949	61	17	18	0.0	3	1
1950	69	16	5	6	2	2
1951	45	40	2	5	7	1
1952	69	18	3	0.0	7	2
1953	47	31	18	1	3	0.0
1954	39	38	12	4	7	1
1955	28	47	8	7	10	0.0
1956	24	48	9	5	13	2
1957	31	39	5	4	21	1
1958	38	28	4	6	23	1
1959	17	58	1	4	17	3
1960	19	55	4	2	16	3
1961	14	49	3	4	28	2
1962	11	49	2	7	28	3
1963	12	53	2	5	23	4
1964	7	58	2	5	25	5
1965	15	52	7	6	18	5
1966	19	43	10	7	17	5
1967	20	44	5	8	20	6
1968	22	39	2	7	27	6
1969	18	41	1	8	29	5

Fig.3-20.SECTIONAL CONTRIBUTION: IMPORTS (excluding bullion)

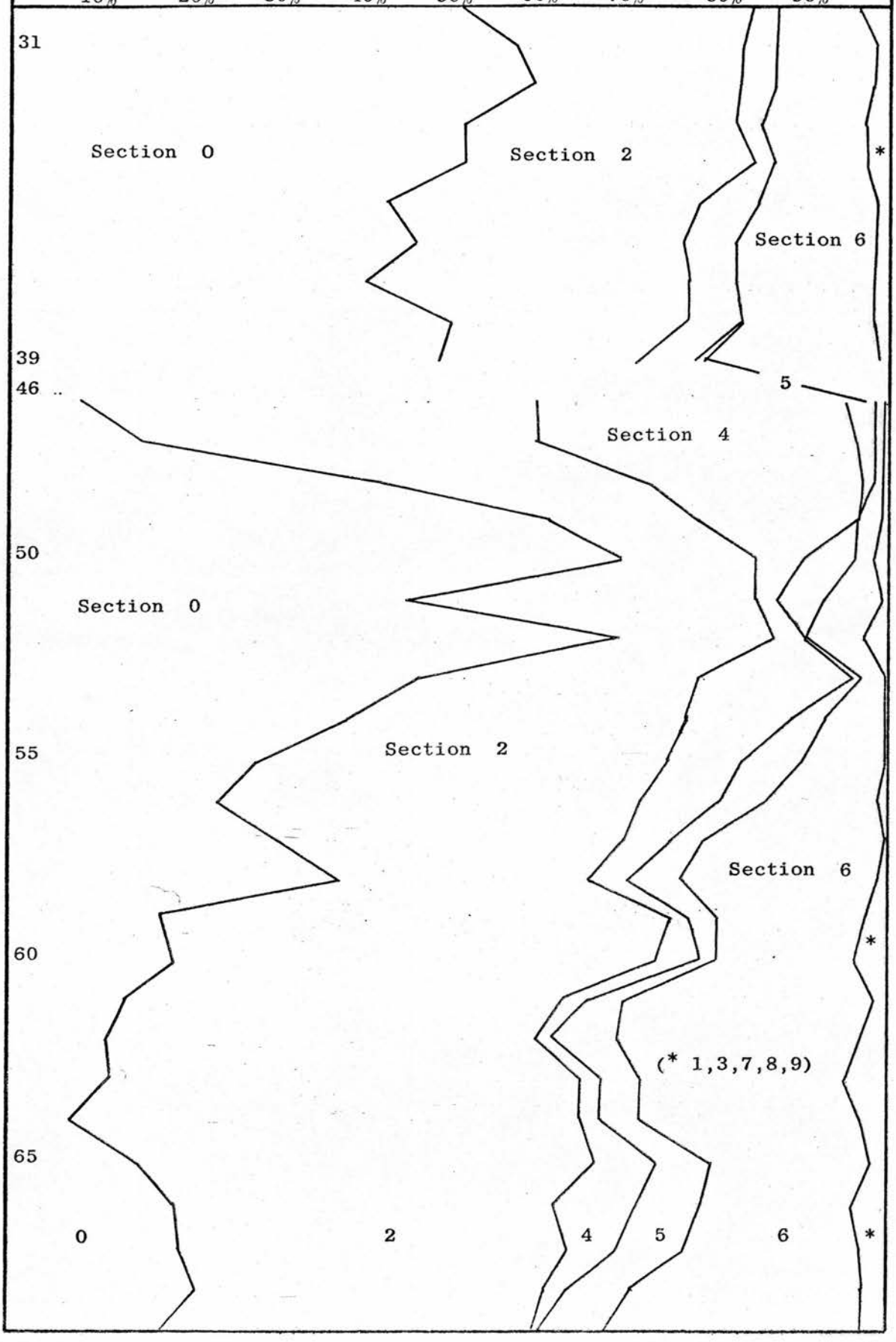


Fig 3-20 SECTIONAL CONTRIBUTION: IMPORTS (excluding bullion)

Table 3-29

Exports: Sectional Coverage

Year	Sect. 0	Sect. 1	Sect. 2	Sect. 3	Sect. 4	Sect. 5	Sect. 6	Sect. 7	Sect. 8**	Sect. 9
1930	60	100	46	100	NI	72	88	74	37	98
1931	53	100	65	100	NI	66	89	69	40	99
1932	55	100	70	100	NI	64	89	82	35	100
1933	65	100	81	100	NI	65	87	74	25	99
1934	72	100	92	100	NI	62	88	79	22	99
1935	55	100	94	0	NI	56	85	81	23	98
1936	53	100	98	0	NI	64	87	70	8	100
1937	39	100	98	0	NI	71	89	71	9	97
1938	47	100	77	0	NI	57	87	72	2	99
1939	35	95	96	0	NI	78	82	81	7	100
1946	2	50	94	0	NI	57	79	67	2	100
1947	0	16	97	0	NI	47	85	67	1	100
1948	0	5	96	0	NI	44	78	71	0	99
1949	0	2	90	0	NI	75	95	84	0	100
1950	0	15	98	0	NI	67	102*	76	0	0
1951	0	0	100	0	0	32	69	71	34	0
1952	0	26	100	0	100	95	80	89	72	0
1953	0	66	100	0	100	79	85	86	17	0
1954	100	58	100	0	100	69	92	74	55	0
1955	42	0	99	0	0	45	33	46	4	0
1956	0	0	100	0	0	44	58	64	0.0	0
1957	98	0	100	0	0	55	66	54	0	0
1958	76	0	99	0	0	60	97	87	1	0
1959	2	0	98	37	0	60	92	79	0	0
1960	2	0	98	25	0	63	85	86	0	0
1961	69	0	99	99	0	69	89	55	0	0
1962	14	0	99	90	0	75	95	56	0	0
1963	0	90	99	0	0	60	96	26	4	100
1964	0	0	97	97	100	40	97	45	8	100
1965	0	0	90	0	100	54	97	65	4	100
1966	21	0	86	0	100	52	96	45	2	100
1967	38	0	99	0	100	44	91	76	2	100
1968	0	0	98	0	100	19	72	33	0	100
1969	0	0	99	0	100	18	75	35	44	100

NI: See Table 3-15, Note 1; *Read here as '100'.
**: Section 8 is excluded from Sectional Indexes (XS6 - 10).

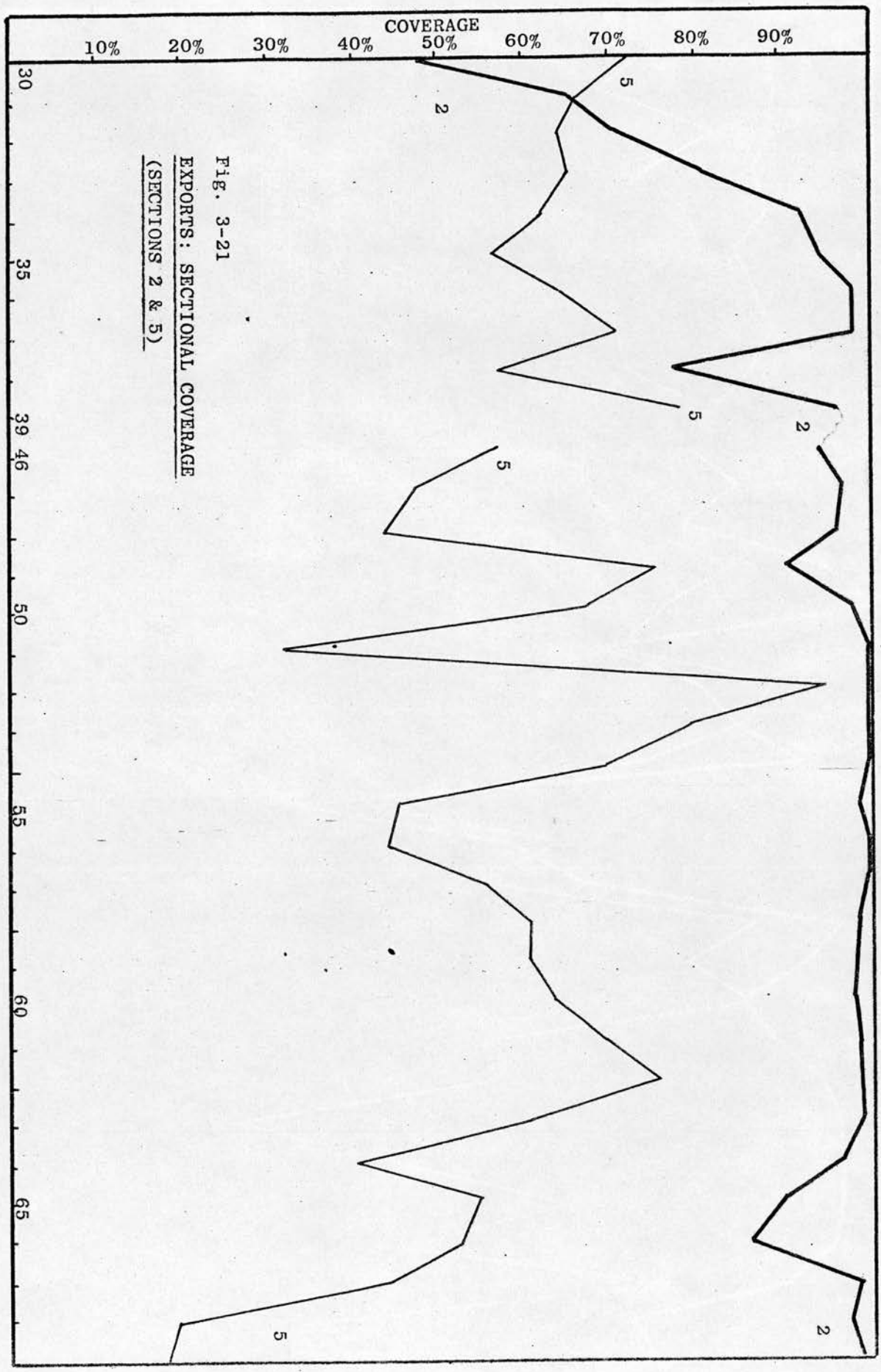
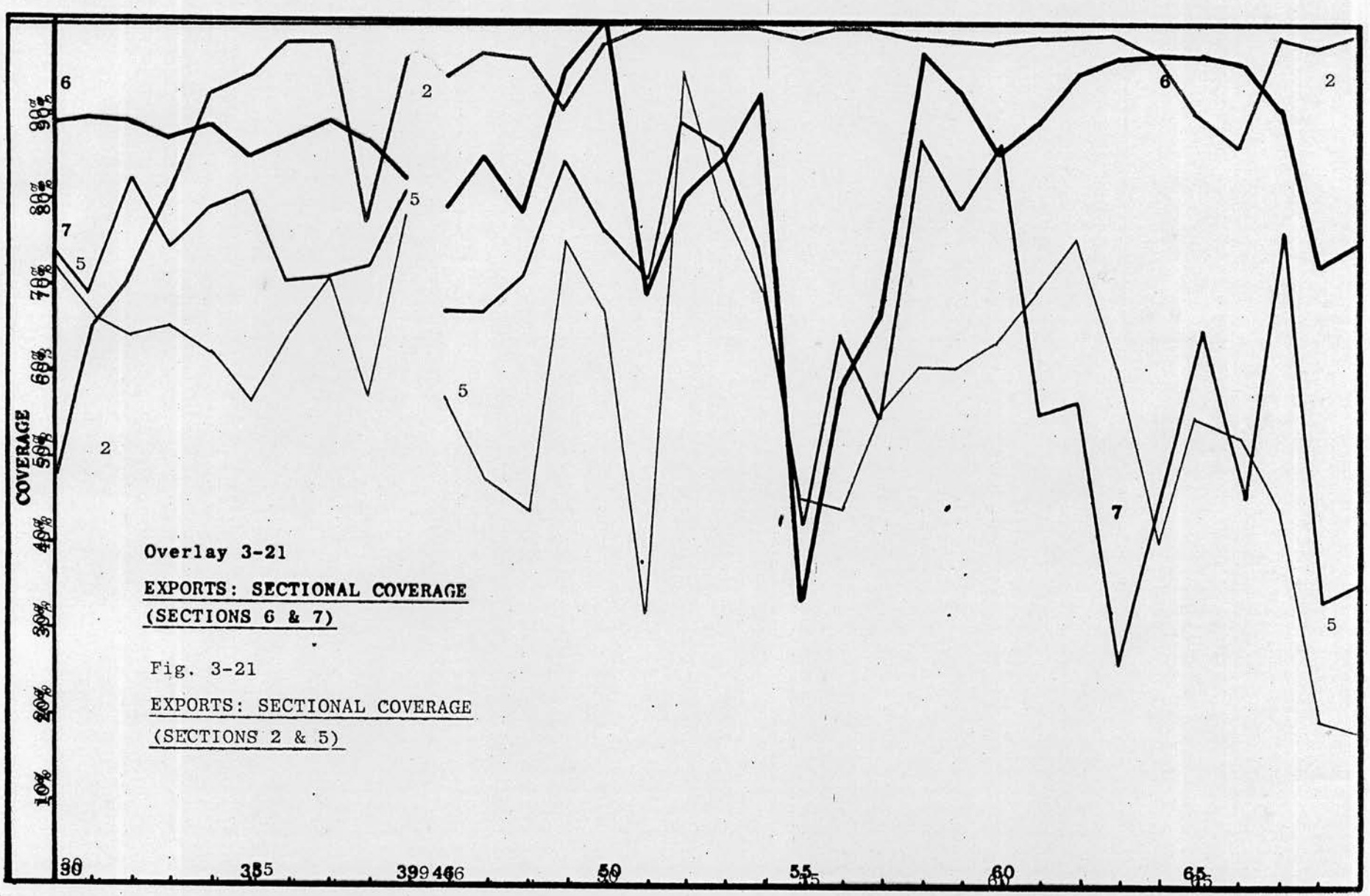


Fig. 3-21

EXPORTS: SECTIONAL COVERAGE

(SECTIONS 2 & 5)



Overlay 3-21

EXPORTS: SECTIONAL COVERAGE (SECTIONS 6 & 7)

Fig. 3-21

EXPORTS: SECTIONAL COVERAGE (SECTIONS 2 & 5)

Table 3-30

Exports: Contribution by Sections

%

Year	Sect. 0	Sect. 1	Sect. 2	Sect. 3	Sect. 4	Sect. 5	Sect. 6	Sect. 7	Sect. 8	Sect. 9
1930	1	12	1	0.0	NI	9	53	20	3	1
1931	1	10	1	0.0	NI	11	58	17	2	1
1932	1	4	1	0.0	NI	7	64	20	3	1
1933	1	3	3	0.0	NI	9	58	21	5	1
1934	1	2	5	0.0	NI	7	56	23	5	1
1935	1	3	8	0	NI	9	44	31	5	1
1936	1	2	16	0	NI	8	38	23	13	1
1937	1	1	15	0	NI	8	43	20	11	1
1938	1	2	2	0	NI	4	29	32	31	1
1939	1	3	9	0	NI	11	36	29	12	1
1946	0.0	1	12	0	NI	13	34	22	18	0.0
1947	0.0	0.0	7	0	NI	11	38	30	14	0.0
1948	0.0	0.0	11	0	NI	8	19	40	22	0.0
1949	0.0	0.0	19	0	NI	13	25	37	5	0.0
1950	0.0	0.0	10	0	NI	7	55	28	0.0	0
1951	0.0	0.0	15	0.0	0.0	13	24	40	6	0
1952	0.0	0.0	16	0.0	1	61	7	14	1	0
1953	0.0	0.0	58	0	0.0	14	10	17	1	0
1954	0.0	0.0	53	0.0	0.0	22	6	16	4	0
1955	0.0	0	67	0.0	0	23	6	3	2	0
1956	0.0	0	48	0.0	0	12	28	9	3	0
1957	11	0	35	0.0	0	23	16	10	5	0
1958	1	0	25	0.0	0	11	47	15	2	0
1959	0.0	0	20	0.0	0	15	54	10	1	0.0
1960	0.0	0	17	0.0	0	8	61	12	2	0.0
1961	1	0	42	1	0	13	25	16	2	1
1962	0.0	0	29	0.0	0	14	38	16	2	1
1963	0.0	0.0	18	0.0	0.0	10	31	37	3	1
1964	0.0	0.0	14	0.0	0.0	10	32	36	8	1
1965	0.0	0.0	4	0.0	0.0	13	36	39	8	0.0
1966	0.0	0.0	7	0.0	0.0	8	29	46	10	0.0
1967	0.0	0.0	17	0.0	0.0	11	40	26	6	0.0
1968	0.0	0.0	6	0.0	0.0	12	67	10	4	0.0
1969	0.0	0.0	8	0.0	0.0	8	78	5	2	0.0

0.0: <0.5
0 : nil
NI : see Table 3-15, Note 1

Fig.3-22. EXPORTS: CONTRIBUTION BY SECTIONS

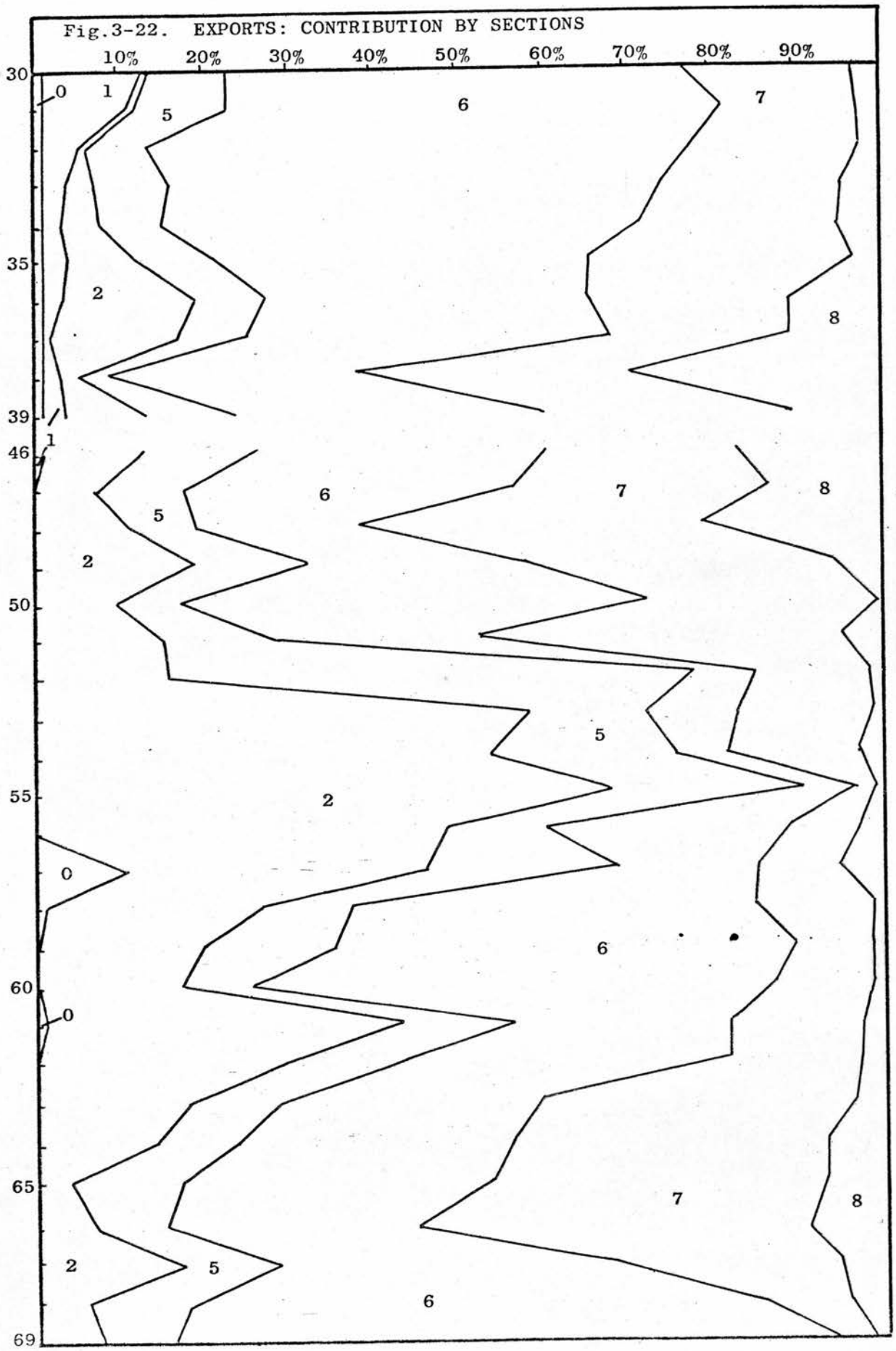


Fig 3-22. EXPORTS: CONTRIBUTION BY SECTIONS

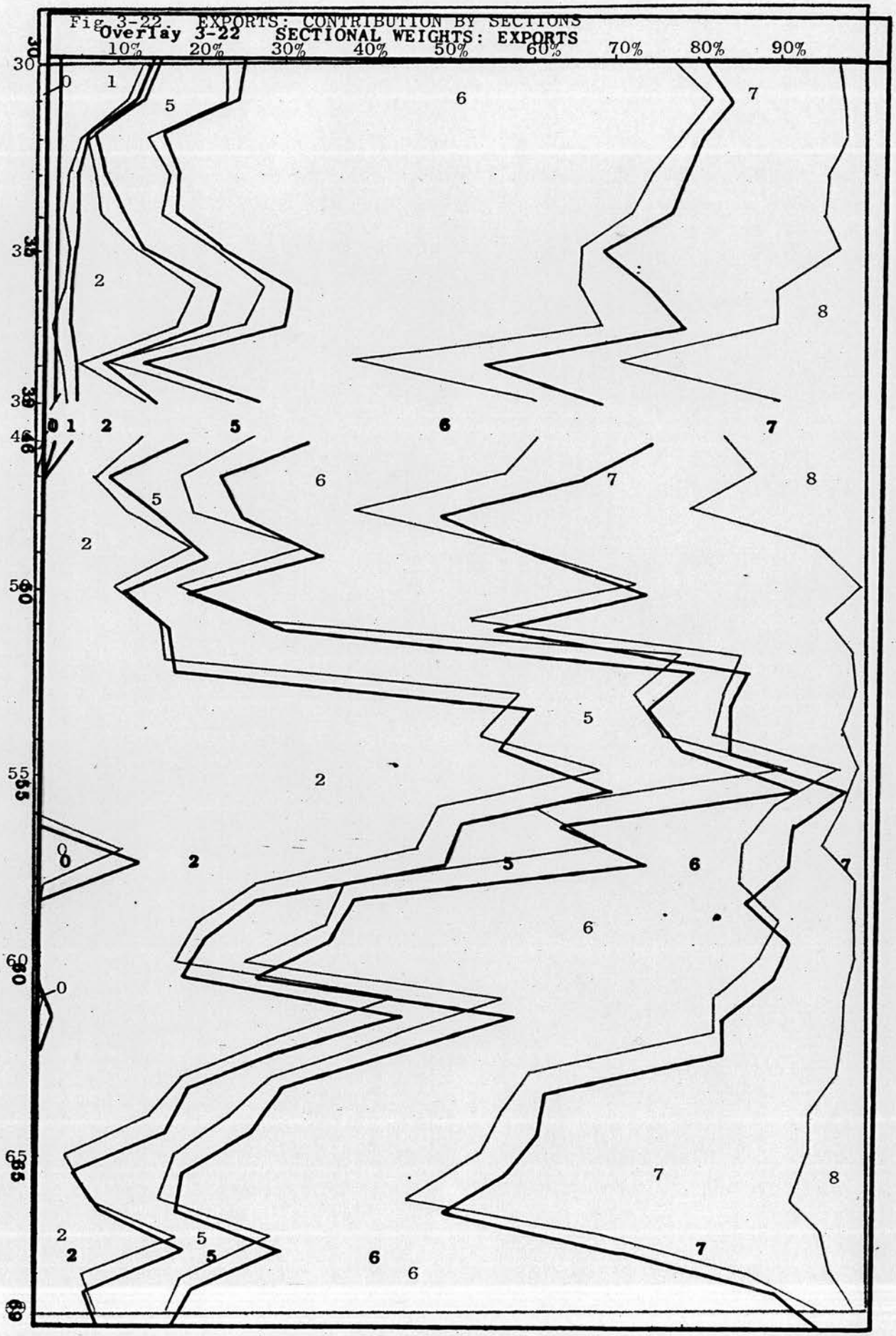


Table 3-31

Exports: Sectional Weights

Year	Sect. 0	Sect. 1	Sect. 2	Sect. 3	Sect. 4	Sect. 5	Sect. 6	Sect. 7	Sect. 9
1930	1	12	1	0.0	NI	10	54	21	1
1931	1	10	1	0.0	NI	11	59	17	1
1932	1	4	1	0.0	NI	8	65	20	1
1933	1	3	3	0.0	NI	9	61	22	1
1934	1	3	5	0.0	NI	7	59	24	1
1935	1	3	8	0	NI	9	46	32	1
1936	1	2	18	0	NI	9	43	27	1
1937	1	2	17	0	NI	9	48	22	1
1938	1	3	3	0	NI	5	41	46	1
1939	1	3	10	0	NI	12	41	32	1
1946	1	2	14	0	ni	15	41	27	0.0
1947	0.0	0.0	8	0	NI	13	44	35	0.0
1948	0.0	0.0	14	0	NI	10	24	51	0.0
1949	0.0	0.0	20	0	NI	14	26	39	0.0
1950	0.0	0.0	10	0	NI	7	55	28	0
1951	0.0	0.0	15	0.0	0.0	14	25	46	0
1952	0.0	0.0	16	0.0	1	62	7	14	0
1953	0.0	0.0	59	0	0.0	14	10	17	0
1954	0.0	0.0	55	0.0	0.0	22	6	17	0
1955	0.0	0	68	0.0	0	23	6	3	0
1956	0.0	0	50	0.0	0	12	29	9	0
1957	12	0	37	0.0	0	24	17	10	0
1958	0.0	0	26	0.0	0	12	47	15	0
1959	0.0	0	20	0.0	0	15	55	10	0.0
1960	0.0	0	17	0.0	0	9	62	13	0.0
1961	1	0	43	1	0	13	25	17	1
1962	0.0	0	29	0.0	0	14	39	16	1
1963	0.0	0.0	18	0.0	0.0	11	32	38	1
1964	0.0	0.0	15	0.0	0.0	11	34	39	1
1965	0.0	0.0	4	0.0	0.0	14	39	42	0.0
1966	0.0	0.0	8	0.0	0.0	9	32	51	0.0
1967	0.0	0.0	18	0.0	0.0	11	42	27	0.0
1968	0.0	0.0	6	0.0	0.0	13	70	11	0.0
1969	0.0	0.0	8	0.0	0.0	8	79	5	0.0

0.0: <0.5 Sections 0,1,2,5,6 & 7 are charted on overlay 3-23.
0 : nil
NI : see Table 3-15,Note 1.
Section 8 is excluded from sectional indexes.

Exports (XS10) cont'd.	Table 3-31	Sectional weight
	Overlay 3-22	

Although Section 8 contributes to total exports (and hence is shown in Table 3-30 and Fig.3-22), it is excluded from the sectional weighted indexes and so does not appear in Table 3-31. The difference between contribution and sectional weight for the important sections (Sections 3, 4 and 9 are omitted for clarity) is shown by comparing Overlay 3-22 with Fig. 3-22.

Again, PNC has been given previously, in Table 3-4 and Fig.3-3.

The dichotomous adjustment largely avoids the problem of uneven coverage by dividing commodities into 'raw materials' (Sections 0 to 4) and 'manufactures' (Sections 5 to 9).[49] By doing this both parts have a reasonable coverage in all years.[50] The synopses for the dichotomies are:-

Imports	Table 3-32	Value and samples (MS8 and MS9)
	Fig. 3-23	Value and excluding bullion sample (MS8)
	Fig. 3-24	Value and including bullion sample (MS9)
	Table 3-33	Contribution,Coverage and PNC (MS8,MS9)
	Overlay 3-23	Contribution,Coverage and PNC (MS8)
	Overlay 3-24	Contribution,Coverage and PNC (MS9)

---

[49] Manufactures are usually considered as Sections 5 to 8. Section 9, in Sino-British trade at least, is virtually all 'postal packages' whose value is arbitrarily fixed by Customs (see Devons, *An Introduction to British Trade Statistics* (Cambridge, 1956), p.143, n.3). It is, however, very small in value, when reported at all, and so for convenience it has been included as a manufacture.

[50] Not entirely though; coverage for the imports manufactures dichotomy is low because of the problems of finding suitable commodities for the sample.

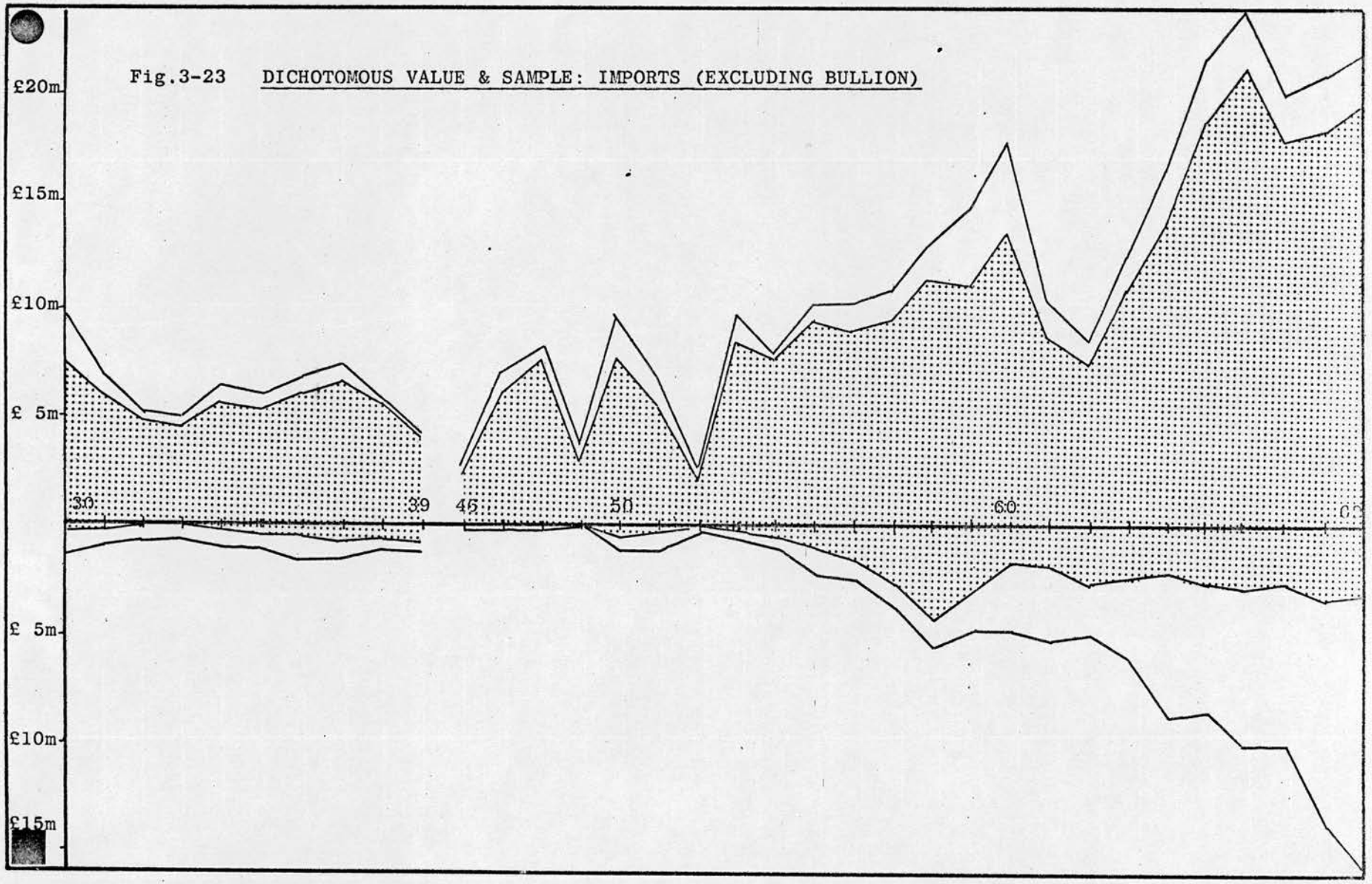
Table 3-32

Import Dichotomies: Value & Sample

£m

Year	Σ(0-4)		Σ(5-9)		Σ(5-9,b)		Bullion
	VAL	PcQc	VAL	PcQc	VAL	PcQc	
1930	8.7	7.5	1.2	0.3	1.3	0.4	0.1
1931	6.7	5.9	1.1	0.2	1.1	0.2	-
1932	5.3	4.7	0.8	0.1	0.8	0.1	-
1933	5.0	4.5	0.8	0.3	4.5	3.9	3.7
1934	6.2	5.5	1.0	0.3	15.7	15.0	14.7
1935	6.0	5.3	1.1	0.5	4.7	4.0	3.6
1936	6.7	5.9	1.5	0.6	4.4	3.5	3.0
1937	7.4	6.5	1.6	0.8	5.0	4.1	3.3
1938	5.8	5.4	1.2	0.7	1.6	1.1	0.4
1939	4.2	3.8	1.2	0.7	1.2	0.7	-
1946	2.5	2.4	0.2	0.01	0.2	0.01	-
1947	6.8	5.9	0.3	0.06	0.3	0.06	-
1948	8.0	7.6	0.2	0.02	0.2	0.02	-
1949	3.5	2.8	0.1	0.03	0.1	0.03	-
1950	9.3	7.6	1.0	0.5	1.0	0.5	-
1951	6.7	5.4	1.0	0.3	1.0	0.3	-
1952	2.7	2.0	0.3	0.1	0.3	0.1	-
1953	9.7	8.7	0.5	0.3	0.5	0.3	-
1954	7.9	7.5	1.1	0.5	1.1	0.5	-
1955	10.2	9.5	2.1	1.1	2.1	1.1	-
1956	10.1	9.0	2.4	1.5	2.4	1.5	-
1957	10.6	9.4	3.6	2.7	3.6	2.7	-
1958	12.9	11.2	5.6	4.2	5.6	4.2	-
1959	14.3	11.0	4.6	2.9	5.4	3.8	0.9
1960	17.4	13.4	4.8	1.6	7.3	4.1	2.5
1961	10.1	8.7	5.2	1.9	21.2	17.8	16.0
1962	8.3	7.3	5.0	2.7	14.9	12.5	9.9
1963	12.4	10.8	6.0	2.3	6.2	2.4	0.1
1964	16.1	13.5	8.5	2.2	8.5	2.2	-
1965	21.3	18.5	8.4	2.5	8.4	2.5	-
1966	23.8	20.9	10.0	2.8	10.0	2.8	-
1967	19.6	17.5	10.0	2.5	10.0	2.5	-
1968	20.6	17.9	13.7	3.5	13.7	3.5	-
1969	21.8	19.2	15.9	3.2	15.9	3.2	-

Fig.3-23 DICHOTOMOUS VALUE & SAMPLE: IMPORTS (EXCLUDING BULLION)



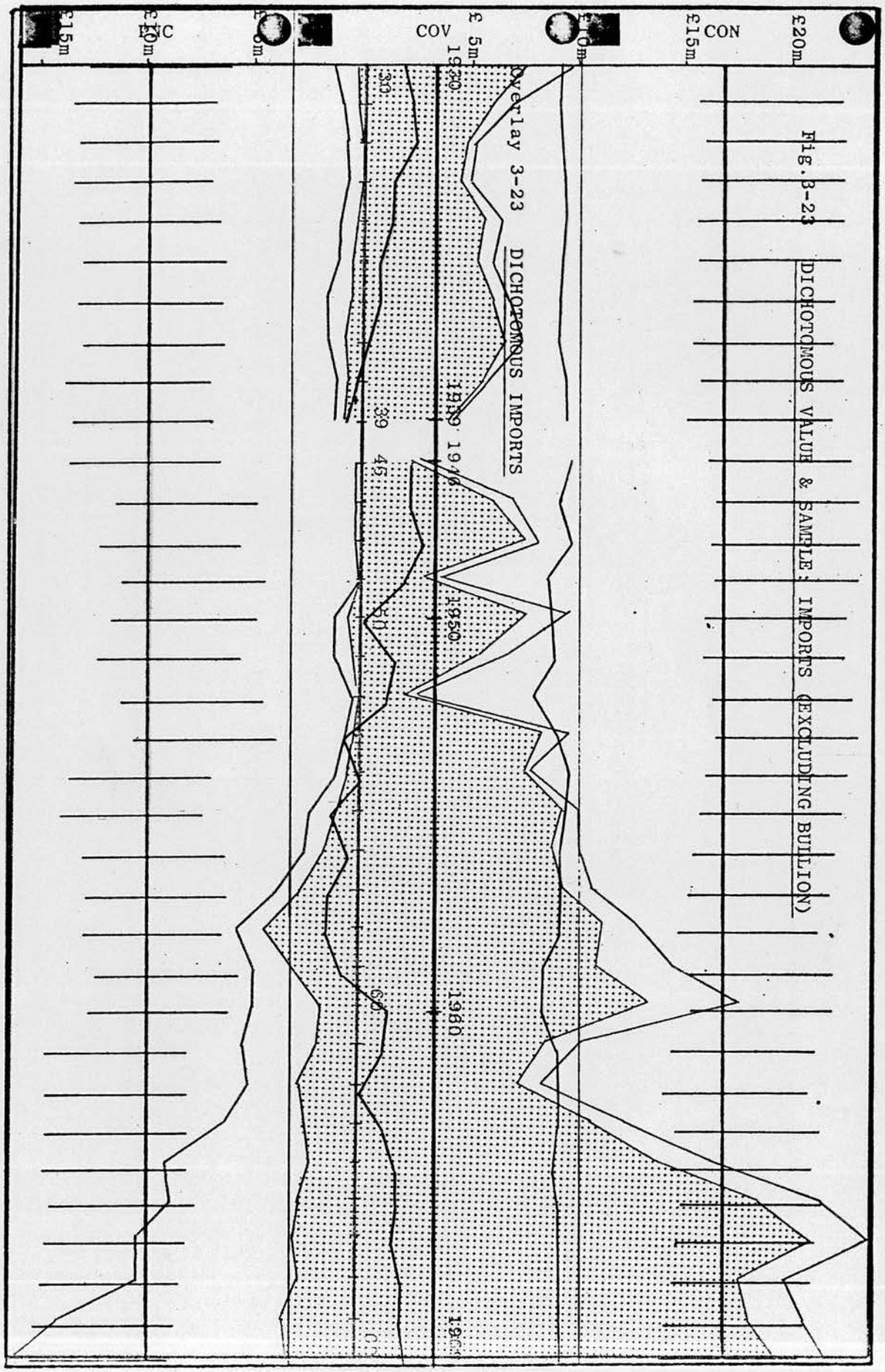


Fig. 3-23 DICHOTOMOUS VALUE & SAMPLE IMPORTS (EXCLUDING BULLION)

Fig.3-24. DICHOTOMOUS VALUE & SAMPLE: IMPORTS (INCLUDING BULLION)

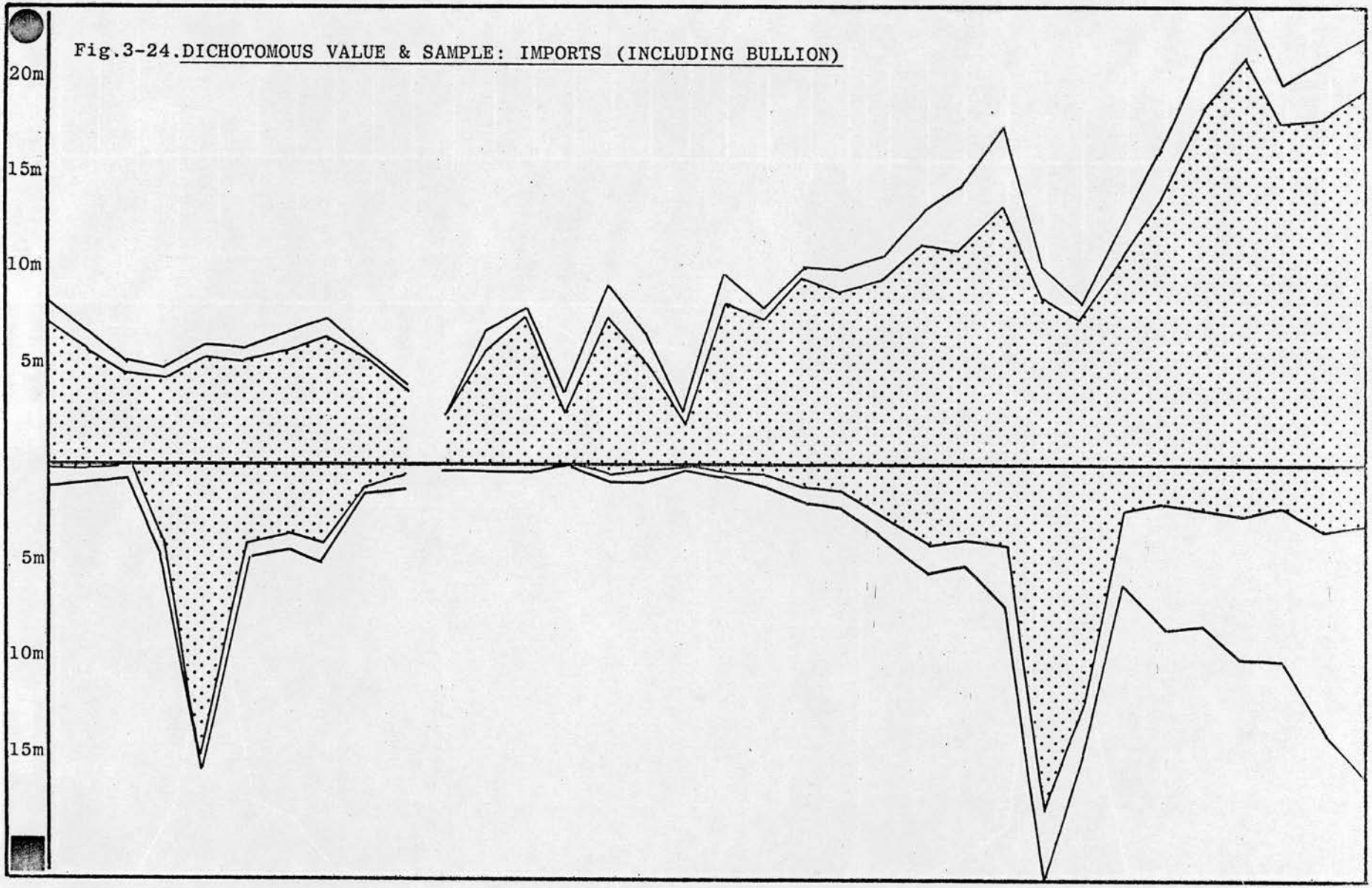


Fig.3-24.DICHOTOMOUS VALUE & SAMPLE: IMPORTS (INCLUDING BULLION)

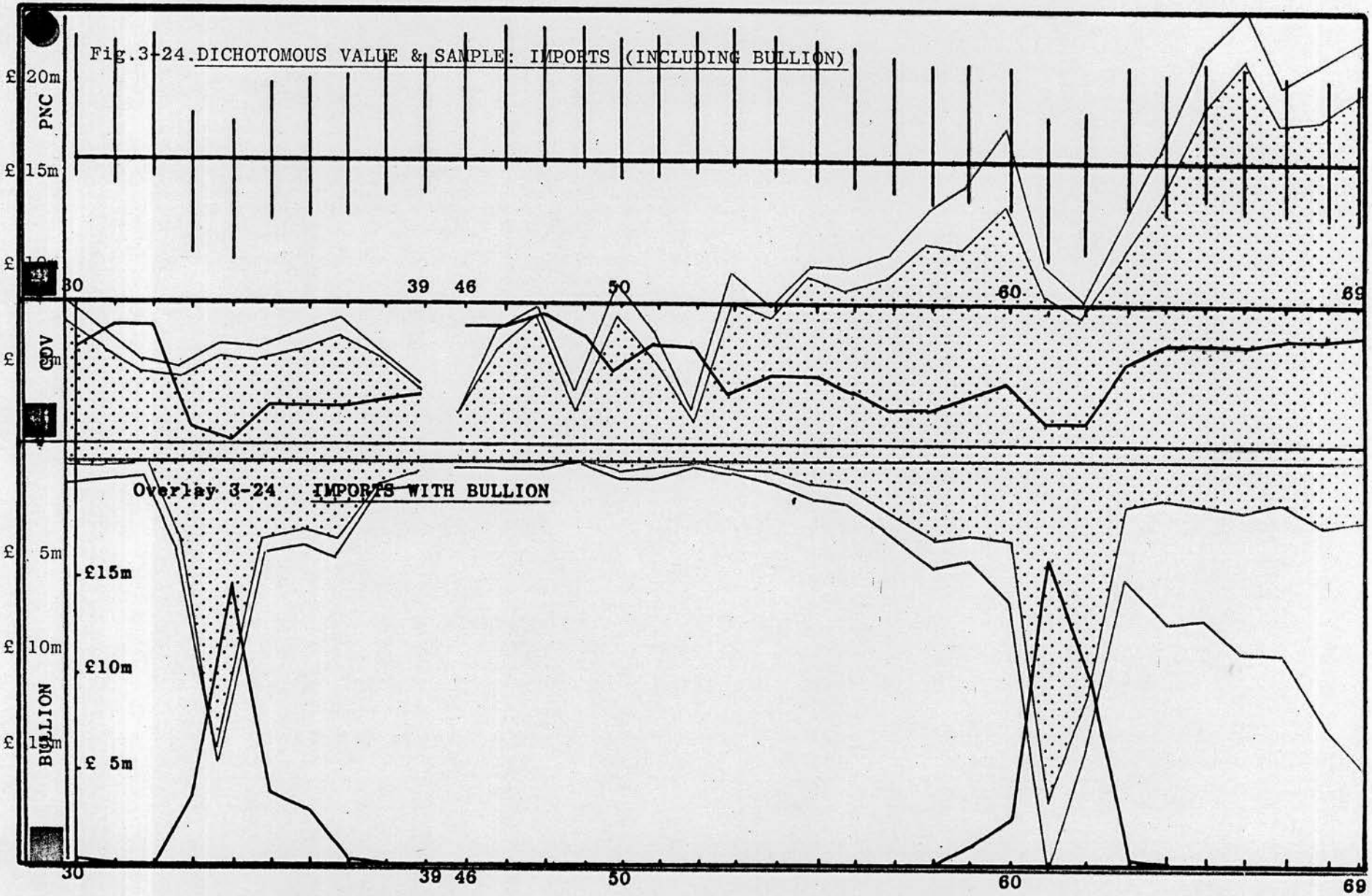
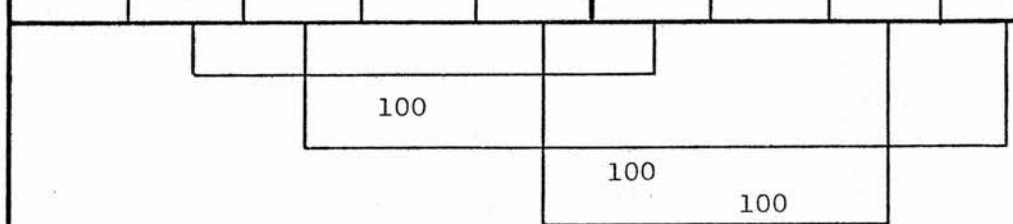


Table 3-33

Contribution, Coverage & PNC by Dichotomies (Imports)

	Σ(0-4)				Σ(5-9)			Σ(5-9,b)	
Year	CON	CONB	COV	PNC	CON	COV	PNC	CONB	COV
1930	88	87	87	55	12	24	45	13	30
1931	86	anb	88	46	14	17	54	anb	anb
1932	87	anb	88	48	13	16	52	anb	anb
1933	86	53	90	46	14	30	54	47	87
1934	86	28	90	47	14	29	53	72	96
1935	84	56	88	52	16	40	48	44	72
1936	82	60	88	48	18	40	52	40	72
1937	82	60	88	51	18	47	49	40	72
1938	83	78	93	42	17	54	58	22	67
1939	78	|	92	45	22	63	55	|	|
1946	94	|	96	44	6	17	56	|	|
1947	95	|	87	76	5	17	24	|	|
1948	97	|	95	68	3	9	32	|	|
1949	96	|	81	84	4	18	16	|	|
1950	90	anb	82	76	10	48	24	anb	anb
1951	87	|	82	63	13	26	37	|	|
1952	91	|	73	79	9	30	21	|	|
1953	95	|	87	87	5	62	13	|	|
1954	88	|	95	44	12	52	56	|	|
1955	83	|	93	40	17	52	60	|	|
1956	80	|	89	53	20	60	47	|	|
1957	75	|	89	58	25	76	42	|	|
1958	70	|	87	53	30	74	47	|	|
1959	76	72	77	66	24	64	34	28	69
1960	78	70	77	56	22	33	44	30	56
1961	66	32	86	29	34	36	71	68	84
1962	62	36	88	30	38	53	70	64	84
1963	67	67	87	29	33	37	71	33	39
1964	65	|	84	29	35	26	71	|	|
1965	72	|	87	32	28	29	68	|	|
1966	70	anb	88	29	30	28	71	anb	anb
1967	66	|	89	23	34	25	77	|	|
1968	60	|	87	21	40	25	79	|	|
1969	58	|	88	17	42	20	83	|	|



Note: PNC is the same for Σ(5-9) and Σ(5-9,b).

Exports (XS15)	Table 3-34	Value and sample
	Fig. 3-25	
	Table 3-35	Contribution, Coverage and PNC
	Overlay 3-25	

The raw materials dichotomy is coded ● on the figures and overlays, and the manufactures side ■ . The overlays show the distribution of contribution and PNC between the two dichotomies by means of annual lines of fixed length (100 per cent) oscillating on the central line. Thus, for example, Overlay 2-25 shows that exports are nearly exclusively manufactures until 1951, whereupon there are a couple of waves of predominance of raw materials until the mid-sixties, when there is a reversion to the original balance. The central part of the overlay shows that coverage of the raw material exports is virtually complete, but that coverages of manufactures is lower and varying. As a result, the PNC, the proportion of trade not covered by the sample, falls virtually entirely on the manufactures side on the PNC line.

It is considered that the other synoptic longitudinal tables and figures for the three sets of indexes are self-explanatory and that any verbal description would be tiresomely redundant. The assumptions underlying these three different types of adjustment for incomplete coverage are examined in Part D. However, irrespective of their validity for extrapolating from the sample to the whole trade, it will be appreciated that the division of the sample and trade into sections and dichotomies is in itself an important element in analysing the interactions between composition and price movements.

ASSEMBLING AND COMBINING THE EXPORT AND IMPORT UVI'S

So far we have described the extraction and collation of innumerable pieces of data, their reduction to a far smaller number of commodities which are reasonably consistent over time and which have a 1958 unit value which is either 'real' or can be estimated, the ordering of these commodities into SITC(R) sequence and their classification into minor and major, A and B. It has also been mentioned that imports of bullion,

Table 3-34

Export Dichotomies: Value & Sample

£m

Year	Σ(0-4)		Σ(5-9)	
	VAL	PcQc	VAL	PcQc
1930	1.2	1.1	7.4	6.0
1931	0.9	0.9	6.9	5.6
1932	0.4	0.4	7.4	6.2
1933	0.4	0.4	5.9	4.6
1934	0.6	0.5	6.0	4.8
1935	0.6	0.5	4.5	3.5
1936	1.0	1.0	4.7	3.2
1937	1.0	1.0	4.9	3.5
1938	0.2	0.2	3.9	2.1
1939	0.5	0.4	3.1	2.2
1946	1.1	0.9	6.8	3.9
1947	0.9	0.8	11.9	7.4
1948	1.0	0.9	7.7	4.1
1949	0.4	0.4	1.8	1.5
1950	0.4	0.3	3.2	2.9
1951	0.4	0.4	2.3	1.4
1952	0.8	0.8	3.8	3.5
1953	3.6	3.6	2.6	2.1
1954	3.6	3.6	3.2	2.3
1955	5.3	5.2	2.6	1.1
1956	5.1	5.1	5.5	2.9
1957	5.6	5.6	6.5	3.5
1958	6.8	6.8	19.8	17.3
1959	4.8	4.7	19.6	16.3
1960	5.3	5.1	26.2	21.3
1961	5.6	5.5	7.3	5.1
1962	2.5	2.5	5.9	4.6
1963	2.4	2.3	10.8	6.1
1964	2.5	2.5	15.2	9.2
1965	1.0	0.9	23.9	16.9
1966	2.3	1.9	29.7	16.8
1967	6.7	6.5	31.3	23.0
1968	1.8	1.7	26.7	15.4
1969	4.1	4.0	47.6	32.3

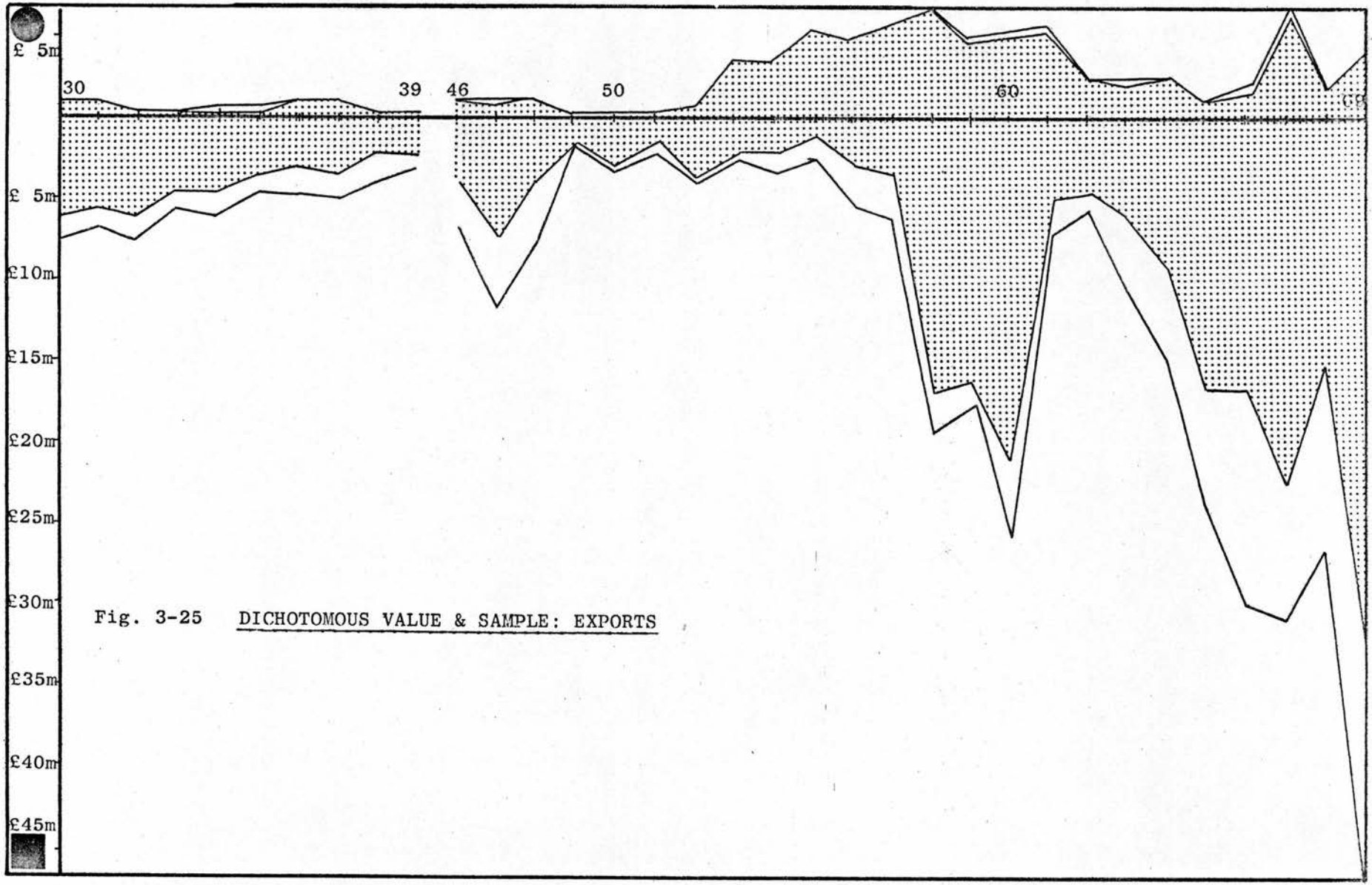


Fig. 3-25 DICHOTOMOUS VALUE & SAMPLE: EXPORTS

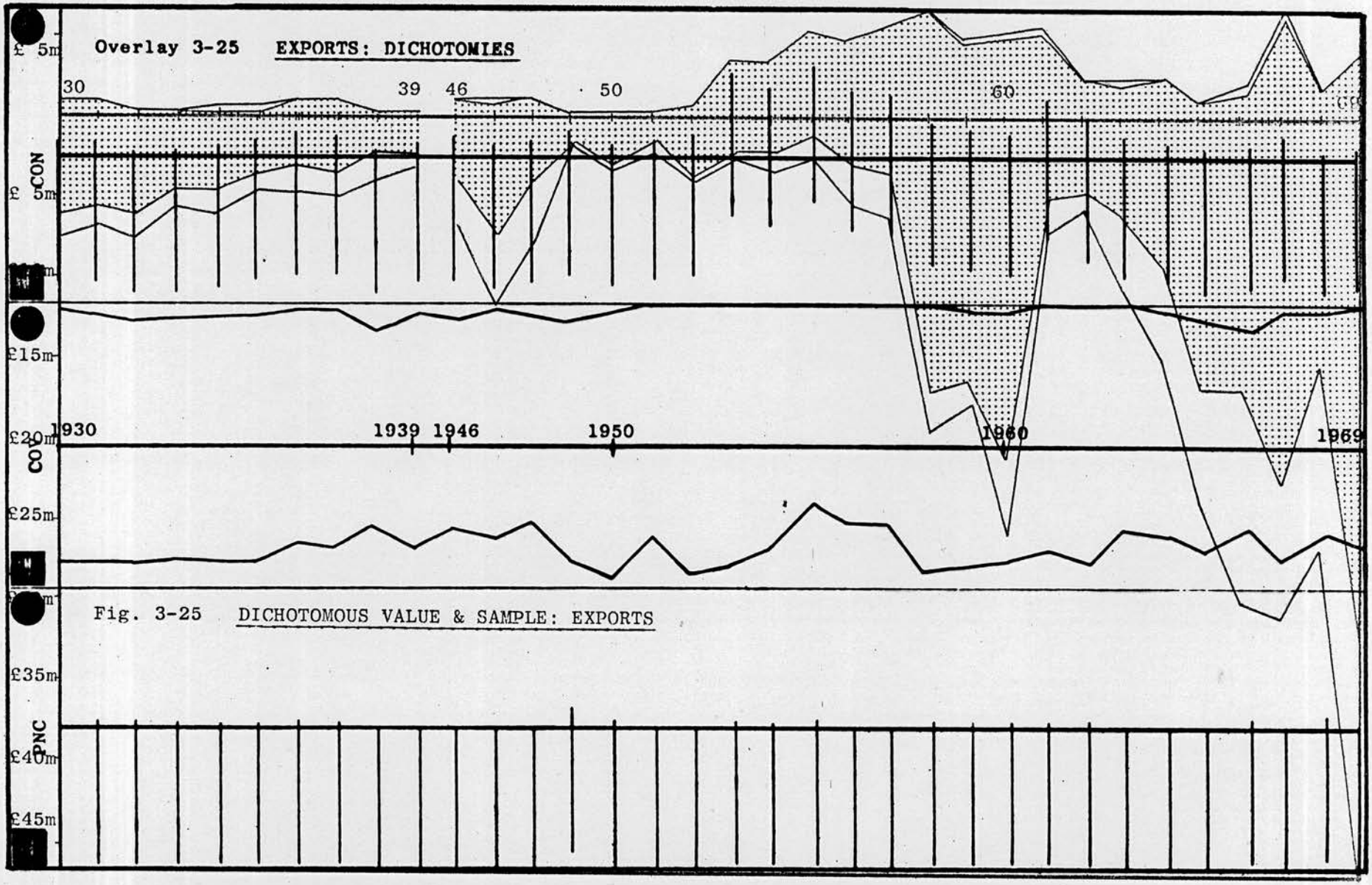


Fig. 3-25 DICHOTOMOUS VALUE & SAMPLE: EXPORTS

Table 3-35

Contribution, Coverage & PNC by Dichotomies (Exports)

	Σ(0-4)			Σ(5-9)		
Year	CON	COV	PNC	CON	COV	PNC
1930	14	94	5	86	81	95
1931	12	93	4	88	81	96
1932	6	87	5	94	84	95
1933	6	86	4	94	79	96
1934	9	92	4	91	80	96
1935	11	92	4	89	78	96
1936	18	96	3	82	68	97
1937	17	96	3	83	72	97
1938	5	81	2	95	54	98
1939	13	93	4	87	71	96
1946	14	87	4	86	57	96
1947	7	94	1	93	62	99
1948	11	92	2	89	53	98
1949	19	87	14	81	81	86
1950	10	97	4	90	91	96
1951	14	99	0.0	86	62	100
1952	17	100	1	83	92	99
1953	59	99	4	41	82	96
1954	53	99	6	47	73	94
1955	67	98	6	33	41	94
1956	48	100	1	52	52	99
1957	46	99	2	54	53	98
1958	26	99	3	74	87	97
1959	20	96	5	80	83	95
1960	17	96	4	83	81	96
1961	43	99	3	56	71	97
1962	30	99	3	70	79	97
1963	18	99	1	82	56	99
1964	14	97	1	86	61	99
1965	4	86	2	96	71	98
1966	7	83	3	93	57	97
1967	18	97	2	82	74	98
1968	6	95	1	94	58	99
1969	8	98	0.0	92	68	100

which after the 30's were largely integrated into the commodity returns, have been isolated so that imports can be considered with or without bullion. Finally, the three modes of weighting, undifferentiated, sectional and dichotomous, have been described. There is one further complication to be introduced, and that is the question of exports of iron and steel. This is tackled in Appendix E and all that needs to be said here is that we arrive at three mutually exclusive, but not disparate, UVI's for iron and steel.

The number of ways these alternatives and variants could be combined into import and export UVI's and from them into terms of trade indexes is, of course, huge. The actual combinations that are utilised are shown in Fig.3-26 and Table 3-36. The basic rule has been to pair like with like; for instance, undifferentiated exports of A commodities UVI (XS1) with undifferentiated imports A (MS1), but not with sectional imports A (MS4) or undifferentiated imports AB (MS2). This is quite arbitrary and there is no good *prima facie* reason for it. It might, for example, have been unwarranted to apply the same classification criteria to both imports and exports, in which case imports AB may be just as appropriately combined with exports, and so on. However, it seems unnecessary to worry too much over that.

Even with a partial take-up of possible combinations we still generate twenty-one terms of trade indexes, which may well seem twenty too many. In fact, most of them can be relegated to second division without too much ado. Firstly, whilst it is useful for purposes of analysis to have export UVI's exclusive of iron and steel,[51] they remain partial indexes. Of the three iron and steel indexes (in each weighting mode) the ISIV series is only operational from 1946. There is little to choose between the other two (see Appendix E) but where, for convenience, we have to plump for one, it is the TIS variant that is used, and specifically the undifferentiated weighted version (XS5).

On the imports side the role of bullion is ambiguous, but it only features in the trade for a third of the period (i.e., for twenty-two years out of thirty-four ABB = AB) so for most of the time it is

---

[51] For instance, iron and steel, in all three variants, has a very strong dampening effect on the latter 60's.

Fig.3-26

UTILISED COMBINATIONS FOR TERMS OF TRADE INDEXES
(UNDIFFERENTIATED WEIGHTING)

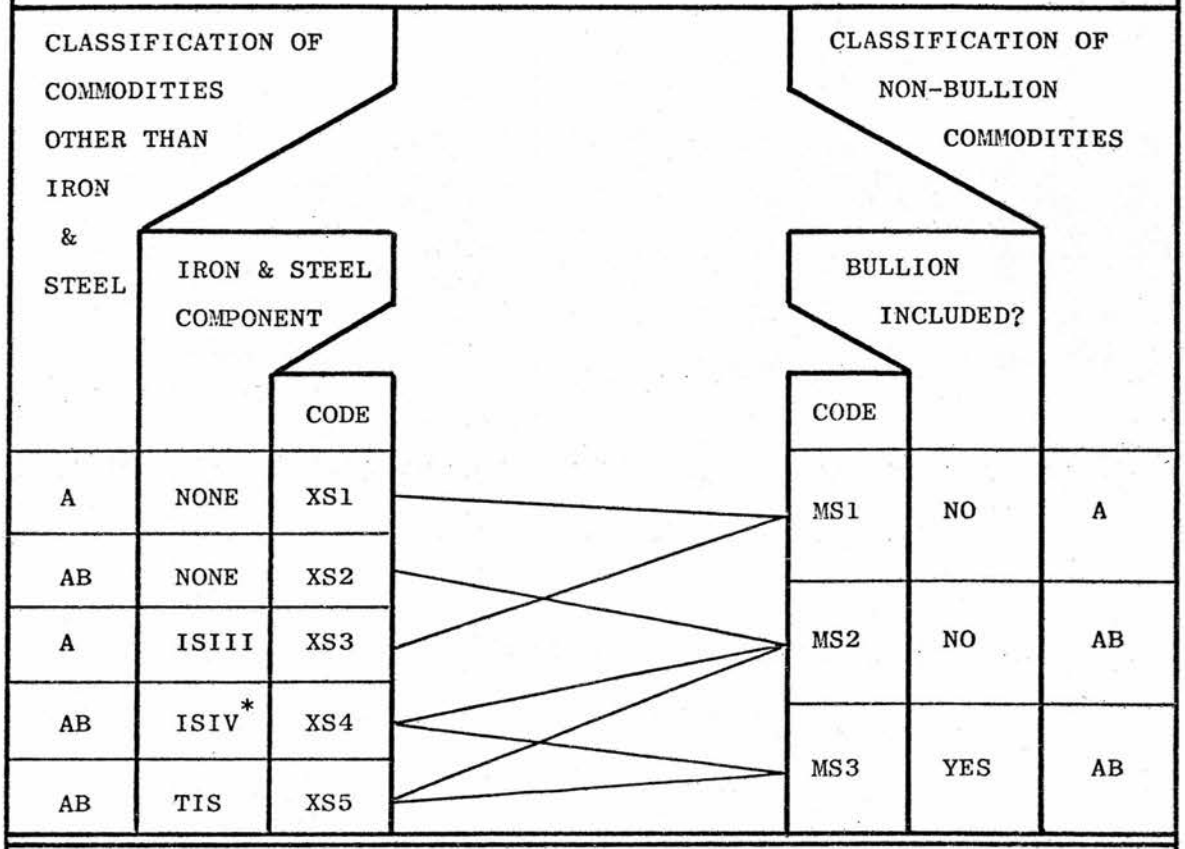


Table 3-36

*1946 onwards

Provenance of Terms of Trade Indexes

	Terms of Trade (TT)	Export UVI (XS)		Import UVI (MS)	
UNDIFFEREN-TIATED	1	1	A	1	A
	2	2	AB	2	AB
	3	3	AISIII	1	A
	4*	4	ABISIV*	3	ABB
	5	5	ABTIS	3	ABB
	16	5	ABTIS	2	AB
	19*	4	ABISIV*	2	AB
SECTIONAL	6	6	A	4	A
	7	7	AB	5	AB
	8	8	AISIII	4	A
	9*	9	AISIV*	6	ABB
	10	10	ABTIS	6	ABB
	17	10	ABTIS	5	AB
	20*	9	ABISIV*	5	AB
DICHOTOMOUS	11	11	A	7	A
	12	12	AB	8	AB
	13	13	AISIII	7	A
	14*	14	ABISIV*	9	ABB
	15	15	ABTIS	9	ABB
	18	15	ABTIS	8	AB
	21*	14	ABISIV*	8	AB

immaterial whether we use MS2 (undifferentiated,AB) or MS3 (undifferentiated, ABB). In fact MS3 has conventionally been chosen when only one UVI was needed (e.g., the following section).[52]

In practice, then, we may consider that there is one main set of UVI's (XS5 and MS3) from which one (net barter) Terms of Trade index is derived (TT5), and that there are a number of ancillary ones which are used primarily for comparison and analysis. There are times, however, when exclusion of bullion is necessary (especially in Chapter Eleven) and then MS2 is used to produce the Terms of Trade index, TT16.

POSTSCRIPT: ESTIMATING CONFIDENCE INTERVALS

Since the sample from which the indexes are constructed is not randomly selected but a purposive one, we are not free to use in the usual way those statistical tools such as confidence levels, x^2 tests and so on which are based on probability theory. However, it is possible to apply some of these statistical techniques with discretion to arrive at a 'plausible' (rather than the statistical 'probable') estimate of the confidence interval for the indexes.

There are two indicators of the reliability of the sample-coverage and number of commodities (NOC). They have been determined down to section level (Table 3-15) but here, for manageability, they are only considered at total level. Similarly, only the two major indexes, MS3 and XS5, are tested. (Tables 3-37,-38,-39; Fig. and Overlay 3-28.)

NOC figures were given in Table 3-2 and Fig.3-2. One fact is immediately apparent: the number of commodities in the export sample is considerably greater than in the import sample. On average, over the period, the export NOC is nearly four times the import NOC. The preponderance is much greater in the 30's,and in 1969 the position is actually reversed, but apart from this year the export side never drops below 30 (even in 1969 it is 26) while the import side is seldom above it. It follows from this

---

[52] MS3 is considered to take on the value of MS2 during non-bullion years. The same, *mutatis mutandis*, applies to the other bullion indexes, both imports and Terms of Trade.

that the two sides should be treated differently. When, below, an assumption of normality is made in estimating percentage deviation around the UVI, individual commodities and Student's t distribution are used for imports and sections, and normal distribution for exports.

Coverage is both high and virtually identical on both sides - an average of 78 per cent for imports and 76 per cent for exports. Using the working assumptions already made, and for simplicity confining ourselves to the undifferentiated adjustment, it follows that we need only consider the effect on the 'real unit value index' (RUVI) of a plausible deviation of the UVI of the non-covered trade (NCUVI) from the UVI of the sample (SUVI). That is, the RUVI is given by a combination of the SUVI, which we know (if the other assumptions hold), and the NCUVI, which we do not know but which we presume will be of the order of the SUVI. The effect that the NCUVI can have on the RUVI decreases sharply, of course, as the coverage increases. Thus, for example, if the SUVI were 100, even if the NCUVI is 200 (line A in Fig.3-27), although at 30 per cent coverage the RUVI would be 170, by 70 per cent coverage it would only be 130 and at 90 per cent coverage it would have fallen to 110.

Arithmetically, this can be expressed thus:

let a = coverage, b = non-coverage (expressed as %)

y = deviation factor, $\frac{NCUVI}{SUVI}$;

$$\text{percentage deviation (PD)} = \frac{RUVI - SUVI}{RUVI} \cdot 100$$

then $$RUVI = \frac{a.}{100} SUVI + \frac{b.}{100} NCUVI$$

but $a + b = 100$ and $NCUVI = y \,.\, SUVI$

so $$RUVI = \frac{a.}{100} SUVI + \frac{(100 - a)}{100} \,.\, (y.SUVI)$$

$$= \frac{a.SUVI + 100 \;.\; y.SUVI - y.a.SUVI}{100}$$

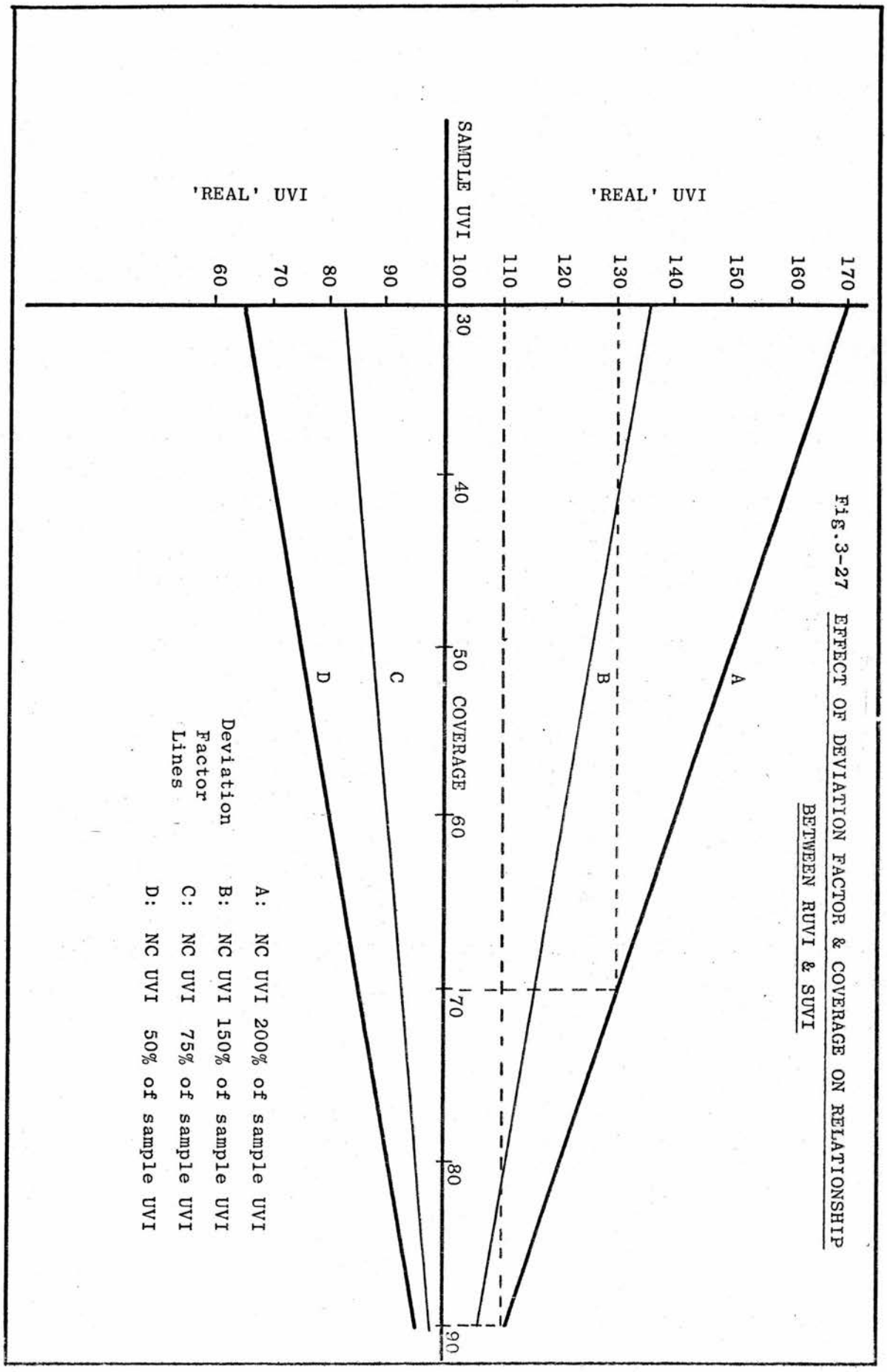


Fig.3-27 EFFECT OF DEVIATION FACTOR & COVERAGE ON RELATIONSHIP BETWEEN RUVI & SUVI

$$\frac{SUVI}{100} \cdot (a + 100y - y.a)$$

now $$PD = \frac{RUVI - SUVI}{SUVI} \cdot 100$$

substituting for RUVI,

$$PD = \frac{SUVI \cdot (a + 100.y - y.a) - 100.SUVI}{100.SUVI} \cdot 100$$

$$= a + 100.y - a.y - 100$$

$$= a(1 - y) - 100(1 - y)$$

$$= (a - 100)(1 - y) \quad \text{or} \quad (100 - a)(y - 1)$$

Thus, since we have 'a' (coverage), we need only an estimate of y to arrive at a figure for PD.

If we take SUVI as an estimate of NCUVI, and assume a normal distribution, then at the 5 per cent confidence level the limits of the NCUVI will be ±1.96 by the standard error of SUVI (SES). (In the case of imports 1.96 will be replaced by the t at the appropriate degrees of freedom.) Thus,

for exports: $$y = \frac{100.SUVI \pm 1.96\ SES}{100.SUVI}$$

for imports: $$y = \frac{100.SUVI \pm t \cdot SES}{100.SUVI}$$

For exports, because of the large NOC, it would be unjustifiably time-consuming without computer facilities to calculate the standard deviation from individual commodities, so sections are used instead. To take account of the varying weights of the sections (or, in the case of imports, commodities) we treat it as a frequency distribution of UVI's with the section (commodity) PoQc figure as the frequency.

Thus, where

f is frequency $= PoQc$

X is UVI $= \frac{PcQc}{PoQc} \cdot 100$

N is the sum of frequencies $= \Sigma PoQc$

Using the standard derived formula

$$\sigma = \sqrt{\left[\frac{\Sigma fx^2}{N} - \left[\frac{\Sigma fx}{N}\right]^2\right]}$$

where $fx = PoQc \cdot \frac{PcQc}{PoQc} \cdot 100 = PcQc \cdot 100$

and $fx^2 = PoQc \cdot \left[\frac{PcQc}{PoQc} \cdot 100\right]^2 = \frac{PcQc^2}{PoQc} \cdot 100^2$

substituting

$$\sigma = \sqrt{\left[\frac{\Sigma\left(\frac{PcQc^2}{PoQc}\right)}{\Sigma PoQc} - \left[\frac{\Sigma PcQc}{\Sigma PoQc}\right]^2\right]} \cdot 100$$

When calculating the standard error in the formula $SES = \frac{\sigma}{\sqrt{n}}$ 'n' is taken as the actual number of UVI's used (i.e., number of sections for exports, number of commodities for imports). Thus,

$$SES = \sqrt{\left[\frac{\Sigma\left(\frac{PcQc^2}{PoQc}\right)}{\Sigma PoQc} - \left[\frac{\Sigma PcQc}{\Sigma PoQc}\right]^2\right]} \cdot \frac{100}{\sqrt{n}}$$

Since we are deriving a percentage, we can disregard for the moment the -1.96 SES version of the PD.

So, (for exports):

$$PD = (100 - a)(y - 1)$$

$$= (100 - a)\left[\frac{SUVI.100 + 1.96\ SES}{100.SUVI}\right] - 1$$

$$= (100 - a)\left[\left[\frac{100 \cdot \frac{\Sigma PcQc}{\Sigma PoQc} + 1.96 \cdot SES}{100 \cdot \frac{\Sigma PcQc}{\Sigma PoQc}}\right] - 1\right]$$

$$= (100 - a)\left[\frac{\Sigma PoQc}{100.\Sigma PcQc}\left[\frac{100 \cdot \Sigma PcQc}{\Sigma PoQc} + 1.96\ SES\right] - 1\right]$$

$$= (100 - a)\left[1 + \frac{\Sigma PoQc}{100.\Sigma PcQc} \cdot 1.96.SES - 1\right]$$

$$= (100 - a) \cdot \frac{\Sigma PoQc}{100.\Sigma PcQc} \cdot 1.96\ SES$$

$$= \frac{(100 - a)}{100} \cdot \frac{\Sigma PoQc}{\Sigma PcQc} \cdot 1.96 \sqrt{\left[\frac{\Sigma\left(\frac{PcQc^2}{PoQc}\right)}{\Sigma PoQc} - \left[\frac{\Sigma PcQc}{\Sigma PoQc}\right]^2\right]} \cdot \frac{100}{\sqrt{n}}$$

$$= (100 - a) \cdot \frac{\Sigma PoQc}{\Sigma PcQc} \cdot \frac{1.96}{\sqrt{n}} \sqrt{\left[\frac{\Sigma\left(\frac{PcQc^2}{PoQc}\right)}{\Sigma PoQc} - \left[\frac{\Sigma PcQc}{\Sigma PoQc}\right]^2\right]}$$

Table 3-37

Percentage Deviation & Range: XS5

Year	XS5	n	100-a	P.D.	Range	
					lower	upper
1930	23.4	9	17	3.4	22.6	24.2
1931	21.0	9	17	2.5	20.5	21.5
1932	19.3	9	15	2.7	18.8	19.8
1933	20.2	9	21	3.1	19.6	20.8
1934	18.8	9	19	2.9	18.3	19.3
1935	20.0	8	21	2.7	19.5	20.5
1936	20.1	8	27	3.5	19.4	20.8
1937	21.0	8	23	3.6	20.3	21.7
1938	21.7	8	45	6.3	20.4	23.1
1939	23.9	8	26	2.4	23.3	24.5
1946	42.8	8	39	5.6	40.4	45.2
1947	50.4	7	35	3.8	48.5	52.3
1948	56.3	6	42	4.7	53.7	58.9
1949	67.8	6	18	1.9	66.5	69.1
1950	76.0	5	8	2.1	74.7	77.6
1951	97.5	5	33	14.2	83.7	111.3
1952	103.6	7	6	1.2	102.3	104.9
1953	118.2	7	8	1.1	116.9	119.5
1954	116.4	8	14	0.8	115.5	117.3
1955	107.5	6	21	1.2	106.2	108.8
1956	103.4	5	25	4.7	98.6	108.2
1957	115.2	5	25	2.7	112.1	118.3
1958	100	INV				
1959	107.3	6	14	0.8	106.4	108.2
1960	104.0	6	16	1.9	102.0	106.0
1961	93.4	6	17	2.5	91.1	95.7
1962	85.9	6	15	3.0	83.3	88.5
1963	93.3	7	36	7.3	86.5	100.1
1964	102.1	8	34	4.8	97.2	107.0
1965	129.7	7	29	2.3	126.7	132.7
1966	116.1	8	41	8.6	106.2	126.0
1967	103.8	8	22	4.7	99.0	108.0
1968	118.2	6	40	8.8	107.8	128.6
1969	167.4	7	30	8.8	152.7	182.1

n : number of sections used.
a : coverage.
INV: no calculation possible for base year.

Table 3-38

Percentage Deviation & Range: MS3

Year	MS3	d.f.	t	100-a	P.D.	Range	
						lower	upper
1930	32.3	20	2.086	21	3.8	31.1	- 33.5
1931	27.8	19	2.093	21	4.6	26.5	- 29.1
1932	27.7	18	2.101	22	4.4	26.5	- 28.9
1933	30.3	24	2.064	11	2.2	29.6	- 31.0
1934	31.7	23	2.069	6	1.0	31.4	- 32.0
1935	28.7	24	2.064	13	3.0	27.8	- 29.6
1936	30.7	24	2.064	15	3.0	29.8	- 31.6
1937	34.6	22	2.074	14	2.4	33.8	- 35.4
1938	32.2	22	2.074	13	1.9	31.6	- 32.8
1939	29.9	21	2.080	15	2.5	29.1	- 30.7
1946	156.0	10	2.228	9	2.2	152.6	- 159.4
1947	133.0	14	2.145	16	3.7	128.0	- 138.0
1948	119.3	16	2.120	7	1.1	118.0	- 120.6
1949	108.0	14	2.145	22	2.4	104.8	- 111.2
1950	113.2	17	2.110	22	2.2	110.7	- 115.7
1951	137.5	20	2.086	26	3.8	132.3	- 142.7
1952	144.4	15	2.131	31	5.1	137.0	- 151.8
1953	129.9	20	2.086	14	0.8	128.8	- 131.0
1954	110.9	21	2.080	10	1.0	109.8	- 112.0
1955	102.6	31	1.960	14	1.2	101.3	- 103.9
1956	114.3	31	1.960	17	1.5	112.6	- 116.0
1957	111.1	31	1.960	15	1.6	110.4	- 111.8
1958	98.2	38	1.960	17	INV		
1959	105.3	28	2.048	25	1.2	104.1	- 106.5
1960	111.6	29	2.045	30	2.9	108.4	- 114.8
1961	111.5	30	2.042	15	1.6	109.7	- 113.3
1962	119.7	30	2.042	15	2.1	117.1	- 122.3
1963	120.7	35	1.960	29	4.7	115.0	- 126.4
1964	122.3	35	1.960	36	5.3	115.8	- 128.8
1965	116.8	38	1.960	29	3.7	112.5	- 121.1
1966	112.2	40	1.960	30	4.0	107.7	- 116.7
1967	114.0	39	1.960	33	4.6	108.8	- 119.2
1968	117.2	40	1.960	38	5.4	110.9	- 123.5
1969	125.4	39	1.960	41	6.2	117.6	- 133.2

d.f.: degrees of freedom (n = d.f. + 2). t: 'Students' t'.
INV : no calculation possible for base year.
a : coverage

Table 3-39

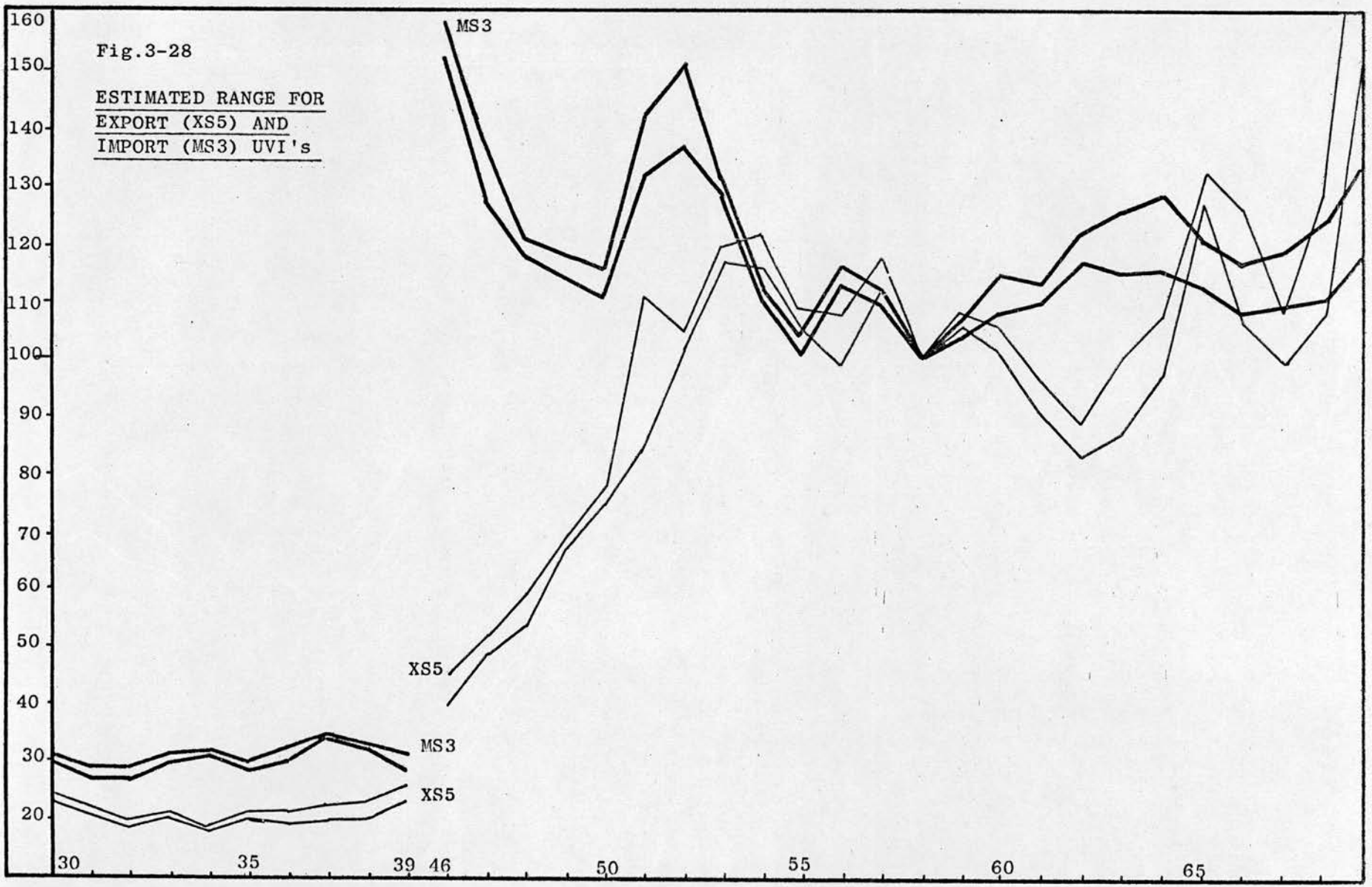
Estimated range at 5% confidence level for TT5

Year	Imports (MS3)				Exports (XS5)				Terms of Trade TT5	
	2	lower	3	upper	4	lower	5	upper	lower($^4/_3$)	upper($^5/_2$)
1930	31.1		33.5		22.6		24.2		67	78
1931	26.5		29.1		20.5		21.5		70	81
1932	26.5		28.9		18.8		19.8		65	75
1933	29.6		31.0		19.6		20.8		63	70
1934	31.4		32.0		18.3		19.3		57	61
1935	27.8		29.6		19.5		20.5		66	74
1936	29.8		31.6		19.4		20.8		61	70
1937	33.8		35.4		20.3		21.7		57	64
1938	31.6		32.8		20.4		23.1		62	73
1939	29.1		30.7		23.3		24.5		76	84
1946	152.6		159.4		40.4		45.2		25	30
1947	128.0		138.0		48.5		52.3		35	41
1948	118.0		120.6		53.7		58.9		45	50
1949	104.8		111.2		66.5		69.1		60	66
1950	110.7		115.7		74.7		77.6		65	70
1951	132.3		142.7		83.7		111.3		59	84
1952	137.0		151.8		102.3		104.9		67	77
1953	128.8		131.0		116.9		119.5		89	93
1954	109.8		112.0		115.5		117.3		103	107
1955	101.3		103.9		106.2		108.8		102	107
1956	112.6		116.0		98.6		108.2		85	96
1957	110.4		111.8		112.1		118.3		100	107
1958	INV									
1959	104.1		106.5		106.4		108.2		100	104
1960	108.4		114.8		102.0		106.0		89	98
1961	109.7		113.3		91.1		95.7		80	87
1962	117.1		122.3		83.3		88.5		68	76
1963	115.0		126.4		86.5		100.1		68	87
1964	115.8		128.8		97.2		107.0		75	92
1965	112.5		121.1		126.7		132.7		105	118
1966	107.7		116.7		106.2		126.0		91	117
1967	108.8		119.2		99.0		108.0		83	99
1968	110.9		123.5		107.8		128.6		87	116
1969	117.6		133.2		152.7		182.1		115	155

INV: No calculation possible for base year. In Fig.3-27 read as '100'.

Fig.3-28

ESTIMATED RANGE FOR EXPORT (XS5) AND IMPORT (MS3) UVI's



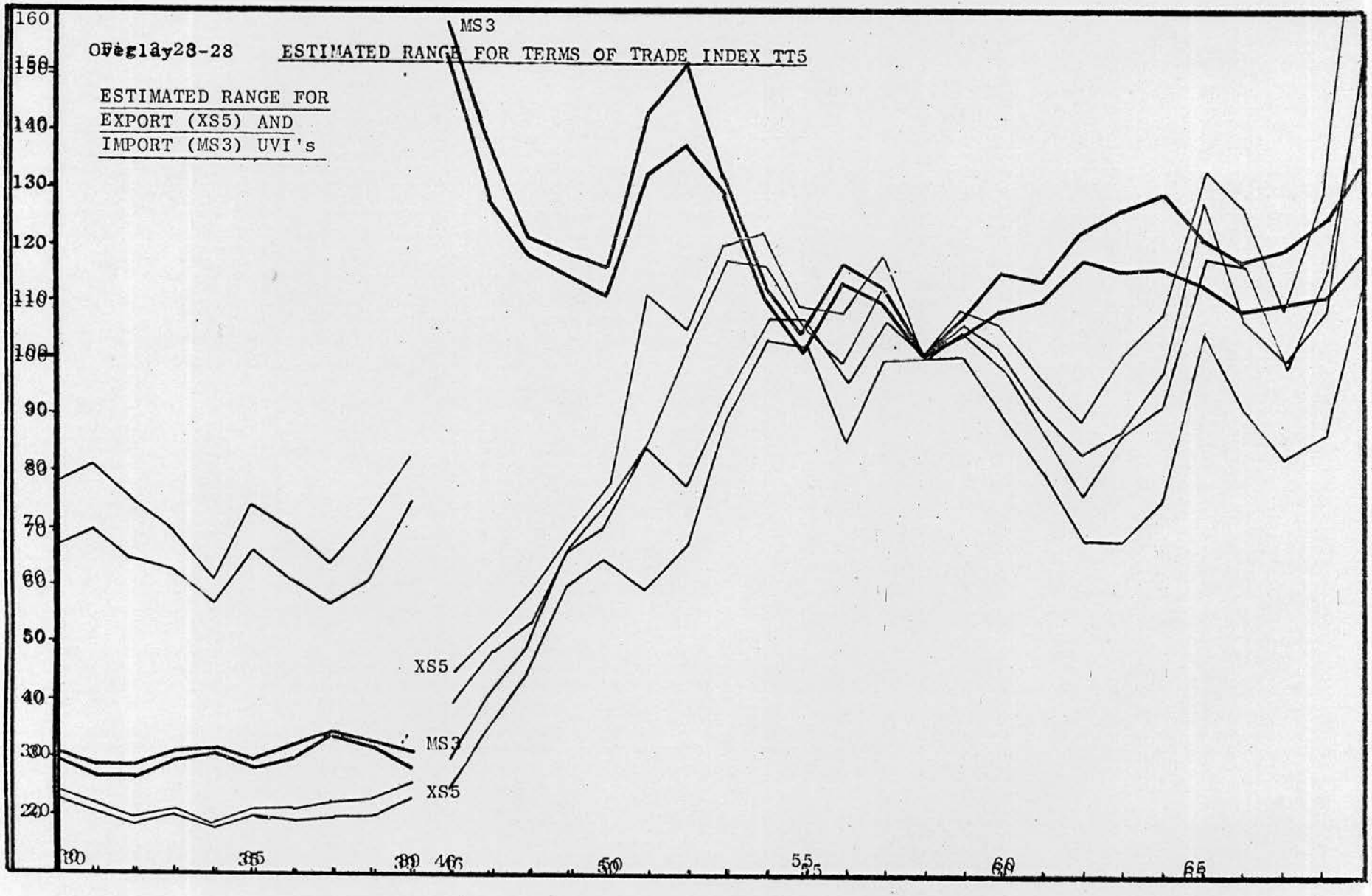

Overlay28-28
ESTIMATED RANGE FOR TERMS OF TRADE INDEX TT5
ESTIMATED RANGE FOR
EXPORT (XS5) AND
IMPORT (MS3) UVI's
MS3
XS5
MS3
XS5
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
30
35
40
45
50
55
60
65

Table 3- 15x

Sample Coverage: Exports

Year: 1930

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	90,496	1.0895		1.1	54,694	60	2	9	0	1	8
	1	1,028,483	12.3827		12.0	1,028,483	100	0	3	0	1	2
	2	58,670	0.7064		0.7	26,868	46	2	4	0	2	2
	3	8,768	0.1056		0.1	8,768	100	0	1	0	0	1
	4	NI										
Σ(0-4)		1,186,417		13.8375	13.8	1,118,813	94	5	17	0	4	13
SECTION	5	804,781	9.6894		9.4	577,885	72	16	16	0	4	12
	6	4,498,321	54.1586		52.5	3,954,473	88	37	57	3	8	46
	7	1,708,140	20.5656		19.9	1,267,919	74	30	36	2	4	30
	8	268,094			3.1	99,072	37	12	12	0	0	12
	9	108,170	1.3023		1.3	105,837	98	0.0	1	0	0	1
Σ(5-9)		7,387,506		86.1625	86.2	6,005,186	81	95	122	5	16	101
TSX		8,305,829				7,024,927	82		127	5	20	102
THP		8,573,923				7,123,999	83		139	5	20	114

Table 3- 15x

Sample Coverage: Exports

Year: 1931

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	63,160	0.8203		0.8	33,590	53	2	9	0	1	8
	1	755,138	9.8071		9.6	755,138	100	0	3	0	1	2
	2	84,409	1.0962		1.1	54,475	65	2	4	0	2	2
	3	8,450	0.1097		0.1	8,450	100	0	1	0	0	1
	4	NI										
Σ(0-4)		911,157		11.5944	11.6	851,653	93	4	17	0	4	13
SECTION	5	838,980	10.8960		10.7	554,559	66	21	16	0	4	12
	6	4,561,909	59.2462		58.1	4,040,974	89	39	58	3	8	47
	7	1,310,542	17.0202		16.7	908,283	69	30	37	2	4	31
	8	158,703			2.0	63,926	40	7	12	0	0	12
	9	77,324	1.0042		1.0	76,899	99	0.0	1	0	0	1
Σ(5-9)		6,947,458		88.4056	88.4	5,644,641	81	96	124	5	16	103
TSX		7,699,912				6,432,368	82		129	5	20	104
THP		7,858,615				6,496,294	83		141	5	20	116

Table 3- 15x

Sample Coverage: Exports

Year: 1932

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	81,027	1.0609		1.0	44,250	55	3	9	0	1	8
	1	286,107	3.7459		3.7	286,107	100	0	3	0	1	2
	2	73,108	0.9572		0.9	51,177	70	2	5	0	2	3
	3	416	0.0054		0.0	416	100	0	1	0	0	1
	4	NI										
Σ(0-4)		440,658		5.6222	5.6	381,950	87	5	18	0	4	14
SECTION	5	579,384	7.5856		7.4	369,895	64	17	16	0	4	12
	6	4,996,318	65.4148		63.8	4,458,448	89	44	59	3	8	48
	7	1,546,652	20.2497		19.7	1,268,154	82	23	42	2	5	35
	8	199,938	[illegible]		2.6	69,925	35	11	12	0	0	12
	9	74,885	0.9804		1.0	74,715	100	0.0	1	0	0	1
Σ(5-9)		7,397,177		94.3778	94.4	6,241,137	84	95	130	5	17	108
TSX		7,637,897				6,553,162	84		136	5	21	110
THP		7,837,835				6,623,087	85		148	5	21	122

Table 3- 15x

Sample Coverage: Exports

Year: 1933

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	76,207	1.2774		1.2	49,261	65	2	9	0	1	8
	1	169,291	2.8376		2.7	169,291	100	0	3	0	1	2
	2	155,241	2.6021		2.5	125,802	81	2	5	0	2	3
	3	2,464	0.0413		0.0	2,464	100	0	1	0	0	1
	4	NI										
Σ(0-4)		403,203		6.4001	6.4	346,818	86	4	18	0	4	14
SECTION	5	560,527	9.3955		8.9	363,620	65	15	16	0	4	12
	6	3,623,309	60.7337		57.5	3,143,232	87	36	59	3	8	48
	7	1,312,086	21.9931		20.8	971,877	74	26	47	3	5	39
	8	334,087			5.3	84,864	25	19	13	0	0	13
	9	66,775	1.1193		1.1	66,153	99	0.0	1	0	0	1
Σ(5-9)		5,896,784		93.5999	93.6	4,629,746	79	96	136	6	17	113
TSX		5,965,900				4,891,700	78		141	6	21	114
THP		6,299,987				4,976,564	79		154	6	21	127

Table 3- 15x

Sample Coverage: Exports

Year: 1934

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	75,499	1.2172		1.2	54,494	72	2	10	0	1	9
	1	157,207	2.5346		2.4	157,207	100	0	3	0	1	2
	2	326,580	5.2653		5.0	300,022	92	2	6	0	2	4
	3	453	0.0073		0.0	453	100	0	1	0	0	1
	4	NI										
Σ(0-4)		559,739		8.5936	8.6	512,176	92	4	20	0	4	16
SECTION	5	441,643	7.1204		6.8	272,511	62	14	15	0	4	11
	6	3,639,046	58.6706		55.9	3,198,591	88	36	58	3	8	47
	7	1,509,326	24.3342		23.2	1,199,117	79	26	51	3	5	43
	8	310,905	[illegible]		4.8	69,528	22	20	12	0	0	12
	9	52,745	0.8504		0.8	52,425	99	0.0	1	0	0	1
Σ(5-9)		5,953,665		91.4064	91.4	4,792,172	80	96	137	6	17	114
TSX		6,202,499				5,234,820	80		145	6	21	118
THP		6,513,404				5,304,348	81		157	6	21	130

Table 3- 15x

Sample Coverage: Exports

Year: 1935

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	53,123	1.1115		1.1	29,156	55	2	8	0	1	7
	1	123,086	2.5753		2.5	123,086	100	0	3	0	1	2
	2	383,256	8.0186		7.6	360,660	94	2	7	0	3	4
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		559,465		11.1413	11.1	512,902	92	4	18	0	5	13
SECTION	5	430,732	9.0119		8.6	240,025	56	18	14	0	4	10
	6	2,197,493	45.9768		43.8	1,873,886	85	31	52	2	7	43
	7	1,540,887	32.2390		30.7	1,252,702	81	28	56	3	5	48
	8	241,949	[illegible]		4.8	56,136	23	18	10	0	0	10
	9	50,997	1.0670		1.0	50,232	98	0.0	1	0	0	1
Σ(5-9)		4,462,058		88.8587	88.9	3,472,981	78	96	133	5	16	112
TSX		4,779,574				3,929,747	78		141	5	21	115
THP		5,021,523				3,985,883	79		151	5	21	125

Table 3- 15x

Sample Coverage: Exports

Year: 1936

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	51,333	1.0179		0.9	26,983	53	2	8	0	1	7
	1	87,156	1.7283		1.5	87,156	100	0	3	0	1	2
	2	897,588	17.7991		15.5	881,598	98	1	7	0	3	4
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		1,036,077		17.9238	17.9	995,737	96	3	18	0	5	13
SECTION	5	440,487	8.7348		7.6	279,770	64	10	14	0	4	10
	6	2,179,117	43.2116		37.7	1,894,097	87	18	53	2	7	44
	7	1,338,855	26.5493		23.2	942,383	70	25	53	2	4	47
	8	737,552			12.8	62,283	8	43	10	0	0	10
	9	48,357	0.9589		0.8	48,189	100	0.0	1	0	0	1
Σ(5-9)		4,744,368		82.0762	82.1	3,226,722	68	97	131	4	15	112
TSX		5,042,893				4,160,176	72		139	4	20	115
THP		5,780,445				4,222,459	73		149	4	20	125

Table 3- 15x

Sample Coverage: Exports

Year: 1937

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	38,531	0.7307		0.7	15,148	39	2	8	0	1	7
	1	84,603	1.6045		1.4	84,603	100	0	3	0	1	2
	2	908,729	17.2336		15.4	893,199	98	1	8	0	3	5
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		1,031,863		17.4543	17.5	992,950	96	3	19	0	5	14
SECTION	5	483,050	9.1608		8.2	343,732	71	10	14	0	4	10
	6	2,531,589	48.0104		42.8	2,256,581	89	20	52	2	7	43
	7	1,185,800	22.4882		20.1	839,725	71	25	54	2	4	48
	8	638,791	[illegible]		10.8	55,644	9	42	11	0	0	11
	9	40,696	0.7718		0.7	39,303	97	0.0	1	0	0	1
Σ(5-9)		4,879,926		82.5457	82.6	3,534,985	72	97	132	4	15	113
TSX		5,272,998				4,472,291	76		140	4	20	116
THP		5,911,789				4,527,935	77		151	4	20	127

Table 3- 15x

Sample Coverage: Exports

Year: 1938

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	36,010	1.2770		0.9	16,739	47	1	7	0	1	6
	1	81,267	2.8819		2.0	81,267	100	0	3	0	1	2
	2	77,127	2.7351		1.9	59,728	77	1	8	0	3	5
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		194,404		4.7911	4.8	157,734	81	2	18	0	5	13
SECTION	5	146,261	5.1867		3.6	82,779	57	3	13	0	3	10
	6	1,160,399	41.1498		28.6	1,009,454	87	8	51	2	7	42
	7	1,285,410	45.5829		31.7	919,784	72	20	50	2	5	43
	8	1,237,648	[illegible]		30.5	25,587	2	66	11	0	0	11
	9	33,464	1.1867		0.8	33,279	99	0.0	1	0	0	1
Σ(5-9)		3,863,182		95.2089	95.2	2,070,883	54	98	126	4	15	107
TSX		2,819,938				2,203,030	54		133	4	20	109
THP		4,057,586				2,228,617	55		144	4	20	120

Table 3- 15x

Sample Coverage: Exports

Year: 1939

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	26,389	0.8391		0.7	9,234	35	2	8	0	1	7
	1	107,022	3.4031		3.0	102,053	95	1	3	0	0	3
	2	320,222	10.1825		9.0	308,633	96	1	8	0	3	5
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		453,633		12.7498	12.8	419,920	93	4	19	0	4	15
SECTION	5	375,356	11.9357		10.6	292,728	78	9	14	0	4	10
	6	1,276,003	40.5747		35.9	1,051,407	82	24	51	2	7	42
	7	1,014,349	32.2545		28.5	818,624	81	21	49	2	5	42
	8	413,142	[illegible]		11.6	30,293	7	42	11	0	0	11
	9	25,485	0.8104		0.7	25,452	100	0.0	1	0	0	1
Σ(5-9)		3,104,335		87.2502	87.3	2,218,504	71	96	126	4	16	106
TSX		3,144,826				2,608,131	73		134	4	20	110
THP		3,557,968				2,638,424	74		145	4	20	121

Table 3- 15x

Sample Coverage: Exports

Year: 1946

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	32,614	0.5055		0.4	651	2	1	2	0	0	2
	1	102,882	1.5947		1.3	51,514	50	2	1	0	1	0
	2	921,267	14.2796		11.8	869,192	94	2	5	0	2	3
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		1,056,763		13.5014	13.5	921,357	87	4	8	0	3	5
SECTION	5	993,002	15.3915		12.7	570,565	57	14	9	0	4	5
	6	2,646,372	41.0186		33.8	2,086,620	79	18	24	3	3	18
	7	1,729,679	26.8099		22.1	1,116,500	67	19	24	0	6	18
	8	1,375,433			17.6	23,859	2	45	1	0	0	1
	9	25,830	0.4004		0.3	25,760	100	0.0	1	0	0	1
Σ(5-9)		6,770,316		86.4986	86.5	3,873,304	57	96	59	3	13	43
TSX		6,451,646				4,770,802	61		66	3	16	47
THP		7,827,079				4,794,661	61		67	3	16	48

Table 3- 15x

Sample Coverage: Exports

Year: 1947

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	8,268	0.0750		0.1	0	0	0.0	0	0	0	0
	1	21,258	0.1928		0.2	3,465	16	0.0	1	0	1	0
	2	874,230	7.9287		6.8	844,216	97	1	5	0	2	3
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		903,756		7.0733	7.1	847,681	94	1	6	0	3	3
SECTION	5	1,380,564	12.5208		10.8	644,281	47	9	0	0	4	5
	6	4,866,958	44.1401		38.1	4,140,766	85	16	24	3	3	18
	7	3,845,050	34.8721		30.1	2,560,659	67	28	28	0	6	22
	8	1,750,936	[illegible]		13.6	18,915	1	38	1	0	0	1
	9	29,826	0.2705		0.2	29,770	100	0.0	1	0	0	1
Σ(5-9)		11,873,334		92.9267	92.9	7,394,391	62	99	63	3	13	47
TSX		11,026,154				8,223,157	64		68	3	16	49
THP		12,777,090				8,242,072	65		69	3	16	50

Table 3- 15x

Sample Coverage: Exports

Year: 1948

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	25,499	0.3754		0.3	0	0	1	0	0	0	0
	1	12,851	0.1892		0.2	699	5	0.0	1	0	1	0
	2	933,709	13.7469		10.8	894,158	96	1	4	0	2	2
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		972,059		11.2379	11.2	894,857	92	2	5	0	3	2
SECTION	5	690,107	10.1604		8.0	301,382	44	11	9	0	4	5
	6	1,636,746	24.0976		18.9	1,283,525	78	10	22	3	3	16
	7	3,466,402	51.0354		40.1	2,465,953	71	27	28	0	6	22
	8	1,857,690			21.5	0	0	51	0	0	0	0
	9	26,840	0.3952		0.3	26,700	99	0.0	1	0	0	1
Σ(5-9)		7,677,785		88.7621	88.8	4,077,560	53	98	60	3	13	44
TSX		6,792,154				4,972,417	58		65	3	16	46
THP		8,649,844				4,972,417	58		65	3	16	46

Table 3- 15x

Sample Coverage: Exports

Year: 1949

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	8,319	0.3879		0.4	0	0	2	0	0	0	0
	1	4,596	0.2143		0.2	104	2	1	1	0	1	0
	2	425,859	19.8553		18.9	383,081	90	11	3	0	2	1
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		438,774		19.4400	19.4	383,185	87	14	4	0	3	1
SECTION	5	300,961	14.0320		13.3	225,338	75	19	9	0	4	5
	6	564,703	26.3287		25.0	534,166	95	8	24	4	3	17
	7	831,870	38.7851		36.9	702,491	84	32	24	0	5	19
	8	112,254			5.0	0	0	28	0	0	0	0
	9	8,515	0.3970		0.4	8,515	100	0	1	0	0	1
Σ(5-9)		1,818,303		80.5600	80.6	1,470,510	81	86	58	4	12	42
TSX		2,144,823				1,853,695	82		62	4	15	43
THP		2,257,077				1,853,695	82		62	4	15	43

Table 3- 15x

Sample Coverage: Exports

Year: 1950

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	2,653	0.0741		0.1	0	0	1	0	0	0	0
	1	2,400	0.0670		0.1	349	15	1	1	0	1	0
	2	352,039	9.8333		9.8	345,288	98	2	3	0	2	1
	3	0	0		0	0	0	0	0	0	0	0
	4	NI										
Σ(0-4)		357,092		9.9546	10.0	345,637	97	4	4	0	3	1
SECTION	5	234,332	6.5455		6.5	157,373	67	26	6	0	2	4
	6	1,981,857	55.3581		55.2	2,025,694	102*	INV	18	2	3	13
	7	1,006,784	28.1219		28.1	761,436	76	83	21	0	5	16
	8	7,124			0.2	0	0	2	0	0	0	0
	9	0	0		0	0	0	0	0	0	0	0
Σ(5-9)		3,230,097		90.0454	90.0	2,944,503	91	96	45	2	10	33
TSX		3,580,065				3,290,140	92		49	2	13	34
THP		3,587,189				3,290,140	92		49	2	13	34

*Note 2

Table 3- 15x

Sample Coverage: Exports

Year: 1951

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	161	0.0064		0.0	0	0	0.0	0	0	0	0
	1	463	0.0184		0.0	0	0	0.0	0	0	0	0
	2	386,965	15.4085		14.5	385,682	100	0.0	6	0	2	4
	3	300	0.0119		0.0	0	0	0.0	0	0	0	0
	4	6	0.0002		0.0	0	0	0.0	0	0	0	0
Σ(0-4)		387,895		14.4925	14.5	385,682	99	0.0	6	0	2	4
SECTION	5	348,806	13.8891		13.0	112,439	32	27	15	0	4	11
	6	629,560	25.0683		23.5	432,695	69	22	9	1	0	8
	7	1,145,113	45.5971		42.8	813,161	71	38	13	0	4	9
	8	165,145	[illegible]		6.2	56,677	34	12	3	0	0	3
	9	0	0		0	0	0	0	0	0	0	0
Σ(5-9)		2,288,624		85.5075	85.5	1,414,972	62	100	40	1	8	31
TSX		2,511,374				1,743,977	65		43	1	10	32
THP		2,676,519				1,800,654	67		46	1	10	35

Table 3- 15x

Sample Coverage: Exports

Year: 1952

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	9	0.0002		0.0	0	0	0.0	0	0	0	0
	1	542	0.0121		0.0	143	26	0.0	1	0	1	0
	2	728,511	16.2632		16.0	726,496	100	1	3	0	2	1
	3	563	0.0126		0.0	0	0	0.0	0	0	0	0
	4	42,760	0.9546		0.9	42,760	100	0	1	0	0	1
Σ(0-4)		772,385		17.0082	17.0	769,399	100	1	5	0	3	2
SECTION	5	2,789,259	62.2670		61.4	2,651,302	95	48	13	0	4	9
	6	300,977	6.7190		6.6	240,740	80	21	10	2	2	6
	7	616,890	13.7714		13.6	547,144	89	24	10	0	3	7
	8	61,738	[illegible]		1.4	44.181	72	6	1	0	0	1
	9	0	0		0	0	0	0	0	0	0	0
Σ(5-9)		3,768,864		82.9918	83.0	3,483,367	92	99	34	2	9	23
TSX		4,479,511				4,208,585	93		38	2	12	24
THP		4,541,249				4,252,766	94		39	2	12	25

Table 3- 15x

Sample Coverage: Exports

Year: 1953

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	16,706	0.2741		0.3	0	0	3	0	0	0	0
	1	4,490	0.0737		0.1	2,955	66	0.0	1	0	1	0
	2	3,581,913	58.7772		58.1	3,580,348	100	0.0	6	0	2	4
	3	0	0		0	0	0	0	0	0	0	0
	4	4,993	0.0819		0.1	4,993	100	0	1	0	0	1
M(0-4)		3,608,102		58.5600	58.6	3,588,296	99	4	8	0	3	5
SECTION	5	846,667	13.8933		13.7	665,680	79	37	19	1	3	15
	6	625,721	10.2677		10.2	534,731	85	19	11	2	2	7
	7	1,013,566	16.6320		16.5	872,326	86	29	9	0	3	6
	8	67,316			1.1	11,772	17	11	3	0	0	3
	9	0	0		0	0	0	0	0	0	0	0
M(5-9)		2,553,270		41.4400	41.4	2,084,509	82	96	42	3	8	31
TSX		6,094,056				5,661,033	92		47	3	11	33
THP		6,161,372				5,672,805	92		50	3	11	36

Table 3- 15x

Sample Coverage: Exports

Year: 1954

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	20,386	0.3100		0.3	20,373	100	0.0	3	0	0	3
	1	1,789	0.0272		0.0	1,036	58	0.0	1	0	1	0
	2	3,585,024	54.5132		52.5	3,542,542	100	5	6	0	2	4
	3	10,112	0.1538		0.2	0	0	1	0	0	0	0
	4	2,345	0.0357		0.0	2,345	100	0	1	0	0	1
Σ(0-4)		3,619,656		53.0282	53.0	3,566,296	99	6	11	0	3	8
SECTION	5	1,469,538	22.3455		21.5	1,017,422	69	48	25	1	4	20
	6	399,898	6.0808		5.9	367,004	92	4	11	1	1	9
	7	1,087,346	16.5340		15.9	805,032	74	30	11	0	3	8
	8	249,475	[illegible]		3.7	136,163	55	12	2	0	0	2
	9	0			0	0	0	0	0	0	0	0
Σ(5-9)		3,206,257		46.9718	47.0	2,325,621	73	94	49	2	8	39
TSX		6,576,438				5,755,754	84		58	2	11	45
THP		6,825,913				5,891,917	86		60	2	11	47

Table 3- 15x

Sample Coverage: Exports

Year: 1955

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	32,616	0.4207		0.4	13,701	42	1	1	0	0	1
	1	0	0		0	0	0	0	0	0	0	0
	2	5,245,337	67.6564		66.7	5,170,112	99	5	4	0	2	2
	3	4,863	0.0627		0.1	0	0	0.0	0	0	0	0
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		5,282,816		67.1404	67.1	5,183,813	98	6	5	0	2	3
SECTION	5	1,769,030	22.8176		22.5	789,185	45	60	14	1	2	11
	6	498,423	6.4289		6.3	164,766	33	20	9	1	2	6
	7	202,635	2.6137		2.6	92,587	46	7	5	0	1	4
	8	115,413	[illegible]		1.5	4,349	4	7	1	0	0	1
	9	0	0		0	0	0	0	0	0	0	0
Σ(5-9)		2,585,501		32.8596	32.9	1,050,887	41	94	29	2	5	22
TSX		7,752,904				6,230,351	79		33	2	7	24
THP		7,868,317				6,234,700	79		34	2	7	25

Table 3- 15x

Sample Coverage: Exports

Year: 1956

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,362	0.0325		0.0	0	0	0.0	0	0	0	0
	1	0	0		0	0	0	0	0	0	0	0
	2	5,134,882	49.6697		48.1	5,118,814	100	1	4	0	2	2
	3	1,673	0.0162		0.0	0	0	0.0	0	0	0	0
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		5,139,917		48.1188	48.1	5,118,814	100	1	4	0	2	2
SECTION	5	1,282,799	12.4085		12.0	562,040	44	27	13	1	2	10
	6	2,952,319	28.5578		27.6	1,700,925	58	47	9	1	3	5
	7	963,021	9.3153		9.0	614,715	64	13	13	0	1	12
	8	343,677	[illegible]		3.2	1,101	0.0	13	1	0	0	1
	9	0	0		0	0	0	0	0	0	0	0
Σ(5-9)		5,541,816		51.8812	51.9	2,878,781	52	99	36	2	6	28
TSX		10,338,056				7,996,494	75		39	2	8	29
THP		10,681,733				7,997,595	75		40	2	8	30

Table 3- 15x

Sample Coverage: Exports

Year: 1957

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	1,363,521	11.8164		11.3	1,332,632	98	1	1	0	1	0
	1	0	0		0	0	0	0	0	0	0	0
	2	4,245,732	36.7939		35.1	4,231,252	100	0.0	4	0	2	2
	3	6,810	0.0590		0.1	0	0	0.0	0	0	0	0
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		5,616,063		46.3654	46.4	5,563,884	99	2	5	0	3	2
SECTION	5	2,788,407	24.1646		23.0	1,534,848	55	41	14	1	2	11
	6	1,982,309	17.1789		16.4	1,315,329	66	22	10	1	3	6
	7	1,152,450	9.9872		9.5	619,511	54	17	18	0	1	17
	8	573,389			4.7	0	0	19	0	0	0	0
	9	0			0	0	0	0	0	0	0	0
Σ(5-9)		6,496,555		53.6346	53.6	3,469,688	53	98	42	2	6	34
TSX		11,539,229				9,033,572	75		47	2	9	36
THP		12,112,618				9,033,572	75		47	2	9	36

Table 3- 15x

Sample Coverage: Exports

Year: 1958

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	122,801	0.4688		0.5	93,753	76	1	1	0	0	1
	1	0	0		0	0	0	0	0	0	0	0
	2	6,710,235	25.6141		25.2	6,670,700	99	2	6	0	3	3
	3	5,465	0.0208		0.0	0	0	0.0	0	0	0	0
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		6,838,501		25.6699	25.7	6,764,453	99	3	7	0	3	4
SECTION	5	3,014,545	11.5070		11.3	1,821,672	60	47	16	1	2	13
	6	12,440,740	47.4884		46.7	12,077,875	97	14	19	1	6	12
	7	3,903,644	14.9009		14.7	3,408,456	87	19	29	0	1	28
	8	442,684			1.7	5,984	1	17	1	0	0	1
	9	0	0		0	0	0	0	0	0	0	0
Σ(5-9)		19,801,613		74.3301	74.3	17,313,987	87	97	65	2	9	54
TSX		26,197,430				24,072,456	90		71	2	12	57
THP		26,640,114				24,078,440	90		72	2	12	58

Table 3- 15x

Sample Coverage: Exports

Year: 1959

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	44,218	0.1833		0.2	729	2	1	1	0	0	1
	1	0	0		0	0	0	0	0	0	0	0
	2	4,756,134	19.7210		19.5	4,640,701	98	3	6	1	3	2
	3	30,150	0.1250		0.1	10,998	37	1	1	0	0	1
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		4,830,502		19.7925	19.8	4,652,428	96	5	8	1	3	4
SECTION	5	3,536,254	14.6628		14.5	2,124,398	60	40	18	0	1	17
	6	13,255,358	54.9624		54.3	12,183,166	92	31	16	1	5	10
	7	2,480,795	10.2864		10.2	1,955,281	79	15	14	0	1	13
	8	288,614			1.2	0	0	8	0	0	0	0
	9	14,240	0.0590		0.1	0	0	0.0	0	0	0	0
Σ(5-9)		19,575,261		80.2075	80.2	16,262,845	83	95	48	1	7	40
TSX		24,117,149				20,915,273	86		56	2	10	44
THP		24,405,763				20,915,273	86		56	2	10	44

Table 3- 15x

Sample Coverage: Exports

Year: 1960

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	42,934	0.1390		0.1	901	2	1	1	0	0	1
	1	0	0		0	0	0	0	0	0	0	0
	2	5,186,442	16.7940		16.5	5,059,815	98	2	6	1	3	2
	3	25,486	0.0825		0.1	6,328	25	0.0	1	0	0	1
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		5,254,862		16.7175	16.7	5,067,044	96	4	8	1	3	4
SECTION	5	2,647,975	8.5743		8.4	1,674,357	63	19	19	0	1	18
	6	19,083,125	61.7922		60.7	16,288,787	85	55	16	1	5	10
	7	3,860,569	12.5007		12.3	3,324,200	86	11	15	0	1	14
	8	550,592	[illegible]		1.8	0	0	11	0	0	0	0
	9	36,185	0.1172		0.1	0	0	1	0	0	0	0
Σ(5-9)		26,178,446		83.2825	83.3	21,287,344	81	96	50	1	7	42
TSX		30,882,716				26,354,388	84		58	2	10	46
THP		31,433,308				26,354,388	84		58	2	10	46

Table 3- 15x

Sample Coverage: Exports

Year: 1961

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	83,394	0.6598		0.7	57,478	69	1	1	0	0	1
	1	0	0		0	0	0	0	0	0	0	0
	2	5,416,775	42.8553		42.0	5,384,789	99	1	6	1	3	2
	3	105,177	0.8321		0.8	103,585	99	0.0	1	0	0	1
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		5,605,346		43.4779	43.5	5,545,852	99	3	8	1	3	4
SECTION	5	1,615,477	12.7810		12.5	1,118,242	69	23	18	0	1	17
	6	3,212,704	25.4176		24.9	2,866,614	89	16	14	1	5	8
	7	2,110,942	16.7009		16.4	1,164,803	55	43	13	0	0	13
	8	252,717	[illegible]		2.0	0	0	12	0	0	0	0
	9	95,206	0.7532		0.7	0	0	4	0	0	0	0
Σ(5-9)		7,287,046		56.5221	56.5	5,149,659	71	97	45	1	6	38
TSX		12,639,675				10,695,511	83		53	2	9	42
THP		12,892,392				10,695,511	83		53	2	9	42

Table 3- 15x

Sample Coverage: Exports

Year: 1962

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	19,778	0.2399		0.2	2,798	14	1	1	0	0	1
	1	0	0		0	0	0	0	0	0	0	0
	2	2,431,405	29.4894		29.0	2,416,836	99	1	5	1	2	2
	3	34,960	0.4240		0.4	31,420	90	0.0	1	0	0	1
	4	0	0		0	0	0	0	0	0	0	0
Σ(0-4)		2,486,143		29.6929	29.7	2,451,054	99	3	7	1	2	4
SECTION	5	1,154,667	14.0044		13.8	861,739	75	23	20	0	1	19
	6	3,208,695	38.9168		38.3	3,043,241	95	13	13	1	3	9
	7	1,320,886	16.0204		15.8	733,147	56	46	16	0	0	16
	8	127,843			1.5	0	0	10	0	0	0	0
	9	74,620	0.9050		0.9	0	0	6	0	0	0	0
Σ(5-9)		5,886,711		70.3071	70.3	4,638,127	79	97	49	1	4	44
TSX		8,245,011				7,089,181	85		56	2	6	48
THP		8,372,854				7,089,181	85		56	2	6	48

Table 3- 15x

Sample Coverage: Exports

Year: 1963

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	4,437	0.0346		0.0	0	0	0.0	0	0	0	0
	1	12,364	0.0965		0.1	11,130	90	0.0	1	0	0	1
	2	2,357,910	18.3993		17.9	2,337,382	99	0.0	6	1	2	3
	3	7,849	0.0612		0.1	0	0	0.0	0	0	0	0
	4	1	0.0000		0.0	0	0	0.0	0	0	0	0
Σ(0-4)		2,382,561		18.0928	18.1	2,348,512	99	1	7	1	2	4
SECTION	5	1,351,968	10.5497		10.3	814,063	60	11	13	0	2	11
	6	4,089,757	31.9132		31.1	3,923,326	96	4	8	1	2	5
	7	4,915,523	38.3568		37.3	1,256,412	26	77	20	0	1	19
	8	353,298			2.7	13,803	4	7	1	0	0	1
	9	75,437	0.5887		0.6	75,387	100	0.0	1	0	0	1
Σ(5-9)		10,785,983		81.9072	81.9	6,082,991	56	99	43	1	5	37
TSX		12,815,246				8,417,700	64		49	2	7	40
THP		13,168,544				8,431,503	64		50	2	7	41

Table 3- 15x

Sample Coverage: Exports

Year: 1964

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	7,503	0.0458		0.0	0	0	0.0	0	0	0	0
	1	6,155	0.0376		0.0	0	0	0.0	0	0	0	0
	2	2,500,479	15.2552		14.1	2,432,790	97	1	5	1	2	2
	3	32,868	0.2005		0.2	31,775	97	0.0	1	0	0	1
	4	551	0.0034		0.0	551	100	0	1	0	0	1
Σ(0-4)		2,547,556		14.3800	14.4	2,465,116	97	1	7	1	2	4
SECTION	5	1,807,597	11.0280		10.2	730,651	40	18	11	0	2	9
	6	5,641,817	34.4202		31.9	5,463,240	97	3	15	1	4	10
	7	6,310,539	38.5000		35.6	2,838,776	45	58	37	1	2	34
	8	1,324,912			7.5	102,092	8	20	3	0	0	3
	9	83,491	0.5094		0.5	83,486	100	0.0	1	0	0	1
Σ(5-9)		15,168,356		85.6200	85.6	9,218,245	61	99	67	2	8	57
TSX		16,391,000				11,581,269	65		71	3	10	58
THP		17,715,912				11,683,361	66		74	3	10	61

Table 3- 15x

Sample Coverage: Exports

Year: 1965

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	29,697	0.1299		0.1	0	0	0.0	0	0	0	0
	1	6,925	0.0303		0.0	0	0	0.0	0	0	0	0
	2	965,951	4.2236		3.9	871,925	90	1	6	1	2	3
	3	9,154	0.0400		0.0	0	0	0.0	0	0	0	0
	4	849	0.0037		0.0	849	100	0	1	0	0	1
Σ(0-4)		1,012,576		4.0709	4.1	872,774	86	2	7	1	2	4
SECTION	5	3,125,640	13.6669		12.6	1,684,718	54	20	12	0	2	10
	6	9,016,505	39.4249		36.3	8,760,217	97	4	14	2	5	7
	7	9,630,338	42.1089		38.7	6,250,974	65	47	36	0	3	33
	8	2,003,459	[illegible]		8.1	74,342	4	27	4	0	0	4
	9	85,017	0.3717		0.3	85,017	100	0	1	0	0	1
Σ(5-9)		23,860,959		95.9291	95.9	16,855,268	71	98	67	2	10	55
TSX		22,870,076				17,653,700	71		70	3	12	55
THP		24,873,535				17,728,042	71		74	3	12	59

Table 3- 15x

Sample Coverage: Exports

Year: 1966

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	102,308	0.3541		0.3	21,024	21	1	1	0	0	1
	1	7,446	0.0258		0.0	0	0	0.0	0	0	0	0
	2	2,197,504	7.6068		6.9	1,893,570	86	2	6	1	2	3
	3	5,207	0.0180		0.0	0	0	0.0	0	0	0	0
	4	2,069	0.0072		0.0	2,069	100	0	1	0	0	1
Σ(0-4)		2,314,534		7.2340	7.2	1,916,663	83	3	8	1	2	5
SECTION	5	2,678,292	9.2711		8.4	1,391,814	52	10	13	0	1	12
	6	9,138,630	31.6340		28.6	8,732,934	96	3	16	2	5	9
	7	14,665,973	50.7674		45.8	6,539,976	45	61	48	0	2	46
	8	3,106,487	[illegible]		9.7	73,979	2	23	3	0	0	3
	9	91,162	0.3156		0.3	91,147	100	0.0	1	0	0	1
Σ(5-9)		29,680,544		92.7660	92.8	16,829,850	57	97	81	2	8	71
TSX		28,888,591				18,672,534	58		86	3	10	73
THP		31,995,078				18,746,513	59		89	3	10	76

Table 3- 15x

Sample Coverage: Exports

Year: 1967

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	110,520	0.3110		0.3	42,174	38	1	1	0	0	1
	1	13,742	0.0387		0.0	0	0	0.0	0	0	0	0
	2	6,561,704	18.4641		17.3	6,483,885	99	1	4	1	1	2
	3	11,255	0.0317		0.0	0	0	0.0	0	0	0	0
	4	1,910	0.0054		0.0	1,910	100	0	1	0	0	1
Σ(0-4)		6,699,131		17.6404	17.6	6,527,969	97	2	6	1	1	4
SECTION	5	3,971,915	11.1766		10.5	1,733,215	44	27	13	0	3	10
	6	15,045,149	42.3358		39.6	13,728,327	91	16	15	2	3	10
	7	9,750,924	27.4383		25.7	7,427,311	76	28	13	1	2	10
	8	2,438,443	[illegible]		6.4	49,177	2	28	1	0	0	1
	9	70,545	0.1985		0.2	70,490	100	0.0	1	0	0	1
Σ(5-9)		31,276,976		82.3596	82.4	23,008,520	74	98	43	3	8	32
TSX		35,537,667				29,487,312	78		48	4	9	35
THP		37,976,107				29,536,489	78		49	4	9	36

Table 3- 15x

Sample Coverage: Exports

Year: 1968

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	9,497	0.0347		0.0	0	0	0.0	0	0	0	0
	1	28,605	0.1046		0.1	0	0	0.0	0	0	0	0
	2	1,737,735	6.3554		6.1	1,709,479	98	0.0	4	1	1	2
	3	17,575	0.0643		0.1	0	0	0.0	0	0	0	0
	4	1,826	0.0067		0.0	1,826	100	0	1	0	0	1
Σ(0-4)		1,795,236		6.2980	6.3	1,711,305	95	1	5	1	1	3
SECTION	5	3,530,134	12.9107		12.4	673,597	19	25	8	0	2	6
	6	19,082,150	69.7886		66.9	13,678,591	72	47	15	2	3	10
	7	2,878,564	10.5277		10.1	956,731	33	17	12	0	1	11
	8	1,161,993			4.1	0	0	10	0	0	0	0
	9	56,712	0.2074		0.2	56,667	100	0.0	1	0	0	1
Σ(5-9)		26,709,553		93.7020	93.7	15,365,586	58	99	36	2	6	28
TSX		27,342,796				17,076,891	60		41	3	7	31
THP		28,504,789				17,076,891	60		41	3	7	31

Table 3- 15x

Sample Coverage: Exports

Year: 1969

		EXPORTS				SAMPLE						
		VAL	SW	DW	CON	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	20,106	0.0397		0.0	0	0	0.0	0	0	0	0
	1	9,421	0.0186		0.0	0	0	0.0	0	0	0	0
	2	4,049,757	7.9875		7.8	4,010,354	99	0.0	3	1	0	2
	3	1,507	0.0030		0.0	0	0	0.0	0	0	0	0
	4	973	0.0019		0.0	973	100	0	1	0	0	1
Σ(0-4)		4,081,764		7.8955	7.9	4,011,327	98	0.0	4	1	0	3
SECTION	5	3,879,670	7.6520		7.5	692,796	18	21	6	0	2	4
	6	40,256,169	79.3988		77.9	30,304,057	75	65	9	2	2	5
	7	2,430,094	4.7930		4.7	855,914	35	10	4	0	0	4
	8	995,913	[illegible]		1.9	436,842	44	4	2	0	0	2
	9	53,533	0.1056		0.1	53,343	100	0.0	1	0	0	1
Σ(5-9)		47,615,379		92.1045	92.1	32,342,952	68	100	22	3	4	16
TSX		50,701,230				35,917,437	69		24	3	4	17
THP		51,697,143				36,354,279	70		26	3	4	19

Table 3–15m

Sample Coverage: Imports

Year: 1930

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	5,058,283	52.8801	52.3450	51	51	4,741,967	94	15	5	2	2	1
	2	3,261,287	34.0940	33.7490	33	33	2,611,643	80	32	11	2	3	6
	4	294,779	3.0817	3.0505	3	3	195,437	66	5	1	0	1	0
	5	23,804	0.2489	0.2463	0.0	0.0	0	0	1	0	0	0	0
	6	927,414	9.6953	9.5972	9	9	283,986	31	31	2	0	1	1
TSI		9,565,567											
1,3,7,8,9		323,252			3	3			16	0	0	0	0
TSM		9,888,819					7,833,033	79		19	4	7	8
≷(0-4)		8,686,233	87.8389	86.9789	88	87	7,549,047	87	55	17	4	6	7
≷(5-9)		1,202,586	12.1611		12		283,986	24	45	2	0	1	1
≷(5-9,b)		1,302,370		13.0211		13	383,770	30		4	2		2
MKSB		0											
TLS		as TSM											
IB		0											
BMC		as TSM											
XB		99,784								2	1		1
TOTB		99,784		1.0119		1				2	1		1
TSMb		9,988,603					7,932,817	79		21	12		9
TSIb		9,665,351											

Table 3-15m

Sample Coverage: Imports

Year: 1931

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	4,473,398	59.2553	anb	58	anb	4,117,943	92	21	5	2	2	1
	2	1,939,779	25.6946		25		1,659,613	86	17	11	2	3	6
	4	286,222	3.7913		4		148,144	52	8	1	0	1	0
	5	23,571	0.3122		0.0		0	0	1	0	0	0	0
	6	826,397	10.9466		11		177,145	21	39	3	0	2	1
TSI		7,549,367											
1,3,7,8,9		223,707			3	anb			13				
TSM		7,773,074					6,102,845	79		20	4	8	8
WW(0-4)		6,700,221	86.1978	anb	86	anb	5,925,700	88	46	17	4	6	7
WW(5-9)		1,072,853	13.8022		14		177,145	17	54	3	0	2	1
WW(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1932

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,650,050	60.8666	anb	59	anb	3,309,538	91	26	5	2	2	1
	2	1,462,661	24.3907		24		1,228,464	84	18	11	2	3	6
	4	220,682	3.6800		4		156,871	71	5	1	0	1	0
	5	7,512	0.1253		0.0		0	0	1	0	0	0	0
	6	655,898	10.9375		11		134,512	21	39	2	0	1	1
TSI		5,996,803											
1,3,7,8,9		166,222			3	anb			12				
TSM		6,163,025					4,829,385	78		19	4	7	8
≋(0-4)		5,334,225	86.5521	anb	87	anb	4,694,873	88	48	17	4	6	7
≋(5-9)		828,800	13.4479		13		134,512	16	52	2	0	1	1
≋(5-9,b)		anb		anb		anb	anb	anb	anb	------ anb ------			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		------anb------			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1933

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,020,104	52.8312	32.1988	51	32	2,814,053	93	19	5	2	2	1
	2	1,839,744	32.1829	19.6144	31	19	1,572,312	85	25	11	2	3	6
	4	163,010	2.8516	1.7379	3	2	144,774	89	2	1	0	1	0
	5	11,723	0.2051	0.1250	0.0	0.0	0	0	1	0	0	0	0
	6	681,937	11.9292	7.2705	12	7	251,443	37	40	3	0	2	1
TSI		5,716,518											
1,3,7,8,9		150,298			3	2			14				
TSM		5,866,816					4,782,582	82		20	4	8	8
M(0-4)		5,024,632	85.6450	52.7252	86	53	4,531,139	90	46	17	4	6	7
M(5-9)		842,184	14.3550		14		251,443	30	54	3	0	2	1
M(5-9,b)		4,505,226		47.2748		47	3,914,485	87		8	4		4
MKSB		771,745					771,745						
TLS		5,095,071											
IB		0								0	0		0
BMC		as TLS											
XB		3,663,042								5	2		3
TOTB		3,663,042		39.0535		38				5	2		3
TSMb		9,529,858					8,445,624	89		25	14		11
TSIb		9,379,560											

Table 3-15m

Sample Coverage: Imports

Year: 1934

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,661,991	52.4922	16.8579	51	17	3,375,757	92	22	6	1	2	3
	2	2,333,607	33.4507	10.7427	33	11	2,006,415	86	25	10	2	3	5
	4	166,818	2.3912	0.7679	2	1	164,942	99	0.0	1	0	1	0
	5	8,098	0.1161	0.0373	0.0	0.0	0	0	1	0	0	0	0
	6	805,747	11.5498	3.7092	11	4	285,940	35	40	3	0	2	1
TSI		6,976,261											
1,3,7,8,9		170,749							13				
TSM		7,147,010			2	1	5,833,054	82		20	3	8	9
≶(0-4)		6,162,585	86.2261	28.1481	86	28	5,547,114	90	47	17	3	6	8
≶(5-9)		984,425	13.7739		14		285,940	29	53	3	0	2	1
≶(5-9,b)		15,730,864		71.8519		72	15,032,379	96		7	5		2
MKSB		1,004,697					1,004,697						
TLS		6,142,313											
IB		0								0	0		0
BMC		as TLS											
XB		14,746,439								4	3		1
TOTB		14,746,439		67.8849		67				4	3		1
TSMb		21,893,449					20,579,493	94		24	14		10
TSIb		21,722,700											

Table 3-15m

Sample Coverage: Imports

Year: 1935

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,078,678	43.9847	29.1808	43	29	2,814,280	91	19	5	2	2	1
	2	2,504,620	35.7832	23.7397	35	23	2,119,242	85	27	11	2	3	6
	4	412,394	5.8918	3.9088	6	4	330,632	80	6	1	0	1	0
	5	10,209	0.1459	0.0968	0.0	0.0	0	0	1	0	0	0	0
	6	993,525	14.1944	9.4170	14	9	456,713	46	38	5	0	3	2
TSI		6,999,426											
1,3,7,8,9		138,892			2	1			10				
TSM		7,138,318					5,720,867	80		22	4	9	9
≷(0-4)		5,995,692	83.9931	56.0909	84	56	5,264,154	88	52	17	4	6	7
≷(5-9)		1,142,626	16.0069		16		456,713	40	48	5	0	3	2
≷(5-9,b)		4,693,546		43.9091		44	4,007,633	72		8	6		2
MKSB		878,824					878,824						
TLS		6,259,494											
IB		0								0	0		0
BMC		as TLS											
XB		3,550,920								3	3		0
TOTB		3,550,920		33.6569		33				3	3		0
TSMb		10,689,238					9,271,787	87		25	16		9
TSIb		10,550,346											

Table 3–15m

Sample Coverage: Imports

Year: 1936

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,730,034	46.4686	33.9758	46	34	3,373,476	90	21	5	2	2	1
	2	2,477,404	30.8634	22.5660	30	22	2,040,573	82	26	11	2	3	6
	4	467,134	5.8195	4.2550	6	4	464,200	99	0.0	1	0	1	0
	5	16,082	0.2003	0.1465	0.0	0.0	0	0	1	0	0	0	0
	6	1,336,346	16.6481	12.1724	16	12	578,680	43	45	5	0	3	2
TSI		8,027,000											
1,3,7,8,9		106,374			1	1			6				
TSM		8,133,374					6,456,929	79		22	4	9	9
≷(0–4)		6,674,572	82.0640	60.2133	82	60	5,878,249	88	48	17	4	6	7
≷(5–9)		1,458,802	17.9360		18		578,680	40	52	5	0	3	2
≷(5–9,b)		4,410,306		39.7867		40	3,530,184	72		8	6		2
MKSB		514,948					514,948						
TLS		7,618,426											
IB		0								0	0		0
BMC		as TLS											
XB		2,951,504								3	3		0
TOTB		2,951,504		26.8844		27				3	3		0
TSMb		11,084,878					9,408,433	85		25	16		9
TSIb		10,978,504											

Table 3-15m

Sample Coverage: Imports

Year: 1937

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,691,839	41.6495	30.2501	41	30	3,411,970	92	16	5	2	2	1
	2	3,281,960	37.0254	26.8916	36	27	2,667,991	81	35	11	2	3	6
	4	413,073	4.6601	3.3846	5	3	411,200	100	0.0	1	0	1	0
	5	15,770	0.1779	0.1292	0.0	0.0	0	0	1	0	0	0	0
	6	1,461,433	16.4871	11.9746	16	12	766,070	52	39	5	0	3	2
TSI		8,864,075											
1,3,7,8,9		158,743			2	1			9				
TSM		9,022,818					7,257,231	80		22	4	9	9
W(0-4)		7,386,872	81.8688	59.7491	82	60	6,491,161	88	51	17	4	6	7
W(5-9)		1,635,946	18.1312		18		766,070	47	49	5	0	3	2
W(5-9,b)		4,976,270		40.2509		40	4,106,394	72		6	4		2
MKSB		773,835					773,835						
TLS		8,248,983											
IB		0								0	0		0
BMC		as TLS											
XB		3,340,324								1	1		0
TOTB		3,340,324		27.3698		27				1	1		0
TSMb		12,363,142					10,597,555	86		23	14		9
TSIb		12,204,399											

Table 3-15m

Sample Coverage: Imports

Year: 1938

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,524,512	51.4025	48.3249	50	47	3,387,714	96	14	5	2	2	1
	2	1,864,078	27.1862	25.5585	27	25	1,596,439	86	28	11	2	3	6
	4	392,858	5.7296	5.3865	6	5	392,136	100	0.0	1	0	1	0
	5	24,637	0.3593	0.3378	0.0	0.0	0	0	3	0	0	0	0
	6	1,050,611	15.3224	14.4050	15	14	658,698	63	41	5	0	3	2
TSI		6,856,696											
1,3,7,8,9		134,692			2	2			14				
TSM		6,991,388					6,034,987	86		22	4	9	9
SW(0-4)		5,781,448	82.6939	77.8325	83	78	5,376,289	93	42	17	4	6	7
SW(5-9)		1,209,940	17.3061		17		658,698	54	58	5	0	3	2
SW(5-9,b)		1,646,617		22.1675		22	1,095,375	6749		6	4		2
MKSB		582,104					582,104						
TLS		6,409,284											
IB		0								0	0		0
BMC		as TLS											
XB		436,677								1	1		0
TOTB		436,677		5.9873		6				0	0		0
TSMb		7,428,065					6,471,664	87		23	14		9
TSIb		7,293,373											

Table 3-15m

Sample Coverage: Imports

Year: 1939

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	2,637,167	50.0061	anb	49	anb	2,451,912	93	24	5	2	2	1
	2	1,244,286	23.5942		23		1,087,169	87	20	11	2	3	6
	4	311,356	5.9040		6		301,331	97	1	1	0	1	0
	5	31,377	0.5950		1		0	0	4	0	0	0	0
	6	1,049,502	19.9007		20		738,377	70	40	5	0	3	2
TSI		5,273,688											
1,3,7,8,9		86,525			2	anb			11				
TSM		5,360,213					4,578,789	85		22	4	9	9
W(0-4)		4,192,809	78.2209	anb	78	anb	3,840,412	92	45	17	4	6	7
W(5-9)		1,167,404	21.7791		22		738,377	63	55	5	0	3	2
W(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		212,920					212,920						
TLS		5,147,293											
IB		0								0	0		0
BMC		as TLS											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1946

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	208,811	7.8398	anb	8	anb	203,566	97	2	1	1	0	0
	2	1,386,817	52.0677		~~19~~ 52		1,284,689	93	42	6	2	1	3
	4	939,701	35.2808		35		939,701	100	0	1	0	1	0
	5	112,156	4.2109		4 ~~0.0~~		0	0	46	0	0	0	0
	6	16,004	0.6009		1		27,234	170*	INV	3	0	1	2
TSI		2,663,489											
1,3,7,8,9		33,334			1	anb			14				
TSM		2,696,823					2,455,190	91		11	3	3	5
M(0-4)		2,535,338	94.0120	anb	94	anb	2,427,956	96	44	8	3	2	3
M(5-9)		161,485	5.9880		6		27,234	17	56	3	0	1	2
M(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

*Note 1

Table 3–15m

Sample Coverage: Imports

Year: 1947

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	1,047,491	14.8568	anb	15	anb	945,092	90	9	3	1	2	0
	2	3,223,997	45.7265		45		3,008,464	93	18	8	2	2	4
	4	2,560,732	36.3193		36		1,986,903	78	49	1	0	1	0
	5	120,506	1.7092		~~2 0.0~~		0	0	10	0	0	0	0
	6	97,880	1.3882		1		59,288	61	3	3	0	1	2
TSI		7,050,606											
1,3,7,8,9		121,484			2	anb			10				
TSM		7,172,090					5,999,747	84		15	3	6	6
TSM(0-4)		6,832,260	95.2618	anb	95	anb	5,940,459	87	76	12	3	5	4
TSM(5-9)		339,830	4.7382		5		59,288	17	24	3	0	1	2
TSM(5-9,b)		anb		anb		anb	anb	anb	anb	------ anb ------			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		------anb------			
TSIb		anb											

Table 3–15m

Sample Coverage: Imports

Year: 1948

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,550,213	43.6737	anb	43	anb	3,409,871	96	24	3	1	2	0
	2	2,468,013	30.3608		30		2,276,120	92	33	8	2	2	4
	4	1,977,415	24.3256		24		1,919,221	97	10	2	1	1	0
	5	56,870	0.6996		1		8,768	15	8	1	0	0	1
	6	76,444	0.9404		1		10,525	14	11	3	0	1	2
TSI		8,128,955											
1,3,7,8,9		72,130			1	anb			13				
TSM		8,201,085					7,624,505	93		17	4	6	7
(0–4)		7,995,696	97.4956	anb	97	anb	7,605,212	95	68	13	4	5	4
(5–9)		205,389	2.5044		3		19,293	9	32	4	0	1	3
(5–9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1949

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	2,202,454	61.6025	anb	61	anb	1,633,108	74	72	3	1	2	0
	2	606,834	16.9731		17		559,605	92	6	6	2	1	3
	4	663,024	18.5447		18		615,161	93	6	2	1	1	0
	5	8,084	0.2261		0.0		2,962	37	1	1	0	0	1
	6	94,873	2.6536		3		24,618	26	9	3	0	1	2
TSI		3,575,269											
1,3,7,8,9		47,051			1	anb			6				
TSM		3,622,320					2,835,454	78		15	4	5	6
(0-4)		3,472,418	95.8617	anb	96	anb	2,807,874	81	84	11	4	4	3
(5-9)		149,902	4.1383		4		27,580	18	16	4	0	1	3
(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1950

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	7,111,338	70.3379	anb	69	anb	5,716,078	80	63	4	1	3	0
	2	1,643,797	16.2587		16		1,345,129	82	13	7	2	1	4
	4	564,527	5.5837		5		560,423	99	0.0	2	1	1	0
	5	613,947	6.0725		6		353,547	58	12	2	0	0	2
	6	176,643	1.7472		2		124,716	71	2	3	0	1	2
TSI		10,110,252											
1,3,7,8,9		214,076			2	anb			10				
TSM		10,324,328					8,099,893	78		18	4	6	8
SW(0-4)		9,319,665	90.2690	anb	90	anb	7,621,630	82	76	13	4	5	4
SW(5-9)		1,004,663	9.7310		10		478,263	48	24	5	0	1	4
SW(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1951

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,464,169	45.5182	anb	45	anb	2,653,510	77	41	4	1	3	0
	2	3,041,419	39.0634		40		2,611,972	86	22	10	3	4	3
	4	170,469	2.2399		2		179,725	105*	INV	3	1	2	0
	5	391,825	5.1485		5		107,287	27	14	1	0	0	1
	6	542,632	7.1300		7		150,458	28	20	3	0	1	2
TSI		7,610,514											
1,3,7,8,9		59,290			1	anb			3				
TSM		7,669,804					5,702,952	74		21	5	10	6
W(0-4)		6,676,058	87.0434	anb	87	anb	5,445,207	82	63	17	5	9	3
W(5-9)		993,746	12.9566		13		257,745	26	37	4	0	1	3
W(5-9,b)		anb		anb		anb	anb	anb	anb	------ anb ------			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		------anb------			
TSIb		anb											

*Note 1

Table 3-15m

Sample Coverage: Imports

Year: 1952

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	2,068,491	69.9586	anb	69	anb	1,610,128	78	49	4	1	3	0
	2	556,386	18.8176		18		276,858	50	30	7	1	2	4
	4	101,065	3.4181		3		101,065	100	0	1	0	1	0
	5	12,804	0.4330		0.0		6,809	53	1	1	0	0	1
	6	217,991	7.3727		7		78,485	36	15	3	0	1	2
TSI		2,956,737											
1,3,7,8,9		55,160			2	anb			6				
TSM		3,011,897					2,073,345	69		16	2	7	7
TSM(0-4)		2,725,960	90.5064	anb	91	anb	1,988,051	73	79	12	2	6	4
TSM(5-9)		285,937	9.4936		9		85,294	30	21	4	0	1	3
TSM(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1953

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	4,801,509	47.0933	anb	47	anb	4,125,032	86	46	5	1	4	0
	2	3,124,598	30.6461		31		2,706,260	87	29	9	3	2	4
	4	1,796,993	17.6249		18		1,618,010	90	12	3	1	2	0
	5	146,610	1.4380		1		100,895	69	3	1	0	0	1
	6	326,037	3.1978		3		209,480	64	8	3	0	1	2
TSI		10,195,747											
1,3,7,8,9		26,435			0.0	anb			2				
TSM		10,222,182					8,759,677	86		21	5	9	7
M(0-4)		9,723,100	95.1177	anb	95	anb	8,449,302	87	87	17	5	8	4
M(5-9)		499,082	4.8823		5		310,375	62	13	4	0	1	3
M(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1954

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,458,780	38.8101	anb	39	anb	3,361,598	97	11	5	1	3	1
	2	3,408,963	38.2511		38		3,089,756	91	36	10	3	3	4
	4	1,038,947	11.6578		12		1,057,560	102*	INV	3	1	2	0
	5	339,385	3.8082		~~50~~ 4		169,019	50	19	1	0	0	1
	6	665,993	7.4729		7		382,397	49	32	3	0	1	2
TSI		8,912,068											
1,3,7,8,9		46,626			1	anb			5				
TSM		8,958,694					8,060,330	90		22	5	9	8
W(0-4)		7,906,690	88.2572	anb	88	anb	7,508,914	95	44	18	5	8	5
W(5-9)		1,052,004	11.7428		12		551,416	52	56	4	0	1	3
W(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

*Note 1

Table 3-15m

Sample Coverage: Imports

Year: 1955

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,385,942	27.5940	anb	28	anb	3,308,273	98	5	12	1	3	8
	2	5,758,724	46.9312		47		5,170,735	90	35	10	2	4	4
	4	1,028,471	8.3816		8		1,028,471	100	0	1	0	1	0
	5	825,984	6.7314		7		248,472	30	34	3	0	0	3
	6	1,271,442	10.3617		10		864,690	68	24	6	0	2	4
TSI		12,270,563											
1,3,7,8,9		31,500			0.0	anb			2				
TSM		12,302,063					10,620,641	86		32	3	10	19
TSM(0-4)		10,173,138	82.6946	anb	83	anb	9,507,479	93	40	23	3	8	12
TSM(5-9)		2,128,925	17.3054		17		1,113,162	52	60	9	0	2	7
TSM(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1956

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,048,105	24.7273	anb	24	anb	2,860,919	94	9	12	1	3	8
	2	5,982,730	48.5340		48		5,068,359	85	44	9	2	3	4
	4	1,068,769	8.6702		9		1,068,769	100	0	1	0	1	0
	5	646,134	5.2417		5		412,206	64	11	4	0	0	4
	6	1,581,142	12.8268		13		1,056,831	67	25	6	0	2	4
TSI		12,326,880											
1,3,7,8,9		222,469			2	anb			11				
TSM		12,549,349					10,467,084	83		32	3	9	20
W(0-4)		10,099,604	80.4791	anb	80	anb	8,998,047	89	53	22	3	7	12
W(5-9)		2,449,745	19.5209		20		1,469,037	60	47	10	0	2	8
W(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3–15m

Sample Coverage: Imports

Year: 1957

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	4,349,462	30.8046	anb	31	anb	4,250,311	98	5	11	1	3	7
	2	5,546,818	39.2847		39		4,436,178	80	53	10	2	3	5
	4	739,414	5.2368		5		739,414	100	0	1	0	1	0
	5	515,780	3.6530		4		454,665	88	3	4	0	0	4
	6	2,968,067	21.0210		21		2,258,894	76	34	6	0	2	4
TSI		14,119,541											
1,3,7,8,9		104,995			1	anb			5				
TSM		14,224,536					12,139,462	85		32	3	9	20
MM(0–4)		10,635,694	74.7701	anb	75	anb	9,425,903	89	58	22	3	7	12
MM(5–9)		3,588,842	25.2299		25		2,713,559	76	42	10	0	2	8
MM(5–9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3–15m

Sample Coverage: Imports

Year: 1958

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	6,973,119	38.0859	anb	38	anb	6,112,469	88	28	14	1	5	8
	2	5,180,303	28.2939		28		4,474,687	86	23	12	2	4	6
	4	741,016	4.0473		4		640,431	86	3	2	0	2	0
	5	1,176,373	6.4251		6		798,370	68	12	4	0	0	4
	6	4,238,116	23.1478		23		3,396,547	80	27	7	0	3	4
TSI		18,308,927											
1,3,7,8,9		232,010			1	anb			7				
TSM		18,540,937					15,422,504	83		39	3	14	22
(0–4)		12,894,447	69.5458	anb	70	anb	11,227,587	87	53	28	3	11	14
(5–9)		5,646,490	30.4542		30		4,194,917	74	47	11	0	3	8
(5–9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1959

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	3,117,487	17.0062	16.2401	17	16	2,053,110	66	22	9	1	5	3
	2	10,885,890	59.3838	56.7085	58	55	8,715,590	80	44	9	3	4	2
	4	268,438	1.4644	1.3984	1	1	268,438	100	0	2	0	2	0
	5	785,331	4.2841	4.0911	4	4	436,092	56	7	3	0	0	3
	6	3,274,275	17.8615	17.0569	17	17	2,462,762	75	17	5	0	2	3
TSI		18,331,421											
1,3,7,8,9		491,689			3	2			10				
TSM		18,823,110					13,935,992	74		28	4	13	11
(0-4)		14,272,108	75.8223	72.4917	76	72	11,037,138	77	66	20	4	11	5
(5-9)		4,551,002	24.1777		24		2,898,854	64	34	8	0	2	6
(5-9,b)		5,415,799		27.5083		28	3,763,651	69		9	3		6
MKSB		0											
TLS		as TSM											
IB		864,797								1	1		0
BMC		19,687,907											
XB		0								0	0		0
TOTB		864,797		4.5050		4				1	1		0
TSMb		19,687,907					14,800,789	75		29	18		11
TSIb		19,196,218											

Table 3-15m

Sample Coverage: Imports

Year: 1960

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	4,143,560	19.2314	17.2613	19	17	2,790,093	67	19	9	1	5	3
	2	12,291,160	57.0467	51.2028	55	50	9,584,370	78	37	10	3	4	3
	4	986,559	4.5789	4.1098	4	4	986,559	100	0	2	0	2	0
	5	549,831	2.5519	2.2905	2	2	285,760	52	4	3	0	0	3
	6	3,574,694	16.5911	14.8915	16	14	1,308,676	37	31	5	0	2	3
TSI		21,545,804											
1,3,7,8,9		714,569			3	3			10				
TSM		22,260,373					14,955,458	67		29	4	13	12
M(0-4)		17,421,284	78.2614	70.4761	78	70	13,361,022	77	56	21	4	11	6
M(5-9)		4,839,089	21.7386		22		1,594,436	33	44	8	0	2	6
M(5-9,b)		7,298,144		29.5239		30	4,053,491	56		9	3		6
MKSB		0											
TLS		as TSM											
IB		2,459,055								1	1		0
BMC		24,719,428											
XB		0								0	0		0
TOTB		2,459,055		10.2440		10				1	1		0
TSMb		24,719,428					17,414,513	70		30	18		12
TSIb		24,004,859											

Table 3-15m

Sample Coverage: Imports

Year: 1961

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	2,214,371	14.6635	7.1273	14	7	1,886,828	85	7	8	1	4	3
	2	7,497,577	49.6486	24.1320	49	24	6,431,179	86	22	10	3	4	3
	4	390,089	2.5832	1.2556	3	1	390,089	100	0	2	0	2	0
	5	656,759	4.3490	2.1139	4	2	287,184	44	8	4	0	0	4
	6	4,342,489	28.7558	13.9769	28	14	1,581,615	36	58	5	0	2	3
TSI		15,101,285											
1,3,7,8,9		241,072			2	1			5				
TSM		15,342,357					10,576,895	69		29	4	12	13
TSM(0-4)		10,102,037	65.8441	32.2644	66	32	8,708,096	86	29	20	4	10	6
TSM(5-9)		5,240,320	34.1559		34		1,868,799	36	71	9	0	2	7
TSM(5-9,b)		21,208,089		67.7356		68	17,836,568	84		11	4		7
MKSB		0											
TLS		as TSM											
IB		15,515,897								1	1		0
BMC		30,858,254											
XB		451,872								1	1		0
TOTB		15,967,769		51.3944		51				2	2		0
TSMb		31,310,126					26,544,664	85		31	18		13
TSIb		31,069,054											

Table 3-15m

Sample Coverage: Imports

Year: 1962

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	1,414,778	10.9895	6.2199	11	6	1,175,014	83	7	8	1	4	3
	2	6,517,458	50.6255	28.6531	49	28	5,760,536	88	22	11	3	4	4
	4	326,068	2.5328	1.4335	2	1	326,068	100	0	1	0	1	0
	5	891,781	6.9271	3.9206	7	4	595,729	67	9	4	0	0	4
	6	3,723,767	28.9250	16.3710	28	16	2,064,545	55	49	5	0	2	3
TSI		12,873,852											
1,3,7,8,9		422,749			3	2			13				
TSM		13,296,601					9,921,892	75		29	4	11	14
TSM(0-4)		8,258,304	62.1084	35.6440	62	36	7,261,618	88	30	20	4	9	7
TSM(5-9)		5,038,297	37.8916		38		2,660,274	53	70	9	0	2	7
TSM(5-9,b)		14,910,548		64.3560		64	12,532,525	84		10	3		7
MKSB		0											
TLS		as TSM											
IB		9,872,251								1	1		0
BMC		23,168,852											
XB		0								0	0		0
TOTB		9,872,251		43.4019		43				1	1		0
TSMb		23,168,852					19,794,143	85		30	16		14
TSIb		22,746,103											

Table 3-15m

Sample Coverage: Imports

Year: 1963

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	2,154,658	12.2278	12.1394	12	12	1,930,500	90	4	14	1	4	9
	2	9,830,693	55.7896	55.3864	53	53	8,490,109	86	25	10	3	3	4
	4	367,748	2.0870	2.0719	2	2	367,604	100	0.0	1	0	1	0
	5	996,277	5.6539	5.6130	5	5	398,379	40	11	4	0	0	4
	6	4,271,651	24.2418	24.0666	23	23	1,859,754	44	45	6	0	2	4
TSI		17,621,027											
1,3,7,8,9		764,090			4	4			14				
TSM		18,385,117					13,046,346	71		35	4	10	21
M(0-4)		12,353,227	67.1915	66.7259	67	67	10,788,213	87	29	25	4	8	13
M(5-9)		6,031,890	32.8085		33		2,258,133	37	71	10	0	2	8
M(5-9,b)		6,160,162		33.2741		33	2,386,405	39		11	3		8
MKSB		0											
TLS		as TSM											
IB		128,272								1	1		0
BMC		18,513,389											
XB		0								0	0		0
TOTB		128,272		0.7227		1				1	1		0
TSMb		18,513,389					13,174,618	71		36	15		21
TSIb		17,749,299											

Table 3-15m

Sample Coverage: Imports

Year: 1964

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	1,833,431	7.8127	anb	7	anb	1,398,767	76	5	11	1	4	6
	2	13,662,206	58.2181		58		11,590,318	85	23	14	3	4	7
	4	578,678	2.4659		2		552,431	95	0.0	1	0	1	0
	5	1,285,129	5.4763		5		507,889	40	9	4	0	0	4
	6	6,107,848	26.0271		25		1,704,203	28	50	6	0	2	4
TSI		23,467,292											
1,3,7,8,9		1,131,912			5	anb			13				
TSM		24,599,204					15,753,608	64		36	4	11	21
TSM(0-4)		16,074,580	65.3459	anb	65	anb	13,541,516	84	29	26	4	9	13
TSM(5-9)		8,524,624	34.6541		35		2,212,092	26	71	10	0	2	8
TSM(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1965

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	4,375,556	15.4675	anb	15	anb	3,470,958	79	10	13	1	4	8
	2	14,830,449	52.4252		52		13,003,515	88	21	14	3	4	7
	4	2,071,578	7.3230		7		2,041,012	99	0.0	2	0	2	0
	5	1,810,019	6.3984		6		776,310	43	12	4	0	0	4
	6	5,201,188	18.3860		18		1,705,212	33	40	6	0	2	4
TSI		28,288,790											
1,3,7,8,9		1,409,536			5	anb			16				
TSM		29,698,326					20,997,007	71		39	4	12	23
≥(0-4)		21,278,722	71.6496	anb	72	anb	18,515,485	87	32	29	4	10	15
≥(5-9)		8,419,604	28.3504		28		2,481,522	29	68	10	0	2	8
≥(5-9,b)		anb		anb		anb	anb	anb	anb	------ anb ------			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		------ anb ------			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1966

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	6,417,206	20.0008	anb	19	anb	5,144,661	80	13	13	1	4	8
	2	13,883,677	43.2719		43		12,289,360	89	16	15	3	4	8
	4	3,448,588	10.7484		10		3,419,713	99	0.0	2	0	2	0
	5	2,497,321	7.7835		7		1,084,917	43	14	5	0	0	5
	6	5,837,983	18.1955		17		1,702,703	29	41	6	0	2	4
TSI		32,084,775											
1,3,7,8,9		1,702,341			5	anb			17				
TSM		33,787,116					23,641,354	70		41	4	12	25
M(0-4)		23,798,119	70.4355	anb	70	anb	20,853,734	88	29	30	4	10	16
M(5-9)		9,988,997	29.5645		30		2,787,620	28	71	11	0	2	9
M(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1967

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	5,889,471	21.2343	anb	20	anb	4,849,196	82	11	14	1	4	9
	2	12,152,511	43.8156		44		11,108,945	91	11	13	3	4	6
	4	1,509,089	5.4410		5		1,493,288	99	0.0	3	0	2	1
	5	2,265,613	8.1686		8		938,065	41	14	4	0	0	4
	6	5,918,908	21.3405		20		1,553,344	26	45	6	0	2	4
TSI		27,735,592											
1,3,7,8,9		1,890,121			6	anb			20				
TSM		29,625,713					19,942,838	67		40	4	12	24
TSM(0-4)		19,632,895	66.2698	anb	66	anb	17,451,429	89	23	30	4	10	16
TSM(5-9)		9,992,818	33.7302		34		2,491,409	25	77	10	0	2	8
TSM(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1968

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	7,379,713	22.9957	anb	22	anb	6,313,931	86	8	11	2	3	6
	2	12,463,725	38.8379		39		10,972,585	88	12	17	3	4	10
	4	678,019	2.1128		2		599,727	88	1	2	0	1	1
	5	2,399,024	7.4755		7		1,301,959	54	8	5	0	0	5
	6	9,171,172	28.5781		27		2,154,609	23	54	6	0	2	4
TSI		32,091,653											
1,3,7,8,9		2,182,114			6	anb			17				
TSM		34,273,767					21,342,811	62		41	5	10	26
TSM(0-4)		20,592,606	60.0827	anb	60	anb	17,886,243	87	21	30	5	8	17
TSM(5-9)		13,681,161	39.9173		40		3,456,568	25	79	11	0	2	9
TSM(5-9,b)		anb		anb		anb	anb	anb	anb	anb			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		anb			
TSIb		anb											

Table 3-15m

Sample Coverage: Imports

Year: 1969

		IMPORTS					SAMPLE						
		VAL	SW/DW	BSW/BDW	CON	CONB	PcQc	COV	PNC	NOC total	NOC b	NOC ma	NOC res
SECTION	0	6,623,070	18.5422	anb	18	anb	5,638,413	85	6	12	2	3	7
	2	14,605,882	40.8911		41		13,024,492	89	10	16	3	4	9
	4	530,707	1.4858		1		521,130	98	0.0	3	0	2	1
	5	2,873,459	8.0446		8		1,349,844	47	10	4	0	0	4
	6	11,085,858	31.0363		29		1,856,484	17	60	5	0	1	4
TSI		35,718,976											
1,3,7,8,9		2,000,029			5	anb			13				
TSM		37,719,005					22,390,363	59		40	5	10	25
MM(0-4)		21,791,939	57.7744	anb	58	anb	19,184,035	88	17	31	5	9	17
MM(5-9)		15,927,066	42.2256		42		3,206,328	20	83	9	0	1	8
MM(5-9,b)		anb		anb		anb	anb	anb	anb	------ anb ------			
MKSB		0											
TLS		as TSM											
IB		0								0	0		0
BMC		as TSM											
XB		0		0		0				0	0		0
TOTB		0								0	0		0
TSMb		anb					anb	anb		------ anb ------			
TSIb		anb											

Table 3-15 NOTES

1. The three classification systems used during this period (1930-50, 1951-62, 1963-69; see Chapter One) are not strictly comparable and the arrangement into SITC(R) order prior to 1963 can only be approximate. Occasionally, it will be found that the sample in a section overflows that section's (estimated) value, but usually the distortion involved is negligible and can be disregarded. This overflow has an effect, of course, on other parts of the construction. If coverage is greater than 100 per cent in one section, then somewhere else, in one section or more, there must be a shortfall. It will also produce a 'negative' PNC (e.g., imports 1946, 1951; shown as INV). However, these instances are, by definition, peripheral and are no more than an inconvenience.

Section 4, however, requires special mention. There is no suitable commodity group to match Section 4 before 1951 (on re-examination, it was decided that the coupling used in my *Dissertation* (Vol.II) was unsatisfactory). On the import side there is no great problem since some of the most important commodities fall within that section (e.g., the oils - tung, cotton seed, stillingia and castor) and so adequate estimate of the section value could be made from the sample. In other words, for many years value is taken as the sum of Section 4 commodities (i.e., VAL = PcQc; COV = 100%) and since virtually all substantial commodities are in the sample we can be confident that this is not far out. For exports, on the other hand, there are few Section 4 commodities and their total value is very small. It was necessary, therefore, to omit that section prior to 1951 and to transfer the sample commodities to Section 6, which is too large to be affected by their inclusion. These commodities are coded in Appendix G as belonging to Section '6/4'.

2. In this case the discrepancy is due to exports of rubber inner tubes which in 1950 were considered parts of motor vehicles (hence under Section 7) but which were subsequently transferred under SITC to manufactures of rubber (Division 62) in Section 6.

PART B

Intellectual and Historical Contexts

CHAPTER FOUR

The Terms of Trade in Classical & Neo-classical Theory

THE ORIGIN OF THE CONCEPT

Theoretical attention to the terms of trade is usually dated from J.S. Mill's elaboration of Ricardo's theory of comparative advantage,[1] although Dobb has argued that earlier the Mercantalists "...while stating their theory in terms of a favourable *balance* of trade, ...were equally if not more concerned with the advantages of favourable *terms* of trade - of buying cheap and selling dear; and while honour was paid to the former, the latter was an important, and at times a major, preoccupation."[2] Clearly, an embryonic concern with the terms of trade, expressed

---

[1] For example, Bairoch, *The Economic Development of the Third World since 1900* (English edition, London, Methuen, 1975), p.227, note 1 to chapter 6. The phrase 'terms of trade' comes from Marshall, although he also uses the expression 'rate of interchange'.

[2] Maurice Dobb, *Studies in the Development of Capitalism* (Routledge paperback edition, London, 1963), p.202. cf. the following passages quoted by Viner (*Studies in the Theory of International Trade*, New York, Harper, 1937) from Tawney and Power, *Tudor Economic Documents*, III (London, Longmans, 1924):

> "And another [object of policy] is that the things which we carry out do surmount in price the things which we bring in; else shall we soon make a poor land and a poor people." [*A discourse of corporations*, (ca 1587), *T.E.D.*, III, 267 (Viner, p.7)]

> "...the wealth of the realm cannot decrease but three manner of ways, which is the transportation of ready money or bullion out of the same; by selling our home commodities too good cheap; or by buying the foreign commodities too dear, wherein chiefly consisteth the aforesaid overbalancing..." [Malynes, *A treatise of the canker*, (1601), *T.E.D.*, III, 387 (Viner, p.17)]

Viner himself notes: "Some mercantalists argued, on what would now be called 'terms of trade' considerations, that it was desirable that export prices should be high and import prices low." (*ibid.*, p.35).

as a complaint about the high price of imports, has a long history. During the Roman Empire, for instance, while, as Tenney Frank argues, the state had no "commercial policy"[3] there were moves to regulate trade prices, such as Claudius' attempt to lower the price of the politically vital tribute corn, and Diocletian's more extensive Edict trying to control, in the modern phrase, prices and incomes. Moreover, when a moralist such as Seneca attacks the fashion of wearing "seric cloths" (that is, Chinese silk) he complains not merely that they are diaphonous, but also that they are costly and have to be paid for in specie:

> I see silken (Seric) garments, if they can be called garments, which cannot afford any protection either for the body or for shame; on taking which a woman will scarce with a clear conscience deny, that she is naked. These are sent for at an enormous price from nations, to which our commerce has not yet extended, in order that our matrons may display their persons to the public no less than to adulterers in their chambers.[4]

The Romans may never have got beyond this perception of the expensiveness of imports, but it is likely that fluctuations in import and export prices may have induced a certain rudimentary consciousness of the terms of trade. Just as we find it easier to see a moving animal than a stationary one, so it might have been the change in the terms of trade that was most noticeable. Prices were both varied and, perhaps, 'god-given'; a general rise in import prices caused by war on the trade routes, with perhaps a corresponding fall in export prices, may have led closer to a concept of the terms of trade. Teggart argued that there was a correspondence between wars on China's western frontier and those on

---

[3] Tenny Frank, *An Economic Survey of Ancient Rome* (Baltimore, Pageant, 1933-40), Vol.5, p.295.

[4] Cited by James Yates, *Textrinum Antiquorum; an account of the art of weaving among the ancients* (London, Taylor & Walton, 1843), Vol.I, p.183. Tenny Frank comments on the specie drain: "...the expensive importations from the East were to them [the Roman emperors] not so much a question of danger to Italian production as of the depletion of precious metals that flowed beyond reach." (p.295)

Rome's eastern caused by interruptions in the trans-continental trade.[5] He claimed:

> ...the effects of wars which arose out of interruptions on the great "silk route' through Persia are plainly visible in the internal history of Rome. Cicero directed attention to the fact that war could not occur in the East without shaking the money market at Rome to its foundations, and seemingly there could be no better illustration of the interdependence of nations than the consideration that a decision of the Chinese government should have been responsible for a financial panic in the capital of the Roman empire.[6]

Teggart may or may not be correct in his general 'correlation' hypothesis,[7] but it does not seem too far-fetched to see, in the reaction of the Rome money market, a certain consciousness of the terms of trade.

However, it seems likely that the intellectual leap from these rudimentary ideas to a true concept of the terms of trade, that is the relationship of the prices of imports to those of exports (ignoring for the moment the various definitions such as net barter, gross barter, etc.), was dependent on the reduction of the overwhelming costs of transport, a knowledge of what those costs were and, as a corollary, some idea of what were the prices obtaining for the imported commodities in the exporting country or the labour involved - in brief, a diminution of the obfuscating role of the merchant. The commercial revolution of the early modern period, with its lowering of transportation costs (to a large degree due to the erosion of monopolies) and the subsequent shifting of emphasis from exchange to production, may be seen to have set the stage for this development in economic thought.

---

[5] Frederick J. Teggart, *Rome and China; A Study of Correlations in Historical Events* (Berkeley, University of California, 1939), p.ix.

[6] *ibid.*, p.x.

[7] Teggart has been criticised by, *inter alia*, Mortimer Wheeler, *Rome beyond the Imperial Frontiers* (London, Bell, 1954), pp.180-181, and Yü Ying-shih, *Trade and Expansion in Han China* (Berkeley, University of California, 1967), p.157.

Dobb argues that with the growth of manufacturing there is a sea change in Mercantalist thought (and state policy): it transfers its attention to the profits of industry which functions within a pattern (largely produced by the metropolis-colony relationship) of the exchange of exports of home manufactures for imports of raw materials.[8] Since these raw materials are an element in the production of the manufactures for which they are exchanged: "Any favourable turn in the terms of trade would...tend to lower industrial costs relatively to the prices of finished industrial goods and consequently to augment industrial profit."[9] Moreover, it was felt that the terms of the raw materials-manufactures exchange was inherently advantageous to the manufactures-exporting country, since more labour was embodied in the manufactured article and hence more profit for capital.[10] This being so, it followed that monopoly which had its profit in merely manipulating the terms of trade within a static market was attacked for limiting the volume of exports. This is not to say that the later Mercantalists were adverse to shifting the terms of trade - on the contrary, "Their case rested on the assumption that (apart from lower wages) a change in the ratio of prices of imports and exports was the only way of increasing the rate of profit available to trade and manufacture."[11] This was increasingly seen to be best achieved by regulating the framework of trade to the pattern of export of home manufactures for imports of (colonial) raw materials,[12] and expansion

---

[8] Dobb, *Studies in the Development of Capitalism*, p.204.

[9] *ibid.*, p.204.

[10] Viner (p.51 and note 1) traces the 'employment argument', which he (p.55) describes as "absurd" further back.

[11] Dobb, *Studies in the Development of Capitalism*, p.209, n.3.

[12] By restricting, for instance, competing colonial manufactures. cf. Dobb, p.205: "A Report of the Commissioner for Trade and Plantations in 1699 declared that 'it was the intent in settling our plantations in America that the people there should be only employed in such things as are not the product of England to which they belong'. Steps were taken to prohibit the colonial manufacture of commodities which competed with the exportable products of English industry, and to forbid the export of enumerated colonial products to other markets than England."

within that framework.[13] This mercantalist concern with the commodity structure of trade was ignored by the classical economists and their successors, but it has been resurrected as an important aspect of the contemporary debate on trade between the developed countries and the Third World.

The 'employment advantage' was but one aspect (the supply side) of the gain accruing to the manufactures-exporting country. Equally important was the widespread feeling that the demand for English exports was highly inelastic. Dobb argues that the mercantalists felt this way because they were principally thinking of the colonial trade.

It might be argued that it was the very success of mercantalist policy in achieving this pattern of trade that led to the demise of mercantalist theory. By the end of the Napoleonic Wars, suggests Hobsbawm:

> Britain's position was unassailable. As the only industrial power, she could undersell anyone else, and the less discrimination there was, the more she could undersell. As the only naval power in the world she controlled access to the non-European world, on which her prosperity rested. With one major exception (India) she did not, economically speaking, need even colonies, for the entire underdeveloped world was her colony, and would remain so if, under Free Trade, they bought in the cheapest market and sold in the dearest, which meant, if they bought and sold in the only big market there was, Britain.[15]

It is not surprising, therefore, that this environment engendered economic theories which stressed the gains, to both partners, from the freest possible trade, and paid no attention to the commodity structure of the trade.

GENESIS AND DEVELOPMENT OF THE CONCEPT

Adam Smith saw foreign trade as a "vent for surplus" which derived from absolute advantage in the production of certain commodities, which

---

[13] Dobb, *Studies in the Development of Capitalism*, p.218.

[14] *ibid.*, pp.203-204.

[15] E.J. Hobsbawm, *Industry and Empire* (Harmondsworth, Penguin,1968),p.232.

in turn was the result of an (actual or perceived) "highly skewed resource base".[16] This concept, as Kindleberger points out, was virtually self-evident and had long been the basis of trade theory.[17] It was, moreover, merely the extension beyond national boundaries of the principle of the division of labour.[18] It is interesting to note that the 'international division of labour' forms the theoretical basis for Soviet foreign trade. In the twenties and thirties the actual division was seen as inimical to Soviet development and something which had to be changed: "We do not in the least intend to strengthen the existing international division of labour, we do not intend to be an agrarian appendage of the capitalist economic system."[19] Currently, the Soviet Union is charged by the Chinese with being all too successful in effecting this transformation:

> Qu'est-ce que la "division internationale du travail"? Quelle est cette thèse dont la clique des traîtres révisionnistes soviétiques a fait son cheval de bataille? A vrai dire, ce n'est pas une nouvelle découverte. C'est un masque déjà bien écorné qu'ils ont racheté aux économistes bourgeois et dont ils s'afflublent pour camoufler leur agression économique et leur expansion commerciale vers l'extérieur. Leur ultime objectif est de modeler l'économie des autres pays sur leurs propres besoins de développement, afin que ces derniers deviennent des débouchés pour les marchandaises soviétiques, des usines annexes de transformation, des jardins potagers et maraîchers, des fermes et des bases d'approvisionnement en

---

[16] Charles P. Kindleberger, *Foreign Trade and the National Economy* (New Haven, Yale University Press, 1962), p.30. In Smith's words: "When the produce of any particular branch of industry exceeds what the demand of the country requires, the surplus must be sent abroad and exchanged for something for which there is a demand at home. Without such exportation a part of the productive labour of the country must cease, and the value of its annual produce diminish. The land and labour of Great Britain produce generally more corn, woollens, and hardware than the demand of the home markets requires. The surplus part of them, therefore, must be sent abroad, and exchanged for something for which there is a demand at home. It is only by means of such exportation that this surplus can acquire a value sufficient to compensate the labour and expense of producing it." Adam Smith, *The Wealth of Nations* (Harmondsworth, Penguin ed., 1974), p.472 (Books I - III of the fifth edition (1789) of *An Enquiry into the Nature and Causes of the Wealth of Nations*).

[17] *ibid.* It is, of course, the forerunner of the Heckscher-Ohlin theorem.

[18] W.M. Scammell, *International Trade and Payments* (London, Macmillan, 1974).

[19] Report to the 15th Conference of the Communist Party of the Soviet Union, December, 1927, cited by E.H. Carr and R.W. Davies, *Foundations of*

> matières premières. C'est couloir réduire ces pays à un état de dépendance économique.[20]

DAVID RICARDO

It remained for Ricardo to make the crucial leap from absolute advantage to the theory of comparative advantage, whereby it was the relationship of costs within the country that was the determining factor.[21] In his famous example, the cost of both wine and cloth was lower in Portugal than in England, and yet it was advantageous to trade wine for cloth:

> Though she [that is, Portugal] could make the cloth with the labour of 90 men, she would import it from a country where it required the labour of 100 men to produce it, because it would be advantageous to her rather to employ her capital in the production of wine, for which she would obtain more cloth from England, than she could produce by diverting a portion of her capital from the cultivation of vines to the manufacture of cloth.[22]

There was some debate subsequently as to whether Ricardo had claimed that all the gain from trade went to one of the countries rather than

---

a Planned Economy, 1926-1929 (Pelican edition, 1974), Vol.I, p.749. See also Michael R. Dohan, "Volume, Price, and Terms of Trade Indices of Soviet Foreign Trade 1913-1938", p.5 in Michael Dohan and Edward Hewett, *Two Studies in Soviet Terms of Trade, 1918-1970* (Bloomington, Indiana University, 1973).

[20] *Monnaie, salaire, commerce extérieur, dans la société Capitaliste, dans la société socialiste*, pp.179-180 (this is a French translation of three pamphlets published in Shanghai, 1974), Lausanne, 1976.

[21] As Mill put it: "It is not a difference in the *absolute* cost of production which determines the interchange, but a difference in the *comparative* cost." J.S. Mill, *Essays on Some Unsettled Questions of Political Economy* (2nd ed., London, 1874), Essay I, p.2.

[22] David Ricardo, *Principles of Political Economy*, in *Works*, pp.76-77, cited by Viner, p.440. Haberler (*The Theory of International Trade*, London, Hodge & Co., 1936, p.122) suggests Torrens as the originator.

being divided between them (that is, where the terms of trade lay), or indeed whether he had "unguardedly" (the word is Mill's)[23] claimed that both of them got all the gain, but Viner argues that this is a misreading and that Ricardo's example in fact divided the gain approximately equally between the two countries.[24] Viner credits Pennington with the important point that the comparative costs set the limits of the terms of trade, and Torrens with the argument that the actual terms of trade were determined by reciprocal demand, although it was J.S. Mill's exposition that later economists followed.[25]

Thus, to use Ricardo's figures (Table 4-1), in Portugal one unit of wine exchanges for 8/9 unit of cloth, whereas in England one unit of wine exchanges for 120/100 units of cloth, and so the range of possible terms of trade for wine in terms of cloth is from 8/9 (below which Portugal will not export) to 6/5 (above which England will not import).

Table 4-1

Country	Amount of Labour required for producing one unit of:	
	Cloth	Wine
Portugal	90	80
England	100	120

Source: Viner, *Studies in the Theory of International Trade*, p.445.

Similarly, the potential terms of trade for cloth in terms of wine ranges from 5/6 (100/120) to 9/8, and the actual terms of trade are determined by the reciprocal demand of the two countries for each other's product.

---

[23] Mill, *Essays*, p.5.

[24] Viner, p.444-446.

[25] *ibid.*, p.447.

If the Portuguese demand for English cloth is high, then, apart from the countervailing effect of English demand for Portuguese wine, the rate of exchange of cloth for wine will tend towards the ratio of comparative costs in Portugal (1 w : 8/9 c). Thus, the greater the demand for English cloth in Portugal and the lower the demand for Portuguese wine in England, the more the terms of trade will tend towards the Portuguese ratio and the more the gains from trade will flow to England. Even at this extreme, however, Portugal cannot lose from trade in the Ricardian model, she can merely fail to gain; or rather, since this is a limiting parameter, she must make some gain for her to trade at all.

J.S. MILL

John Stuart Mill, in his essay *Of the Laws of Interchange between Nations; and the Distribution of the Gains of Commerce among the Countries of the Commercial World*,[26] first expounded his argument that the gains from trade were apportioned by the workings of reciprocal demand with the result that: "The advantage will probably be divided equally, oftener than in any one unequal ratio that can be named; though the division will be much oftener, on the whole, unequal than equal."[27] The introduction of money into the argument makes no difference, since bullion will flow to redress any trade imbalance and in doing so will affect prices. The costs of carriage are not necessarily divided in the same proportion as the 'advantage of the trade' because of differing elasticities of demand for the two commodities in the two countries. He suggests that export or import taxes may or may not bring gain to the levying country for the same reasons, but that they are in any case unwise because their effect is unpredictable, and because the trading partner may retaliate. (He is utterly opposed to protective import duties which

---

[26] J.S. Mill, Essay I of *Essays on Some Unsettled Questions...*written 1829-30 (2nd ed., London, Longmans, 1874). Viner (p.535) notes that the argument was reproduced "with extensions, but also with important omissions" in the first edition (1848) of his *Principles of Political Economy*, book III, chapter xviii.

[27] Mill, *Essays*, p.14.

he terms "purely mischievous".)[28] In conclusion, he writes:

> If the question be now asked, which of the countries of the world gains most by foreign commerce, the following will be the answer.
>
> If by gain be meant advantage, in the most enlarged sense, that country will generally gain the most, which stands most in need of foreign commodities.
>
> If by gain be meant saving of labour and capital in obtaining the commodities which the country desires to have, whatever they may be; the country will gain, not in proportion to its own need of foreign articles, but to the need which foreigners have of the articles which itself produces.
>
> Let us take, as an illustration of our meaning, the case of France and England. Those two nations, in consequence of the restrictions with which they have loaded their commercial intercourse, carry on so little trade with each other, as may almost, regard being had to the wealth and population of the two countries, be called none at all. If these fetters were at once taken off, which of the two countries would be the greatest gainer? England without doubt. There would instantly arise in France an immense demand for the cottons, woollens, and iron of England; while wines, brandies, and silks, the staple articles of France, are less likely to come into general demand here, nor would the consumption of such productions, it is probable, be so rapidly increased by the fall of price. The fall would probably be very great before France could obtain a vent in England for so much of her exports as would suffice to pay for the probable amount of her imports. There would be a considerable flow of the precious metals out of France into England. The English consumer of French wine would not merely save the amount of the duty which that wine now pays, but would find the wine itself falling in prime cost, while his means of purchasing it would be increased by the augmentation of his own money income.[29] The French consumer of English cottons, on the contrary, would not long continue to be able to purchase them at the price they now sell for in England.[30] He would gain

---

[28] cf. F.W. Taussig, *International Trade* (New York, Macmillan, 1927), 146ff.

[29] By this J.S. Mill means that the inflow of French specie would raise prices in England and hence the returns to producers.

[30] Because that price will by then have risen because of the specie inflow.

> less, as the English would gain more, than might appear from a mere comparison between the present prices of commodities in the two countries.[31]
>
> .....
>
> On the whole, England probably, of all the countries of Europe, draws to herself the largest share of the gains of international commerce: because her exportable articles are in universal demand, and are of such a kind that the demand increases rapidly as the price falls. Countries which export food, have the former advantage, but not the latter. But our own colonies, and the countries which supply us with the materials of our manufactures, maintain a hard struggle with us for an equal share of the advantages of their trade; for *their* exports are also of a kind for which there exists a most extensive demand here, and a demand capable of almost indefinite extension by a fall of price. Contrary, therefore, to common opinion, it is probable that our trade with the colonies, and with the countries which send us the raw materials of our national industry, is not more but less advantageous to us, in proportion to its extent, than our trade with the continent of Europe.[32]

Mill, in his later *Principles of Political Economy*,[33] further elucidated his ideas on the relationship between reciprocal demand and the commodity (or net barter) terms of trade. He again takes two countries, Germany and England, and two commodities, linen and cloth, of which the comparative costs are:-

Table 4-2

one unit produces

	Germany	England
linen (yds)	20	15
cloth (yds)	10	10

(costs are assumed to be constant)

---

[31] cf. F.Y. Edgeworth, *The Pure Theory of International Values*, Vol.II of *Papers Relating to Political Economy* (London, Macmillan, 1925), p.55 and F.D. Graham, *The Theory of International Values* (Princeton University Press, 1948), p.265.

[32] Mill, *Essays*, pp.43-46.

[33] J.S. Mill, *Principles of Political Economy*, Book III, chapter xviii; I here follow Viner's exposition (Viner, pp.535-541).

From this it follows that England will export 10 yards of cloth for between 15 and 20 yards of linen and Mill assumes that the reciprocal demands are such that the terms of trade lie at 10 yards of cloth for 17 of linen. Now he assumes that there is an improvement of productivity in the linen industry in Germany so that the comparative costs there become 30 yards of linen to 10 of cloth. He then assumes that the German demand for cloth in terms of linen rises in proportion so that it is 50 per cent higher than before, and he concludes that the terms of trade of linen in terms of cloth will rise above 17:10 and that the new terms of trade will be determined by the elasticity of England's demand for linen in terms of cloth. Thus:

a. if the (English) demand increases "in the same proportion with the cheapness" (that is, unit elasticity) the new terms of trade will be 10 yards of cloth for 25½ yards of linen (that is, up 50 per cent)

b. if the elasticity is greater than unity more than 25½ yards of linen will exchange for 10 yards of cloth.

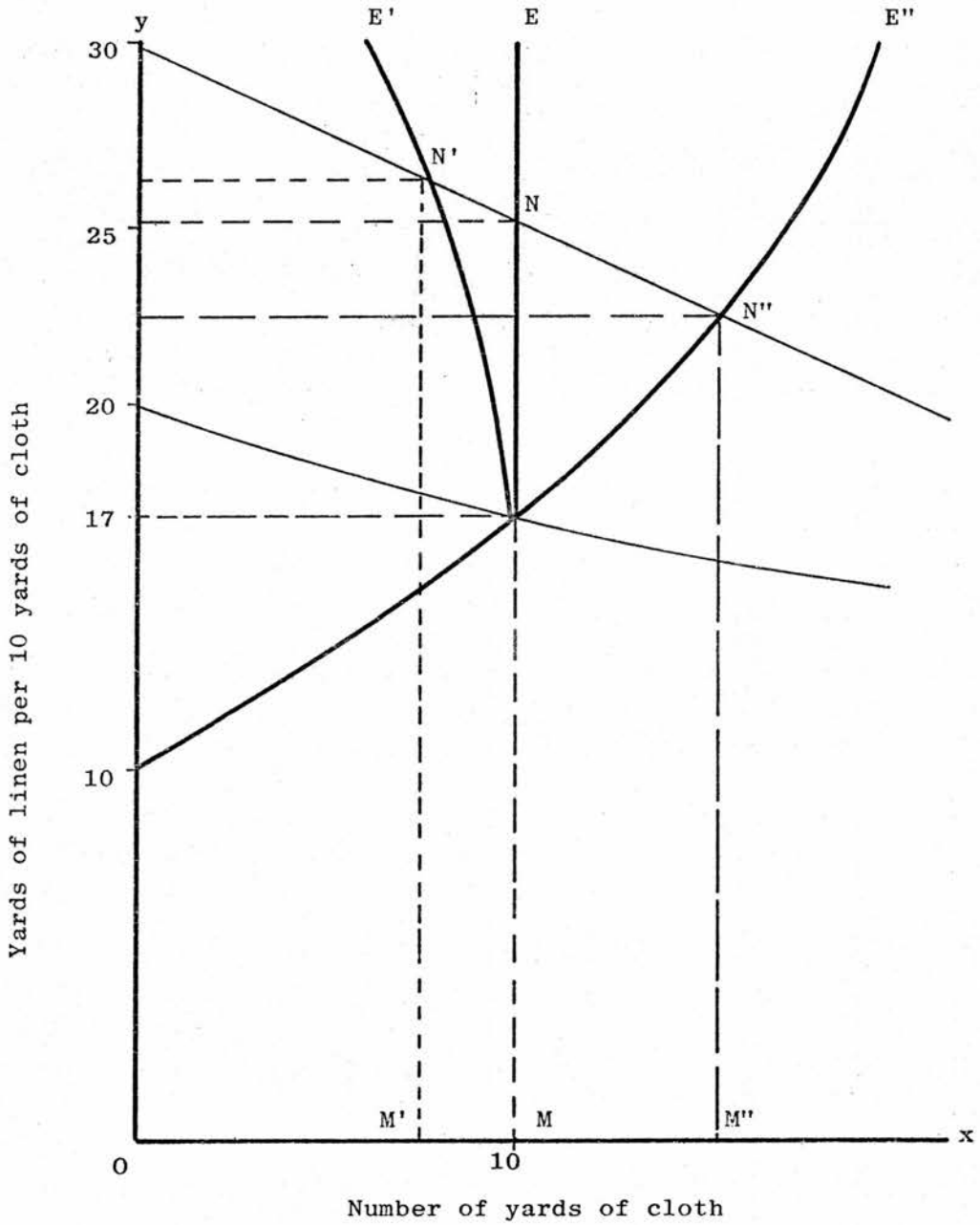
c. if the elasticity is less than unity the rate will be less than 25½:10.

Viner illustrated Mill's reasoning with his own modification of Marshall's foreign trade diagram in which the y-axis represents the terms of trade of linen in terms of cloth, and concluded that Mill's argument, given his assumptions, was correct (Fig.4-1. Marshall's diagrams and Viner's modification are discussed in detail below.) When the English elasticity of demand for linen in terms of cloth (reciprocal demand) is unity (E) the terms of trade are 25½:10 (that is, NM); when the elasticity is greater than unity (curve E") the terms of trade fall to N"M" (that is, $<$NM, or $<25\frac{1}{2}$) and when the elasticity is less than unity (E') the terms of trade rise to N'M' (that is, $>$NM, or $>25\frac{1}{2}$).

ALFRED MARSHALL AND RECIPROCAL DEMAND

Alfred Marshall himself accepted Mill's analysis of reciprocal demand

Fig.4-1



Source: J. Viner, *Studies in the Theory of International Trade*, p.539

as the determinant of the terms of trade ("As to international trade curves:- mine were set to a definite tune, that called by Mill.")[34] and elaborated it chiefly by means of geometrical diagrams.[35] His work on this theme was first given in his *Pure Theory of Foreign Trade*, which was part of a manuscript on international trade written between 1869 and 1873. This pamphlet was privately printed and circulated among economists in 1879 and published in 1930. Together with further material on attempts to measure the national demand and the total direct net benefit of a country's foreign trade, it was virtually reproduced as Book III and appendices H and J of his *Money Credit and Commerce*, 1923.[36]

Marshall, like Mill, takes two countries (E and G), but instead of the latter's yards of cloth and linen he uses 'representative bales' of exports, "each of which represents uniform aggregate investments of her [that is, the exporting country's] labour (of various qualities) and of her capital".[37] He supposes relative factor mobility within the country and factor immobility between countries.[38] He excludes money (and wages), restricting his analysis to pure barter of these 'bales' since he considers that money, because there is no "large and free circulation of labour and capital" between the two countries, "even when firmly based on gold, does not afford a good measure of international values, and it does not help to explain the changes in those values,

---

[34] Letter from Marshall to Cunynghame, 28.6.04, cited by Viner, p.54, n.14.

[35] For his belief in the utility of diagrams, see his *Pure Theory*, p.5.

[36] F.D. Graham, for one, considered the latter treatment much below the standard of the earlier pamphlet (Graham, "Theory of International Values", *Quarterly Journal of Economics*, Vol.46, 1932, p.598.

[37] Marshall, *Money Credit and Commerce* (London, Macmillan, 1923), p.157.

[38] This is, of course, his definition of the difference between foreign and domestic trade and in this he is following Smith, Ricardo, Mill, etc. cf. Haberler, *The Theory of International Trade*, pp.3-8.

which are caused by broad variations in international demand: but on the contrary it disguises and conceals them. For it measures changes in values by standards which are *automatically modified by the variations in international demand, the effects of which are to be measured.*"[39] In this he differs markedly from later writers such as Taussig and Haberler for whom wages are an integral and important part of the theory (let alone Emmanuel). Moreover, pure barter excludes the problem of unilateral transfer caused by capital movements or reparations, which again was important for his successors.[40]

Marshall stresses that, under pure barter, demand and supply are interdependent; that is, the 'price' of the good demanded for import is the supply of the good exported. Reciprocal demand incorporates both supply and demand.[41]

He considers that in the "normal case" a country's demand is elastic,[42] but he does briefly mention two cases which he thinks are possible but unlikely. In class I, that of 'Exceptional Demand', the demand of country E for country G's exports is so inelastic "as to be completely glutted by moderate supplies; in so much that any further increase of the supplies, forced on the market, will compel them to be sold for a diminished aggregate return."[43] At the same time, and a necessary

---

[39]Marshall, *Money Credit and Commerce*, p.157.

[40]See, for instance, Viner, *Studies...*, "The Mechanism of Transfer of Unilateral Payments in Some Recent Literature", part VII (pp.326-336) of chapter VI. He, himself, had studied capital movements in the Canadian case in his *Canada's Balance of International Indebtedness, 1924*. In *Studies* he also describes the keen debate in the 18th and 19th centuries over the question of Irish absentee landlords. The problem of German reparations, with which we identify Keynes above all, loomed large after the 1st World War. See also F.W. Taussig on the Franco-German Indemnity of 1871 (*International Trade*, N.Y., Macmillan, 1927, pp.263-279).

[41]Marshall, *Money Credit and Commerce*, p.160.

[42]He is thinking here of countries such as England and Germany, as is implied by his use of Kafkaesque initials. His remarks on the typical demand elasticities of other countries is considered below.

[43]Marshall, *Money Credit and Commerce*, p.333.

corollary implied by the 'forcing' of G's exports on E's market, G's demand for E's exports is so 'urgent' that she accepts for her increased exports the same, or even decreased, imports.[44]

Marshall gives the following numerical example:

> Suppose the sale of 10 million yards of linen in England to afford the means of purchasing and exporting 10 million yards of cloth, the rate of interchange being thus, one yard of cloth to one yard of linen. An increase in the amount of linen to 15 million yards may perhaps cause the amount of cloth to increase to 12 million: while it is possible that a further increase in the linen to 20 million may so force down its price in the English market as to cause the rate of interchange to become two yards of linen for one of cloth; in which case the amount of cloth which Germany obtains will fall to ten million yards.[45]

His geometrical representation is shown in Fig.4-2 (the construction of Marshall's diagrams is discussed below, *vide* Figs.4-3 to 4-5) where Oy measures G bales, Ox, E bales, and OE shows E's reciprocal demand.

In class II, that of "Exceptional Supply":

> ...the size of an E bale is supposed to be capable of a very great increase in the economies of production by E, which is inherent in an increase of her export trade. And in that case G might conceivably be willing to take an increased number of E's bales at a rate of interchange that moved nominally against her; for their nominal movement might be consistent with her obtaining an increased quantity of goods that she desired in exchange for a unit-product of her own labour and capital.[46]

---

[44] "The first exceptional case is that of a group of problems in which it is assumed that a diminution of the total exports of a country may cause these to be in such urgent demand abroad that she obtains in return for her diminished exports an increased instead of a diminished supply of foreign wares." Marshall, *Pure Theory*, p.5.

[45] Marshall, *Pure Theory*, p.6.

[46] Marshall, *Money Credit and Commerce*, p.333. Marshall seems particularly confused here. He seems to imply that the terms of trade (the "rate of interchange") is moving against G, whereas since it is E's supply that is increasing, the movement is surely in G's favour. If G's demand is elastic there is no need to be surprised, as Marshall appears to be, that she accepts 'an increased quantity of goods' since the price (that is the G bales she exchanges for E bales) is falling. What he is perhaps trying

Fig. 4-2

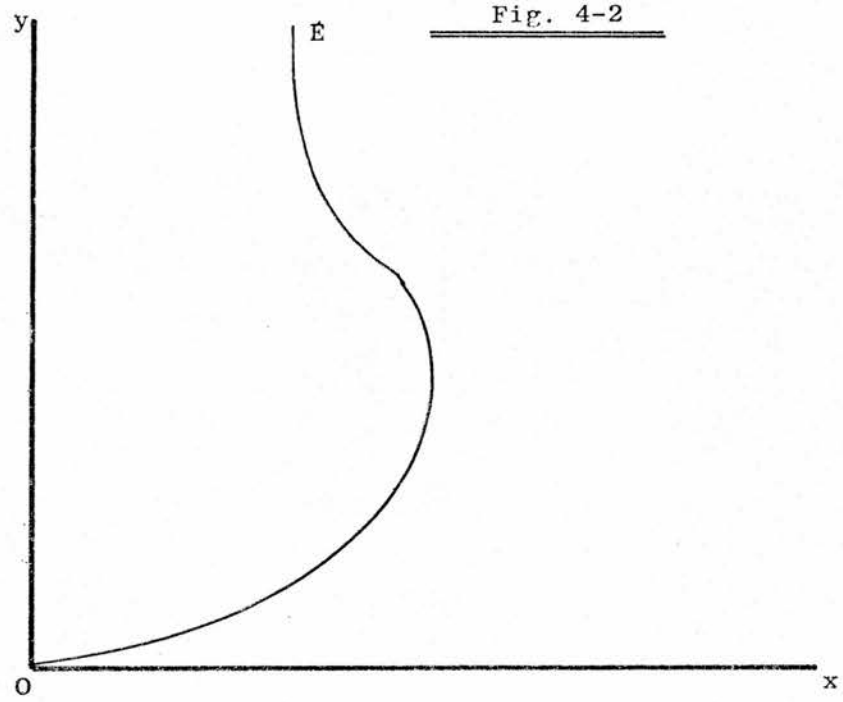
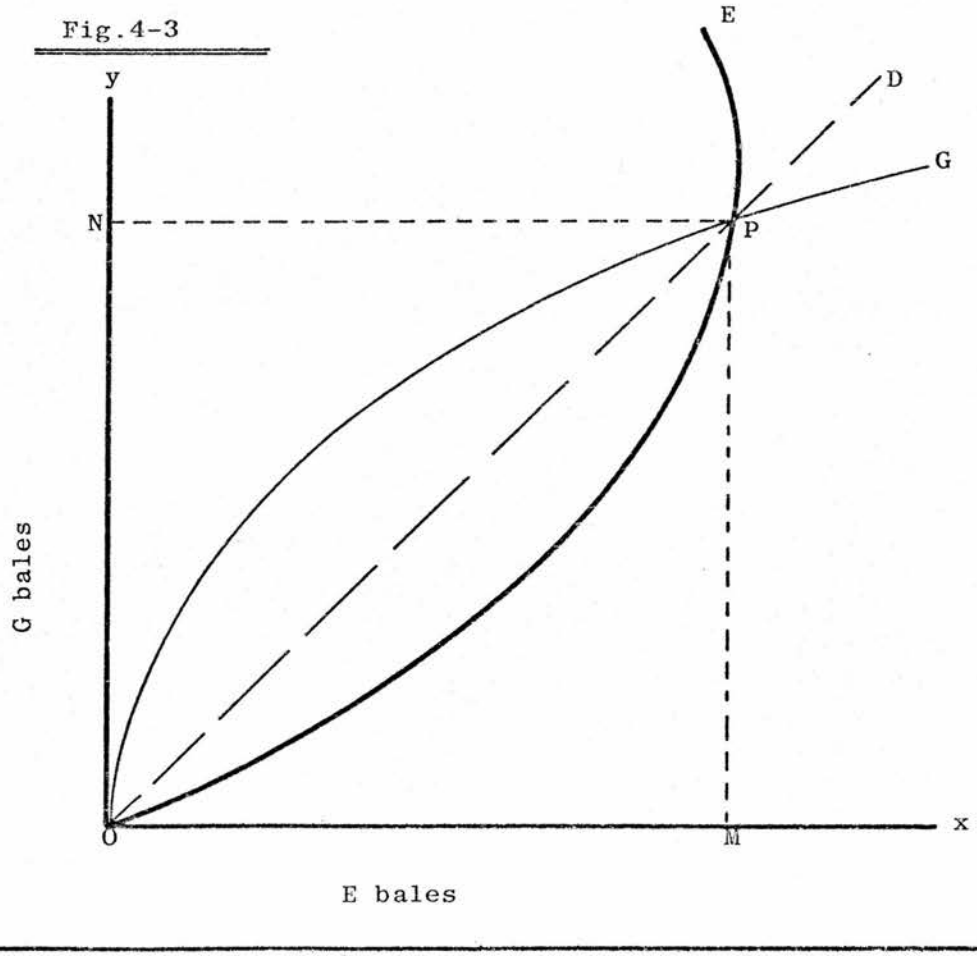


Fig.4-3



MARSHALL'S PARADOX

Marshall displays great ingenuity in formulating rules for his reciprocal demand curves which are developed in some complexity (Viner, for one, implies too much complexity)[47] in Appendix J of *Money Credit and Commerce* and his earlier *Pure Theory*, but his analysis is perhaps best illustrated by concentrating, as does Viner, on a basic proposition that is criticised by Graham,[48] and in part by Viner himself, and which later came to be called "Marshall's Paradox'.[49] The proposition deals with the 'normal class' where the reciprocal-demand curves of both countries are elastic.

Marshall poses the question:

> Let us suppose that, trade between the two countries E and G having been in equilibrium, there is a considerable increase in E's demand for G's goods, unaccompanied by any corresponding increase of demand on the part of G. The first result will be an increase in the amount of E's goods which her importing merchants will be able to obtain in return for each bale of G's goods. The second will be that merchants will be able and compelled to offer more of E's goods in G's markets for each G bale; their mutual competition will force them to do so. That is to say, the terms of international trade will be altered to G's favour. But how far will the movement go?[50]

He concludes that, "The answer depends on the relative elasticities of the demands of the two countries for each others goods."[51]

---

to say is that the fall in E's costs is greater than the shift in terms of trade, in which case, despite the nominal movement in terms of trade against her, she is still getting more G bales per 'unit of labour and capital' than before.

[47] Viner, *Studies*, p.545: "The unnecessary complexity of Marshall's diagram seems to have concealed from him the fact that it provided no answers to the questions he was putting..."

[48] F.D. Graham, "Theory of International Values", *Quarterly Journal of Economics*, 1932.

[49] The term appears to have been coined by Acheson J. Duncan in his "Marshall's Paradox and the direction of shift in demand", *Econometrica*, Vol.6 (1938),pp.357-374.

[50] Marshall, *Money Credit and Commerce*, p.177.

[51] *ibid.*, p.172.

This in detail means that:

> ...in every possible combination of a large, medium or small elasticity on the part of E's demand, one general rule holds. The more elastic the demand of either country, the elasticity of the demand of the other being given, the larger will be the volumes both of her exports and of her imports; but the more also will her exports be enlarged relatively to her imports; or, in other words, the less favourable to her will be the terms of trade.[52]

The basic Marshallian normal reciprocal demand schedules (or offer curves as they are now usually known) are shown in Fig.4-3. OE shows E's offer curve and OG, G's offer curve. At P, E's reciprocal demand matches G's and the trade is in equilibrium. The ray OD passing through P, shows the terms of trade at equilibrium; the tangent of the angle PON (PN/ON = OM/ON = $\frac{\text{exports of E bales}}{\text{exports of G bales}}$) gives E's terms of trade and, similarly, the tangent of POM gives G's. As the angle PON increases, E's terms of trade deteriorate and G's improve.

In Fig.4-4, the elasticity of E's demand at point c is given by the ratio (-) $\frac{Oa}{Ob}$ where cb is the tangent to OE at c and ca is perpendicular to Ox. At this point the elasticity is greater than unity ($Oa > Ob$); at d, Oa' equals Ob' and the elasticity is unity; beyond d, OE becomes inelastic (cf. Fig.4-2). Fig.4-5 shows two demand schedules where cb is the tangent to OE and cb' the tangent to OE'. Since $\left|\frac{Oa}{Ob}\right| > \left|\frac{Oa}{Ob'}\right|$ the schedule OE can be seen to have greater elasticity than OE' at c (and beyond).[53]

In Fig.4-6, we return to Marshall's exposition.[54] He supposes "that E's demand for G's goods increases: and in consequence OE is shifted to a new position OE'."[55] A is the old equilibrium point, A' the new one, OD the

---

[52] *ibid.*, p.178; his geometrical treatment is in Appendix J, part 5, pp.342-344.

[53] cf. Edgeworth, *The Pure Theory of International Values*, pp.35-36.

[54] This is a simplification of Marshall's fig.11, *Money Credit and Commerce*, p.343.

[55] *ibid.*, p.342. At this stage no assumption is made that the elasticities of OE and OE' differ.

Fig.4-4

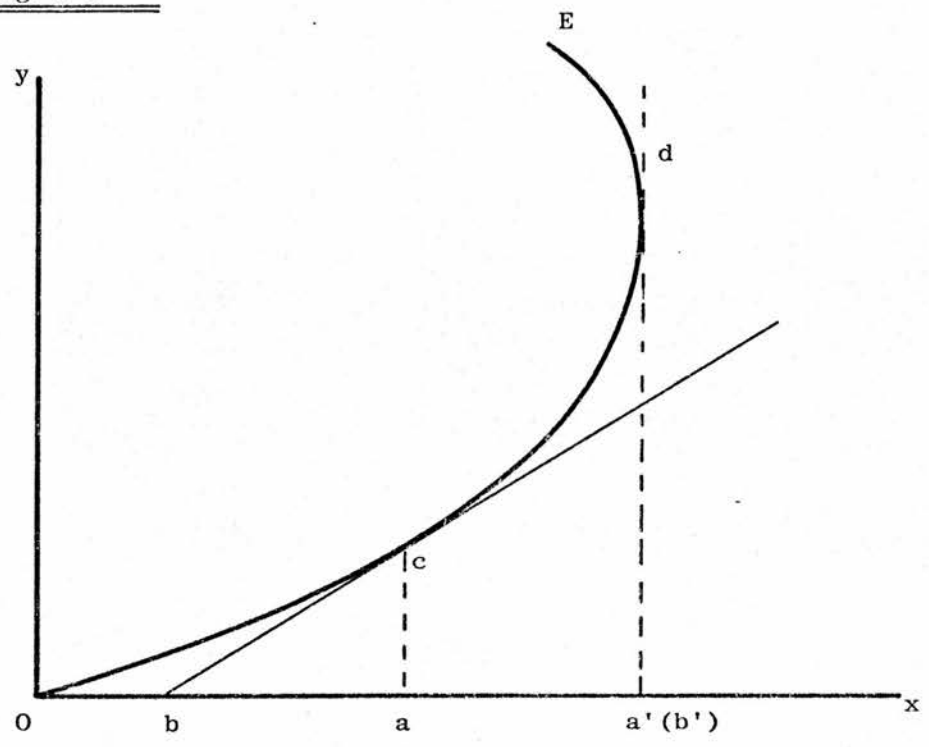
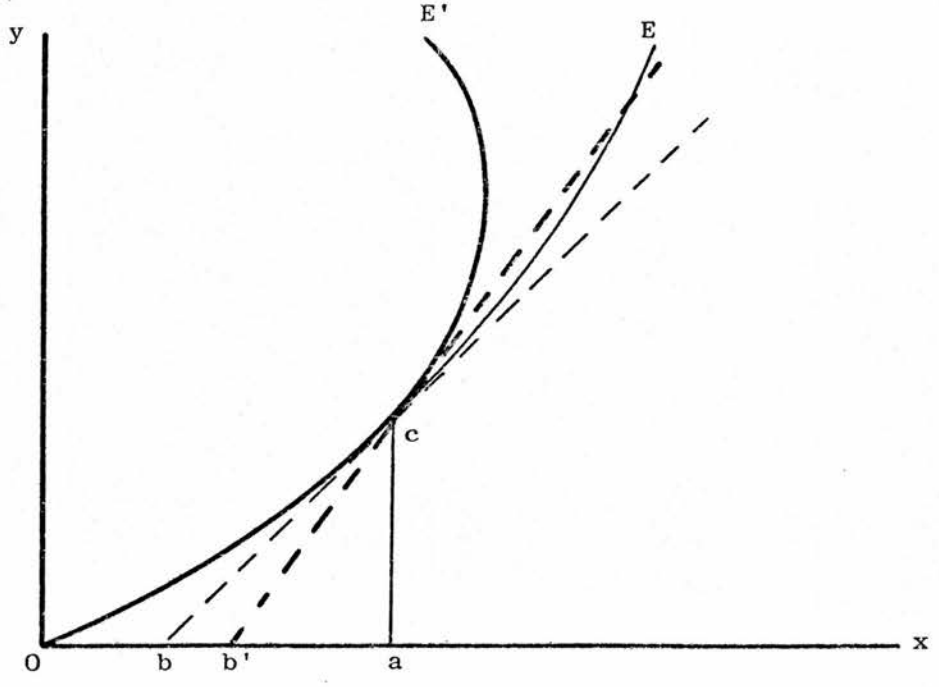


Fig.4-5



Both adapted from Clement, Pfister and Rothwell, *Theoretical Issues in International Economics*, p.167.

Fig.4-6

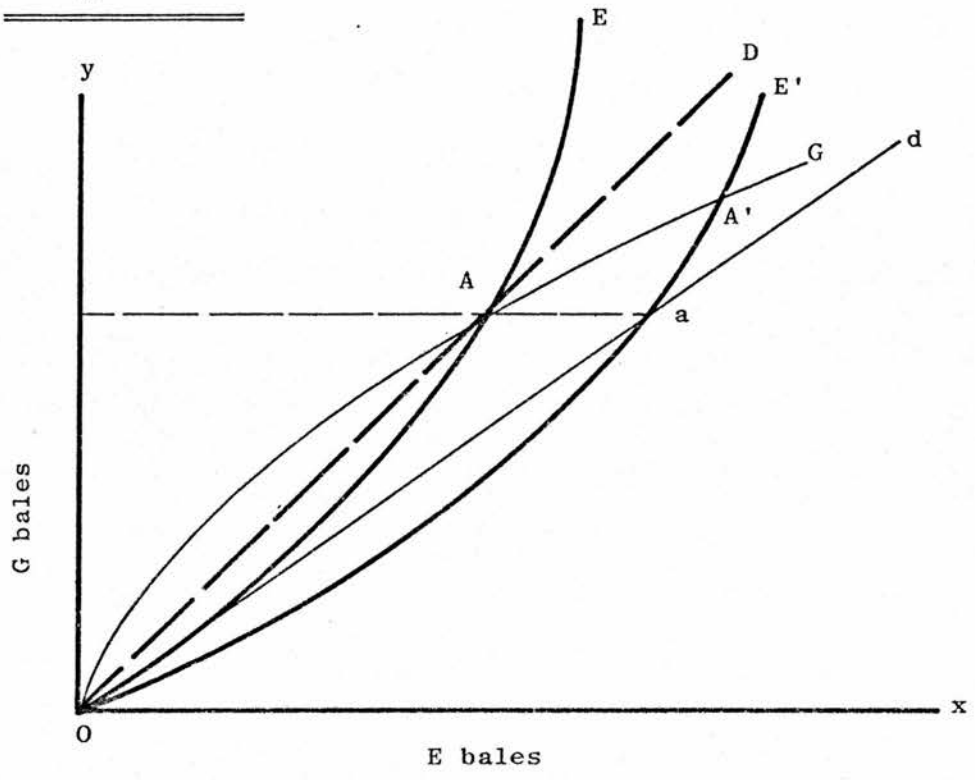
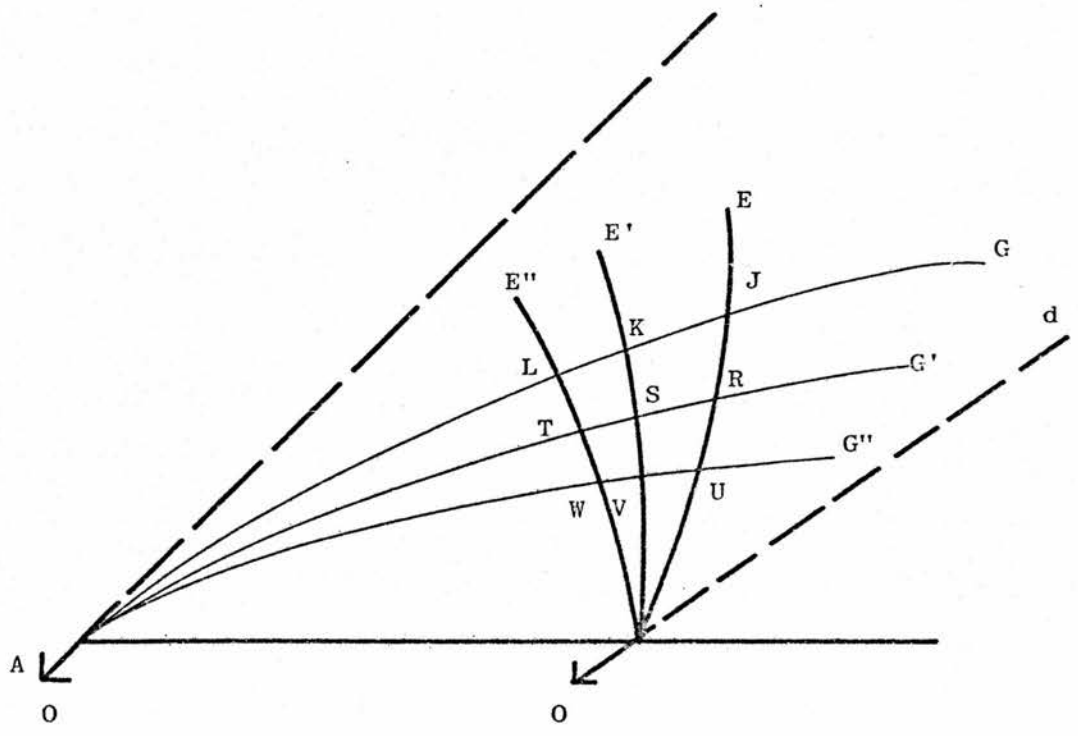


Fig.4-7



old terms of trade line, a is the point of intersection of a horizontal line through A and shows the original quantity of G bales demanded by E, and Od is a ray drawn through a. Marshall says that since OE' is of the normal class (that is, elastic), the new equilibrium point A' will lie somewhere within the area DAad and that its actual position will be determined by the elasticities of E's and G's demands. To show this he enlarges the area DAad and draws three curves each for E and G representing "great, medium and small" elasticities (Fig.4-7, which is a reproduction of his fig.12).

Marshall first considers the case where G's demand is very elastic; that is, OG.[56] He argues that the positions J, K and L indicate "much increased exports of G's produce" since they are much above A (or the line Aa) which was the original level of G's exports. He then goes on to say that "E obtains her increased supplies of G's goods without suffering any great injury in regard to the rate of interchange [since] the angles LOx, KOx and even JOx are not very much greater (*sic*) than AOx." 'Greater' must be a slip of the pen; he surely means 'smaller' (that is, JOx < KOx < LOx < AOx). It will be recalled that as the terms of trade line rotates towards the x-axis; that is, as the angle it makes with the x-axis decreases, so E's terms of trade deteriorate; thus, the greater the angle the more favourable the terms of trade for E. He then applies the same reasoning in turn to the case of "a moderate elasticity in G's demand", OG', and a small elasticity, OG". He concludes:

> ...the rates of interchange at J, K, L are in ascending order of favourableness to E, and unfavourableness to G;[57] so are those at R, S, T;[58] and at U, V, W;[59] so also are those at W, T, L;[60] and at V, S, K;[61] and at U, R, T.[62]

---

[56] As OE in Fig.4-5 was more elastic than OE', so similarly in Fig.4-7: $E_{OE} > E_{OE'} > E_{OE''}$ and $E_{OG} > E_{OG'} > E_{OG''}$.

[57] LOx > KOx > JOx (OG with OE", OE', OE).

[58] TOx > SOx > ROx (OG' with OE", OE', OE).

[59] WOx > VOx > UOx (OG" with OE", OE', OE).

[60] LOx > TOx > WOx (OE" with OG, OG', OG").

[61] KOx > SOx > VOx (OE' with OG, OG', OG").

[62] This should presumably read URJ; then JOx > ROx > UOx (OE with OG, OG', OG").

> Those at W, S and J are presumably about equal:[63] and so are those at T and K;[64] and so again are those at V and R.[65]

A rough ordering of Marshall's conclusions is shown in Table 4-3, and the movement of the terms of trade line through the various points of intersection in Fig.4-8. We will return to both of these later.

Graham begins his attack on Marshall by first quoting the latter's own definition of elasticity: "...the elasticity of a country's demand for imports may be measured by the proportionate increase in that demand, which results from any movement in her favour of the terms on which she can obtain them." From this Graham argues: "Conversely, presumably, elasticity of a country's demand for imports may be measured by the proportionate *decrease* in the demand which results from any movement *against* her of the terms on which she can obtain them."[66]

Graham then quotes Marshall's passage about the 'general rule' quoted above, and concludes:

> While valid for G (The terms of trade will, of course, move in G's favour,but the movement will be less favourable when G's demand schedule is elastic than when it is inelastic. Marshall's phrase would have been somewhat better if he had said "the less favourable to her will be the movement in terms of trade", rather than "the less favourable to her will be the terms of trade".), the rule will certainly not hold for E. The more elastic the demand of E, the demand of G being given, the smaller will be the volume of E's imports and exports (As compared, of course, with what they would be if E's demand were inelastic, not with what they had been before the change in E's demand schedule.), and the less will her exports be enlarged relatively to her imports. E's demand having increased (shift of the demand schedule to the right), and the terms of trade having consequently moved against E, E will, on Marshall's very definition of elasticity, take a quantity of imports which will vary in inverse relationship with the elasticity of her demand schedule. E's exports, as well as her imports, will be smaller in volume when her demand schedule (for imports) shows an elastic trend than they would be if it were in-

---

[63] WOx = SOx = JOx (approximately).

[64] TOx = KOx (approximately).

[65] VOx = ROx (approximately).

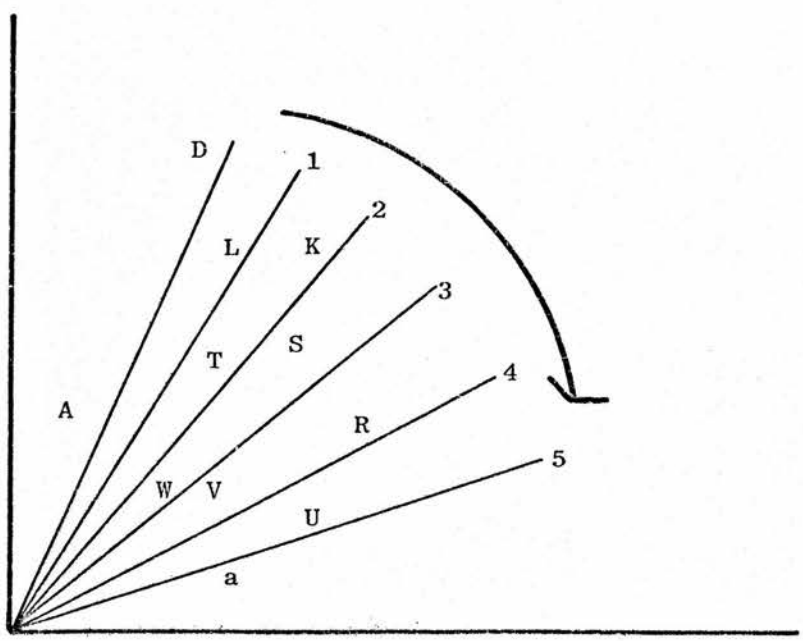
[66] Frank D. Graham,"Theory of International Values", *QJE*, 1932, Vol.46, 600ff. The quotation from Marshall comes from *Money Credit and Commerce*, p.167.

Table 4-3 Movement of Terms of Trade against E in Marshall's example

Elasticity of OE \ Elasticity of OG	large	medium	small
	G / E: OG	OG'	OG"
large: OE	J / 3	R / 4	U / 5
medium: OE'	K / 2	S / 3	U / 4
small: OE"	L / 1	T / 2	W / 3

(1 is least unfavourable, 5 most unfavourable)

Fig. 4-8 MOVEMENT OF TERMS OF TRADE AGAINST E



> elastic, both because, her imports being smaller in volume, fewer exports will, on this account, be required in payment, and also because the terms of trade will not be so adverse as they would be were her demand inelastic. The terms of trade will, of course, have moved against E, but they will certainly not carry as far in that direction if her demand for G's goods is elastic as they would were it inelastic.[67]
>
> [I have put Graham's footnotes into parentheses.]

Thus Graham, who does not refer to Marshall's diagrams, relies exclusively on his derived corollary of Marshall's definition of elasticity. However, as Table 4-3 and Fig.4-8 show, in the diagrams, the more elastic E's demand, the greater the swing in terms of trade against her. The question then arises, of course, whether the diagrams correctly represent Marshall's proposition. Viner thought not.

Viner, who agreed with Graham (and hence disagreed with Marshall), considered that it was the "unnecessary complexity" of his diagrams that had misled Marshall (see note 47 above). He argued that:

> ...the diagram by which he attempts to demonstrate the nature of the dependence of the results of an increase in the English reciprocal demand on the degree of elasticity of that curve shows three *original* English curves, different in locus as well as elasticity, and fails to present a comparison of the effects of an *increase* in an original English curve according as that original curve has high or low elasticity.[68]

He uses his own modification of the Marshall diagram (cf. Fig.4-1) to demonstrate his argument (Fig.4-9). Firstly, he attempts to clarify the phrase 'increase in demand':

> Since 'increase' of demand can be given a variety of meanings, and the results obtained will depend on what meaning is chosen, I will assume, as does Marshall, that when a reciprocal demand "increases" it shifts *to the right* by a uniform *percentage* at all points of the original curve.[69]

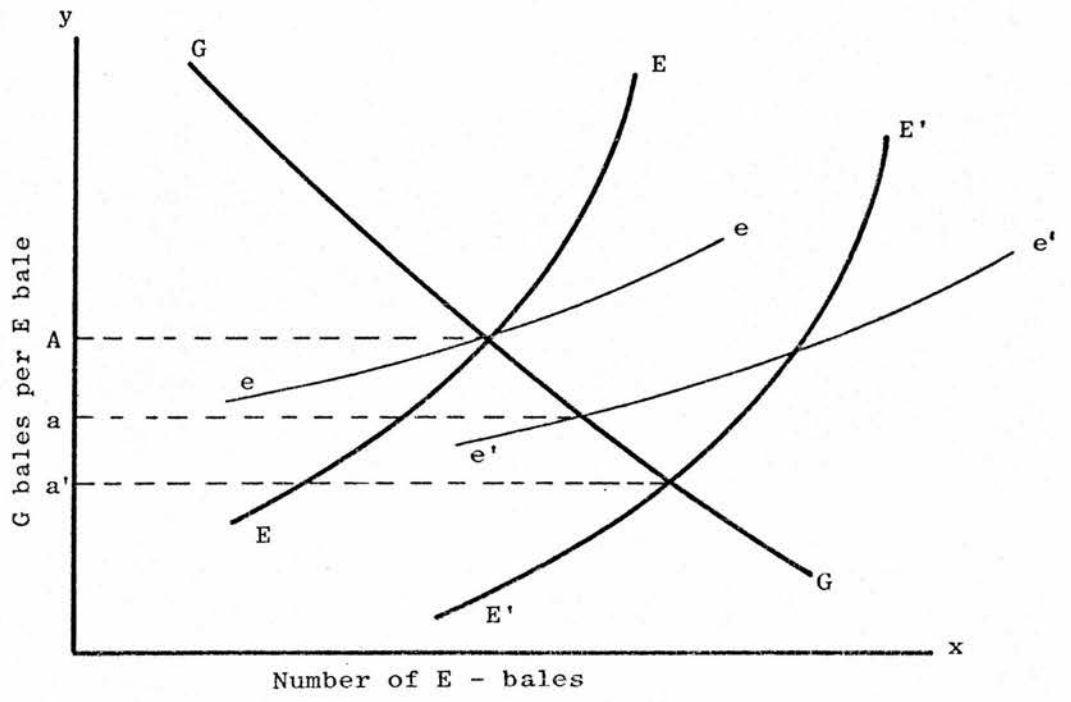
---

[67] *ibid.*, pp.601-602.

[68] Viner, *Studies*, pp.545-546. cf. D.H. Robertson, "Changes in International Demand and the Terms of Trade", *Quarterly Journal of Economics*, Vol.52 (1938), pp.539-540.

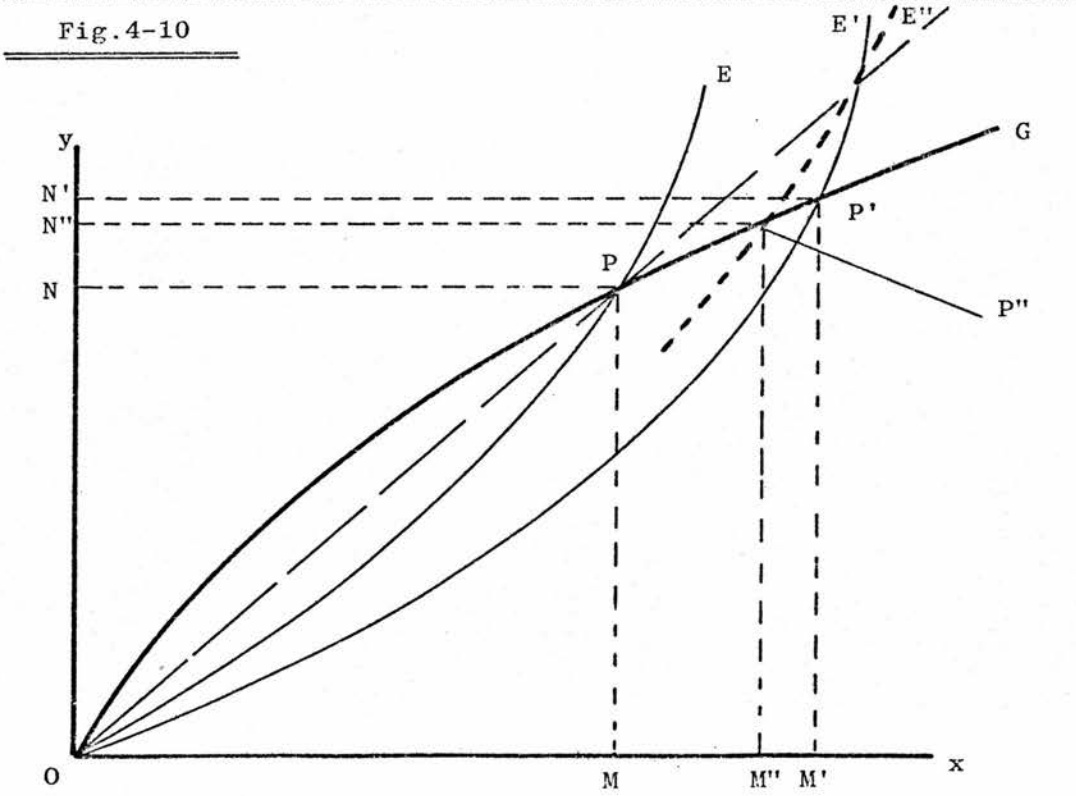
[69] Viner, *Studies*, p.543.

Fig.4-9



Derived from Viner, Chart XIV, p.545.

Fig.4-10



In Fig.4-9 (which is a slightly simplified reproduction of Viner's chart XIV, p.545) we have two original E demand curves of differing elasticities ($E_{ee} > E_{EE}$); ee' and EE' represent the respective increased demands. When the less elastic schedule is shifted to the right (EE to EE'), the terms of trade fall from A to a', which is a greater movement than that caused by the shift of the more elastic schedule (ee to ee'; terms of trade to a; Aa' > Aa). Thus, in Viner's diagram, the less elastic the E demand the greater the movement of terms of trade against E.

D.H. Robertson subsequently pointed out that the reason for the disagreement was simple:

> By a given - say a 10 per cent - increase in demand Professor Viner means something different from that Marshall meant. Marshall meant that, *for any given quantity of G goods*, E will now offer a 10 per cent higher price, and will therefore part with 10 per cent more E goods, than before. Professor Viner means that, *at any given real price of G goods*, E will now demand 10 per cent more G goods, and will therefore part with 10 per cent more E goods, than before.[70]

He suggests that 'Viner's increase', "corresponds to the straightforward case of a growth in E's population, while Marshall's only corresponds to the removal by E of an import or export tax (spent on E goods)."[71]

In fact, Marshall considered his 'increase' covered both cases, but the central point is correct; Marshall is talking about a rise in price at "a given amount of G-bales":

> To give definiteness to the ideas we may suppose that, in consequence of an increase in the population of E, or of the cessation of a tax which she had levied on imports from G, the amount of her bales which can be commanded by any given amount of G bales has increased...[72]

---

[70] Robertson, *QJE*, 1938, p.539.

[71] *ibid.*, p. 539.

[72] Marshall, *Money Credit and Commerce*, p.342.

The point, that Marshall on the one hand and Graham and Viner on the other were meaning different things by 'an increase in demand', was reiterated and developed by other writers.[73] C. Bresciani-Turroni said that if Marshall had been talking about an increase in quantity of imports at a given price, he would have come to the same conclusion as Graham.[74] Acheson J. Duncan represented this diagrammatically (Fig.4-10) by projecting the new curves along the terms of trade line rather than to the right as Marshall had done (cf. Fig.4-6). OE" is the curve of greater elasticity and it can be seen that it intersects the G curve at P", which represents a smaller movement of the terms of trade against E (that is, P"Ox > P'Ox); also, as Graham and Viner had argued, both the imports and exports were less the greater the elasticity of the increased E demand.

Duncan then went on to argue that Viner should not have shifted his curves to the right to represent Marshall's increased demand (Fig.4-9), but rather vertically downwards. That is, a shift horizontally to the right in a Viner diagram would represent an increase in quantity at the same price, whereas Marshall meant an increase in price (which means a decrease in the exchange rate of G bales for E bales) at a constant quantity. When this is done, said Duncan, the Viner diagram gives the same result as Marshall's: the greater the elasticity of E, the greater the movement of terms of trade against E and the greater both the imports (OT"P"M" > OT'P'M') and the exports (OM" > OM') (Fig.4-11).

Duncan's modification of the Viner diagram was subsequently criticised by W.R. Allen,[75] who pointed out that the terms of trade would be altered by the increase in E's demand if either:

---

[73] Viner himself acknowledged his misinterpretation of Marshall in "Indemnity Payments and Gold Movements: A Reply", *Quarterly Journal of Economics*, Vol.52 (1939),pp.316-317.

[74] Cited by Acheson J. Duncan, "Marshall's Paradox and the Direction of Shift in Demand", *Econometrica*, Vol.6 (1938),pp.358-359.

[75] W.R. Allen, "The Effects on Trade of Shifting Reciprocal Demand Schedules", *American Economic Review*, Vol.62 (March 1952), pp.135-140.

a. E's exports remained constant while G's exports fell.

b. E's exports increased while G's exports remained constant.

Marshall, he says, took case b. while Duncan "inexplicably" took case a. To represent Marshall's shift, the curves should be moved not vertically downwards (as in Fig.4-11), but along a rectangular hyperbola. At any point on this hyperbola (R in Fig.4-12) G's exports (being the area of the rectangle) are constant, while the terms of trade vary. Allen claimed that, not merely did this correctly represent Marshall's increase on a Viner diagram, but also that it enables one to analyse the Marshallian problem with inelastic demands. (For Marshall, it will be recalled, the demands of both countries were elastic.)

Allen's diagram is reproduced in Fig.4-12 (his fig.1, p.136). The curve R is the rectangular hyperbola, G is the elastic G-demand, G' the inelastic and, as before, ee and e'e' the more elastic and EE and E'E' the less elastic (but not inelastic) E-demands. Allen concludes:

> With the elastic G curve, an increase in E's demand causes E's exports and imports to be greater and her terms of trade to be worse the more elastic the E-curve; and, with a given increase in E's demand, the more elastic the G-curve the greater is G's trade and the worse her terms - which are Marshall's conclusions.[76]

Allen also points out that while the Marshall and Graham/Viner cases give different solutions when G's demand schedule is elastic, they yield the same result when it is inelastic.[77]

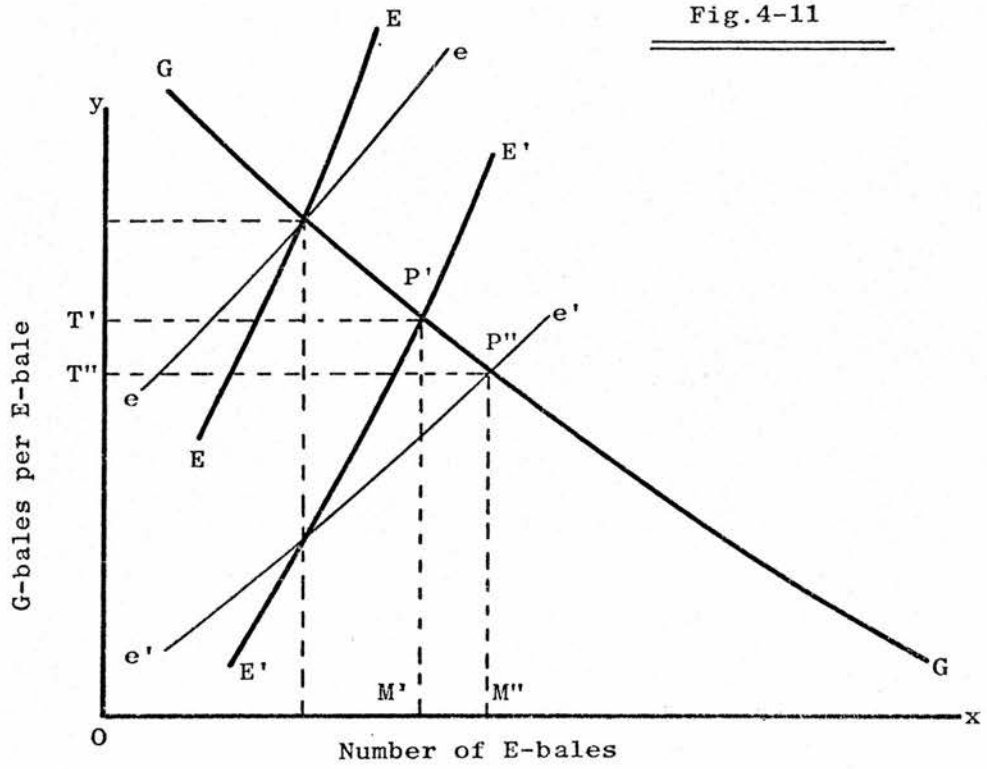
In Figs.4-13 to 4-15,we attempt to summarise the results for the three

---

[76] *ibid.*, p.137.

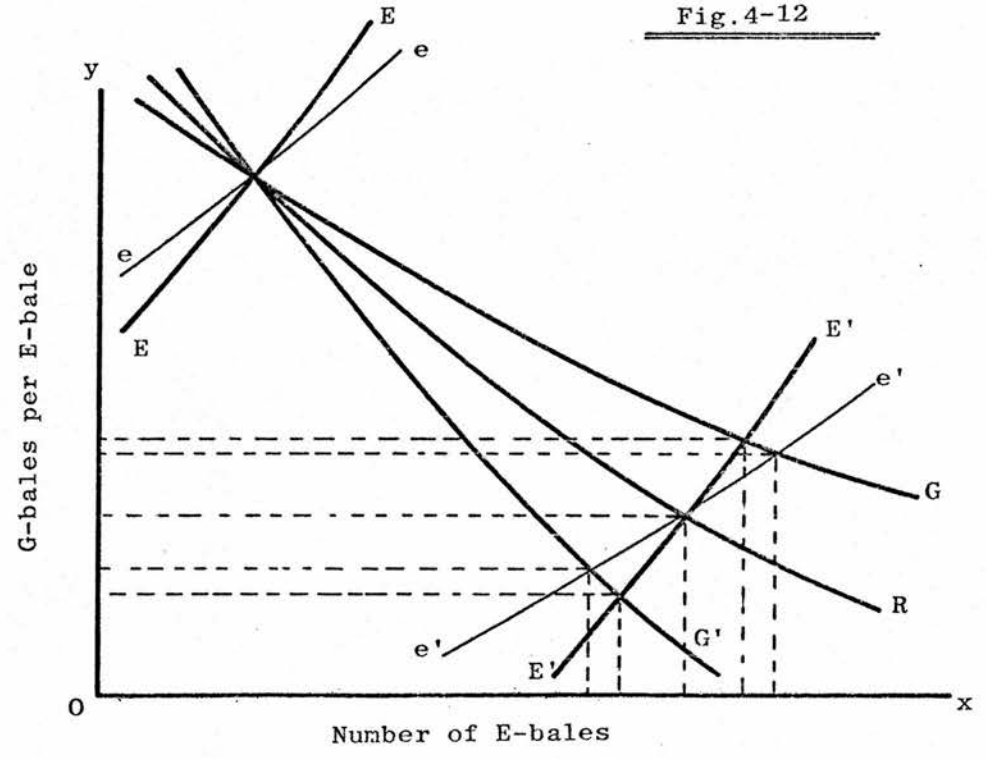
[77] Murray C. Kemp, who tackles the problem algebraically, comes to the same conclusion: "The Relation between Changes in International Demand and the Terms of Trade", *Econometrica*, Vol.24 (1956), pp.41-46.

Fig.4-11



Source: Acheson J. Duncan, *Marshall's Paradox..*(1938)

Fig.4-12



Source: W.R. Allen, *The Effects on Trade...*(1952)

types of shifts itemised by Kemp[78] utilising the 'straight line Marshallian curves' developed by Allen, and adding, as he does, inelastic curves to the analysis.

Fig.13: Type I Shift - the Marshall Case

An increase in the amount of E-goods offered in exchange for given amounts of G goods... The increased E curves are iso-elastic (and hence in the straight-line modification, parallel) to their originals and are shifted to the right along the line representing a constant amount of G goods. We have three E curves of differing elasticity, with E being inelastic ($E_{e''} > E_{e'} > 1 > E_E$) and similarly three G curves ($E_{g''} > E_{g'} > 1 > E_G$). The ray OT gives the parameter of infinite elasticity, hence the E curves must be to the anti-clockwise direction of it. (Similarly, the G curves must be to the clockwise direction of a line parallel to OT drawn through the original equilibrium point; this line would, of course, also run through the origin in a real 'curved-line' Marshallian diagram.)

Although the terms of trade rays and the x and y intercepts have been omitted for fear of further cluttering the diagram, it will be apparent that the following conclusions hold:

Terms of trade

a. For any elasticity of E's demand (that is, E_1, e'_1, e''_1), the greater the elasticity of G, the better the terms of trade (for E).

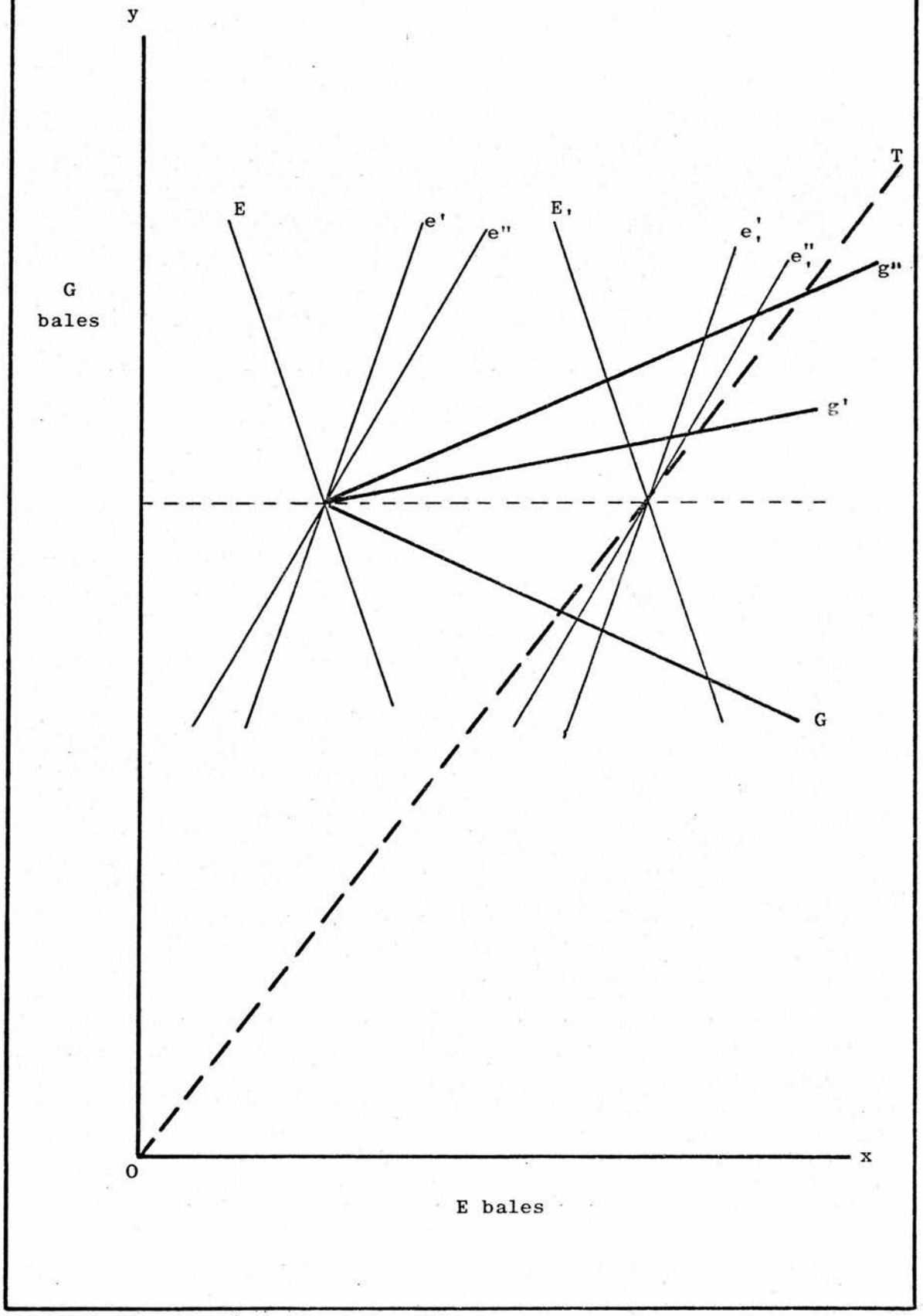
b. When G is elastic (that is, g", g'), the greater the elasticity of E, the worse the terms of trade.

c. When G is inelastic (G), the greater the elasticity of E, the better the terms of trade.

---

[78] *ibid.* Kemp points out that these three types "do not exhaust the possible interpretations of 'an increase in E's demand for G's goods'." (p.41).

Fig.4-13



G bales (G's exports/E's imports)

d. For any elasticity of G, the greater the elasticity of E, the greater the G bales.[79]

e. For any elasticity of E, the greater the elasticity of G, the greater the G bales.

E bales (E's exports/G's imports)

f. When E is inelastic, the greater the elasticity of G, the less the E bales.

g. When E is elastic, the greater the elasticity of G, the greater the E bales.

h. When G is inelastic, the greater the elasticity of E, the less the E bales.

i. When G is elastic, the greater the elasticity of E, the greater the E bales.

Since Marshall confined himself to the 'normal case' where both demands are elastic, only statements a, b, d, e, g, i apply directly to his analysis; it will be seen that they agree with his conclusions.

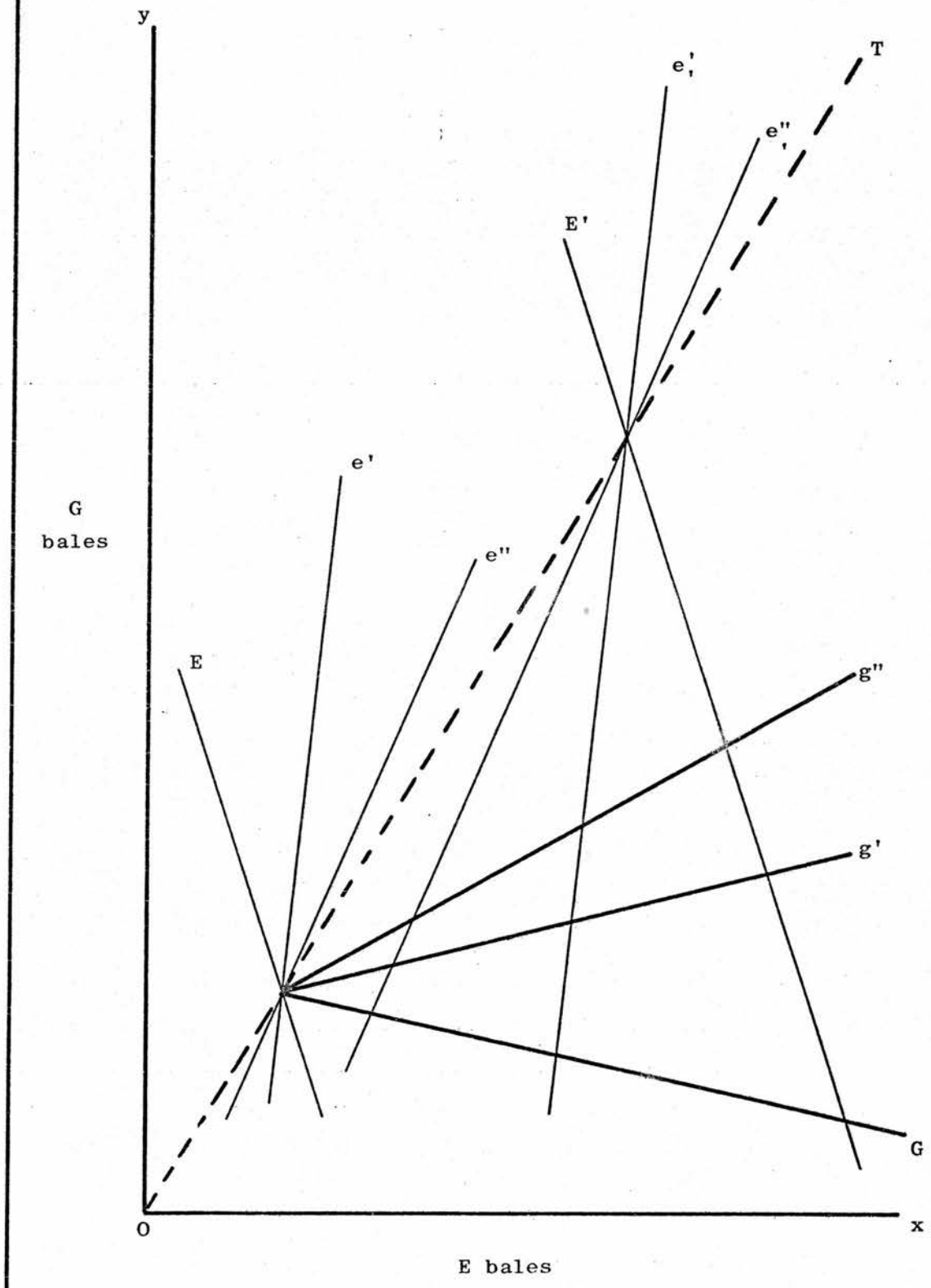
Fig.4-14: Type II Shift - the Graham/Viner Case

Here there is an increase in the amount of E-goods offered at a given terms of trade. The increased demand curves, again iso-elastic to their originals, are shifted outwards along the original terms of trade ray OT.

---

[79] When the G demand is inelastic, in this and other cases, the actual number of G bales is, of course, smaller than the original. Even so, it is greater the more elastic is E. Similarly, when E is inelastic the amount of exports or imports may be smaller, or the terms of trade less favourable. In these cases it would be more correct, but confusing, to say "the lesser the decrease" rather than "the greater". However, since it is the relative position we are considering, rather than the absolute, the simpler expression will suffice.

Fig.4-14



Terms of trade

a. For any elasticity of E, the greater the elasticity of G, the better the terms of trade.

b. For any elasticity of G, the greater the elasticity of E, the better the terms of trade.

G bales (G's exports/E's imports)

c. For all elasticities of E, the greater the elasticity of G, the greater the G bales.

d. When G is inelastic, the greater the elasticity of E, the greater the G bales.

e. When G is elastic, the greater the elasticity of E, the less the G bales.

E bales (E's exports/G's imports)

f. For all elasticities of G, the greater the elasticity of E, the less the E bales.

g. When E is inelastic, the greater the elasticity of G, the less the E bales.

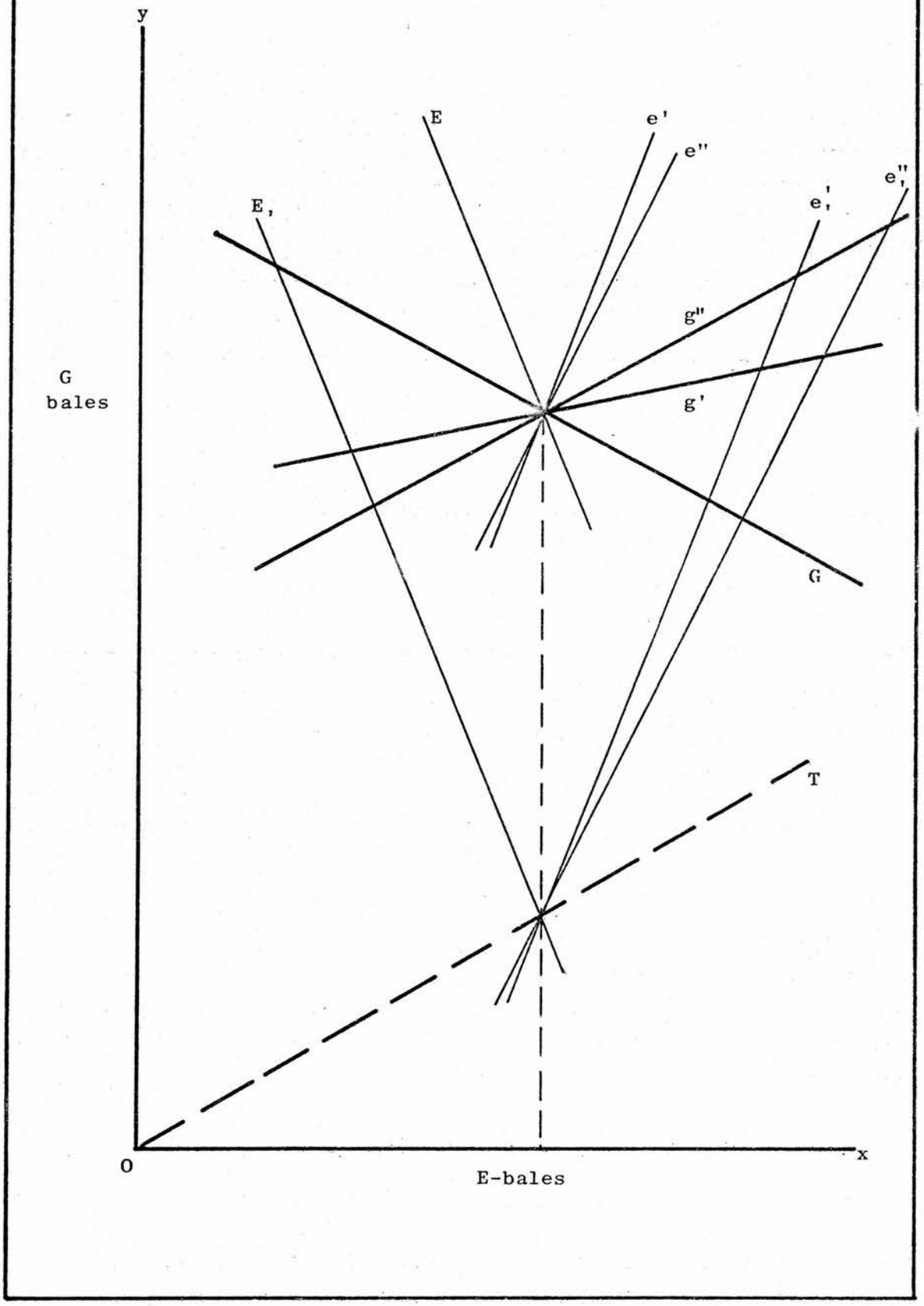
h. When E is elastic, the greater the elasticity of G, the greater the E bales.

Statements b, e, f correspond to Graham's and Viner's disagreement with Marshall.

Fig.4-15: Type III - the Duncan Case

Here there is a decrease in the amount of G goods for a given amount of E goods, and thus the curves are shifted vertically downwards.

Fig.4-15



Terms of trade

a. When E is inelastic, the greater the elasticity of G, the worse the terms of trade.

b. When E is elastic, the greater the elasticity of G, the better the terms of trade.

c. For all elasticities of G, the greater the elasticity of E, the worse the terms of trade.

G bales (G's exports/E's imports)

d. When E is inelastic, the greater the elasticity of G, the less the G bales.

e. When E is elastic, the greater the elasticity of G, the greater the G bales.

f. When G is inelastic, the greater the elasticity of E, the less the G bales.

g. When G is elastic, the greater the elasticity of E, the greater the G bales.

E bales (E's exports/G's imports)

h. For all elasticities of E, the greater the elasticity of G, the greater the E bales.

i. For all elasticities of G, the greater the elasticity of E, the greater the E bales.

It will be apparent that not merely do these three diagrams not exhaust the possible interpretations of 'an increase in G's demand', but also that they themselves could generate many more than the twenty-six statements given here. We could, for instance, conclude from Fig.4-13 (Type I shift) that the terms of trade would be worse for E, and imports and exports lower, if both country's demand were inelastic than they would be if they were both highly elastic. Similar conclusions could be drawn, with varying degrees of confidence, from most of the other intersection points in these diagrams.

ASPECTS OF MARSHALL'S WELTENSCHAUUNG

Alfred Marshall may reasonably be seen as the leading representative of the late classical school,and his *weltenschauung*, if not necessarily typical, is at least highly illustrative of what might be termed the Metropolitan Bourgeois Tradition, in contradistinction to those economists, Marxist and non-Marxist, who tend to be non-metropolitan (at least in viewpoint) and radical. Before we examine his views on the gains from trade then, we will briefly consider some of his more general remarks on international trade that are pertinent to this study, and which may conveniently throw light on the ideological context in which the economic technicalities we are examining are located.

Marshall's general views on the uneven development of the world seem to lay undue stress on race and climate - a preoccupation he shared with many of his contemporaries.[80] "In the long run," he says, "national wealth is governed by the character of the population more than by the bounty of nature. Invigorating climates have attracted and developed strong characters; and wealth has come to them."[81] At the other end of the scale, the tropics are debilitating and breed effete races; he talks of "some vegetable products, especially of a tropical character, which have not yet been largely cultivated by alert and strenuous races."[82]

To be sure, he has his doubts about the Japanese: "The human factor is also uncertain; the sudden rise of Japan suggests caution"[83] - but then

---

[80] cf. Victor Kiernan's *Lords of Human Kind* (London, Weidenfeld and Nicolson, 1969) or Raymond Dawson's survey of European perceptions of China, *The Chinese Chameleon* (London, Oxford University Press, 1967). A modern exponent of the emphasis on climate and race is P.T. Bauer; consider, for instance, his *Dissent on Development* (London, Weidenfeld and Nicolson, 1971), pp.331-332. The novels of, amongst others, John Buchan and Somerset Maughan, convey the flavour of racial attitudes of the day.

[81] Marshall, *Money Credit and Commerce*, p.100.

[82] *ibid.*, p.103. cf. his comments on South America where "Anglo-Saxon, German and Italian energies are, however, gradually making their way against political and other difficulties: the native population, though limp in character, are alert in mind..." (p.174).

[83] *ibid.*, p.103.

the Japanese do live in the temperate zone, so perhaps, like the South Africans, he would accept them as 'honorary white'. Moreover, he does appear to accept that present differences in development are temporary: "It seems probable that advantages, which any particular country has gained from an early start in the industrial race, will diminish: for nearly every place will gradually develop her resources up to a fairly high level."[84] And later:

> But backward countries will gain on those that are more advanced: and therefore those local inequalities of human faculty, which now afford a solid basis for such trade, seem likely on the whole to diminish: and this, in spite of the tendency towards the concentration of some classes of industries which can derive great economies from production on a vast scale. For the equalizing tendencies, which arise from improved means of communication and increased human plasticity, seem not yet to have reached their full development: while the increased economies, which arise from mere enlargements of the scale of production, have already occupied the greater part of industry in which they are of much importance.
>
> The conflict between these two tendencies, the one strengthening many weak *industrial* nations, and the other strengthening the strong,will afford an interesting retrospect to the economic historian a hundred years hence.[85] [emphasis added]

However, it would appear from the context that the 'backward countries' he has in mind might merely be those of 'Slavonic Europe', although later he does hold out hope that "the energies of those races, which were civilized while Europe was still barbarous, may be aroused and trained in modern methods."[86] Moreover, he probably saw this "arousing and training" as part of 'the white man's burden' that was not confined to the tutelage of the 'civilized races': "A great part of the world's resources is wasted through the unhealthiness of a large part of its surface. But there are reasons for hoping that this evil will be gradually remedied; and, if so, then the rate of migration, which has prevailed in the last century, may probably continue for at least another." Thus, it is uncertain whether Marshall actually envisaged the possibility of the equal development of the non-white areas of the world.

---

[84] *ibid.*, p.105.

[85] *ibid.*, p.106.

[86] *ibid.*, p.106.

Marshall recognized that, generally speaking, the larger the country (latitude being more relevant than longitude) the less important to her is foreign trade:

> A large country with ample natural resources, and simple manners, such as Russia or China, resembles a self-sufficing family: her real income consists mainly of her own products; and it is not very greatly affected by the terms on which she exports a small part of them in exchange for foreign goods. Nearly the same may be said of the United States..."[87]

Apart from this, he sees a correlation between development and foreign trade:

> A great national trade has always been an evidence of high industrial energy. It is true that easily worked rich mines, or exceptionally advantageous soil and climate, have sometimes yielded a large *per capita* external trade for a small population: but they have never yielded a very large *aggregate* trade. That has always belonged to a great energetic people, who export a considerable part of the raw or the manufactured products of their industries.[88]

However, he does admit the possibility that diminution in foreign trade may result from an increase in wealth:

> Britain's foreign trade consists in great measure of an exchange of manufactures for grain and meat. Let us suppose that the methods of intensive cultivation are vastly improved: so that the produce of British farms can be greatly increased; since farmers obtain as good a return to much larger applications of labour and capital than before the change. The result would be a considerable addition to Britain's wealth. But her imports of grain and meat would have diminished and her exports would have diminished in like degree (unless indeed she were taking the opportunity of bringing home some of her capital).[89]

Marshall's argument here seems confused, although the main thrust is valid. If farmers merely "obtain as good a return to much larger applications of labour and capital than before" there is no improvement in productivity, and hence no "addition to Britain's wealth", just a diversion of resources from one sector to another; although presumably, the pre-

---

[87] *ibid.*, p.109.

[88] *ibid.*, p.111.

[89] *ibid.*, p.113. ~~cf. Bhagwati's 'immiserizing growth' below~~.

requisite for such a diversion would be increased returns. However, if we understand Marshall to mean an increase in productivity, the thing makes more sense. Outputs would grow faster than inputs and there would be 'an increase in wealth'. These extra outputs would displace imports, and if trade were inexorably balanced, decrease exports as well. Exports would also decrease if the factors moving into agriculture came from exporting industries. He also seems to have the capital flow in the wrong direction; an export surplus would tend to produce an outflow of capital rather than the reverse.

Nevertheless, the main point seems to hold. If there is an improvement in productivity in a 'comparatively disadvantaged' industry (that is, there is a lessening of comparative advantage), then although there is a decrease in trade, and the gains from it, there is still an increase in wealth. ~~We will return to this in discussing the work of Bhagwati.~~

THE GAINS FROM TRADE

Marshall distinguishes between two concepts of the gains from trade:[90]

> In broad terms it may be said that the *prima facie* and direct gain which a country derives from her foreign trade consists in the excess of the value to her of the things which she imports over the value to her of the things which she could have made for herself with the capital and labour devoted to producing the things which she exported in exchange for them; the costs of working the trade being of course reckoned in.
>
> No statistics are, however, available for making a near estimate of this excess: and consequently the gain which a country derives from her foreign trade is often stated on another plan, which suggests more definite ideas: it is not strictly correct; but it serves fairly well for some purposes. On this plan, it is tacitly assumed that the country would make for herself those things which she imports, if she could not get them by trade: and accordingly her gains from trade are taken to be the excess of the cost to which she would be put if she made her imports herself, over that to which she is put by making other things and exporting them in exchange for her imports. This result is of course very

[90] His geometrical treatment of the first concept is discussed below.

> far from the truth in regard to such things as Britain's imports of tropical foods: for she could not produce any great quantities of these herself; and, if she could not import them, she would have very little of them.[91]

Marshall here is touching on an important problem of the basic Ricardian model in measuring the gains from trade, and the terms of trade, in the trade between developed and under-developed countries - the case of exclusive commodities. If we have two countries, each of which exclusively produces one of the (two) commodities, say oil and bananas, not being able to produce the other commodity either absolutely (for example, because it has no oil) or virtually (the cost of producing bananas being prohibitive), then the range of possible terms of trade would tend to infinity[92] and the gains from trade would be immeasurable. The actual terms of trade would be determined by demand unrelated to comparative costs.

In fact, there are probably no commodities, and certainly no important ones, which are nowadays exclusive (or for which there are no substitutes) to one country.[93] If we add a third country (of comparable size) which produces both commodities, then the comparative costs in that country would (disregarding demand) tend to set the international terms of trade. This process can be extended for any number of commodities and countries; as long as there is an overlap, a linkage of comparative costs is established.

Despite Marshall's reference to comparative costs, his concentration on reciprocal demand allows "cost analysis to recede into the background."[94]

---

[91] *ibid.*, pp.109-110.

[92] Courrot apparently made the same point; see Viner, p.564.

[93] There has been, of course, an immense diffusion of products throughout the world, especially since the discovery of the Americas (for example, potatoes, tobacco, rubber outwards, coffee and cotton inwards). As for China, the transference of silk worms, first to Byzantium and then to Italy, and the later planting of tea in India, etc., have had great effect on her trade.

[94] Viner, *Studies in International Trade*, p.527, n.1.

Again he is following J.S. Mill:

> When two articles are produced in the immediate vicinity of one another, so that, without expatriating himself, or moving to a distance, a capitalist has the choice of producing one or the other, the quantities of the two articles which will exchange for each other will be, on the average, those which are produced by equal quantities of labour. But this cannot be applied to the case where the two articles are produced in two different countries; because men do not usually leave their country, or even send their capital abroad, for the sake of those small differences of profit which are sufficient to determine their choice of a business, or of an investment, in their own country and neighbourhood.
>
> The principle, that value is proportional to cost of production, being consequently inapplicable, we must revert to a principle anterior to that of cost of production, and from which this last flows as a consequence, namely, the principle of demand and supply.
> .....
> We should express the principle more accurately, if we were to say, the price so regulates itself that the demand shall be exactly sufficient to carry off the supply.[95]

Thus we may distinguish two different approaches to value or price - cost-orientated and market-orientated - and Marshall's (and Mill's) emphasis on reciprocal demand is market-orientated.[96] It remains to

---

[95] J.S. Mill, *Essays*, pp.8-9.

[96] In distinction to 'cost-orientated' writers, either 'direct-cost' such as Taussig and Viner, or 'opportunity-cost', such as Haberler. This dual approach to value/price is an old one. Consider Marx's address to the General Council of the First International in 1865:

> "What then is the relation between *value* and *market prices*, or between *natural prices* and *market prices*? You all know that the *market price* is the *same* for all commodities of the same kind, however the conditions of production may differ for the individual producers. The market price expresses only the *average amount of social labour* necessary, under the average conditions of production, to supply the market with a certain mass of a certain article. It is calculated upon the whole lot of a commodity of a certain description.
>
> "So far the *market price* of a commodity coincides with its *value*. On the other hand, the oscillations of market prices, rising now over, sinking now under the value or natural price, depend upon the fluctuations of supply and demand. The deviations of market prices from values are continual, but as Adam Smith says:
>
> 'The natural price...is the central price, to which the prices of all commodities are continually

consider briefly Marshall's view on what elasticities of reciprocal demand might be typical for different kinds of countries.

It should firstly be recalled that Marshall's (foreign) demand is also supply. Thus:

> The elasticity of her effective demand for foreign goods is governed not only by her wealth and the elasticity of the desires of her population for them; but also by her ability to adjust the supplies of her own goods of various kinds to the demands of foreign markets.[97]

He suggests that this is especially important for those countries "whose exports owe more to special bounties of nature than to man's energy";[98] that is, primary products specific to a country rather than manufactures which are, generally speaking, non-specific. A country of this sort "may be unable to expand her trade without accepting much less favourable terms to herself; she may have already developed those resources nearly as far as they will reach; or her special products may be such as to command high prices abroad, only when supplied in limited quantities;[99] that is, foreign demand or her supply may be inelastic.

Marshall took issue with Mill on the question of who gains most from trade, rich country or poor. He quotes Mill as follows:

> ...the countries which carry on their trade on the most advantageous terms are those whose commodities are most in demand by foreign countries, and which

---

> gravitating. Different accidents may sometimes keep them suspended a good deal above it, and sometimes force them down even somewhat below it. But whatever may be the obstacles which hinder them from settling in this centre of repose and continuance they are constantly tending towards it.'"

Karl Marx, *Wages Price and Profit*, in Karl Marx and Frederick Engels, *Selected Works in One Volume* (London, Lawrence and Wishart, 1968), pp.207-208. The citation from Smith, ...*Wealth of Nations* (Edinburgh, 1814), p.93. cf. Viner, pp.489-493; Graham (1948), pp.7-8, p.271.

[97] Marshall, *Money Credit and Commerce*, p.167.

[98] *ibid.*, p.167.

[99] *ibid.*, p.168.

> have themselves the least demand for foreign commodities ...From which, among other consequences, it follows that the richest countries are those which *coeteris paribus* gain the least by a given amount of foreign commerce: since, having a greater demand for commodities generally, they are likely to have a greater demand for foreign commodities, and thus modify the terms of interchange to their own disadvantage. Their aggregate gains by foreign trade, doubtless, are generally greater than those of poorer countries, since they carry on a greater amount of such trade, and gain the benefit of cheapness on a larger consumption: but their gain is less on each individual article consumed.[100]

Marshall's rejoinder is both confusing and confused. Mill's 'richer and poorer' countries are transmuted into 'large' and 'small'; 'large' then changes into 'large and rich' before becoming 'great rich' and finally both countries revert to being 'rich and poor'. Marshall then gives as specific examples England and Germany. However, his main point would seem to be that advantage lies in diversity and elasticity of demand and supply and that these tend to be proportional to size (of population, area, G.N.P.?) and industrialisation. Thus, on the supply side:

> ...a great rich country [presumably a country which is both large and industrial] has opportunities for pioneering new sorts of implements and machinery, and new sorts of comforts and luxuries of all kinds: she is likely to have highly organized transport and commercial relations with so many markets that she need not push any one variety of any product on a market which shows signs of being glutted with that variety.[101]

In fact, much the same point had been made by Mill elsewhere (see above) about England. As for demand, and this is where he is at variance with Mill, he notes that, "...the demand of any country for imports is as a rule small relatively to the world's supply of goods of the same class: and the world can nearly always follow changes in that demand rapidly and easily by a change in supply."[102]

Marshall attempted to give an arithmetical and geometrical example of his primary definition of the gains from trade; that is, the 'excess of

---

[100] J.S. Mill, *Principles*, III, XVIII, 8; cited by Marshall, *Money Credit and Commerce*, pp.168-169.

[101] Marshall, *Money Credit and Commerce*, p.169.

[102] *ibid*, p.172.

value' (or total net utility) concept rather than the second 'excess of cost' one. This 'excess of value', or 'net benefit', or 'surplus' as he also calls it, is Marshall's foreign trade equivalent to his 'consumer's surplus' in domestic trade.[103]

Marshall's illustrative figures are given in Table 4-4. He arrives at his assessment of 'net benefit' thus:

> The schedules indicate that if 1000 G bales were offered in E markets they could be disposed of at a rate of 10 for each 100 E bales: at that rate, E would be willing to trade to the extent of exporting 10,000 of her bales: or, which is the same thing, to the extent of importing 1000 G bales: but a rate more favourable to her would be required to induce her to extend the scope of her trade. At the rate of 20 G bales for 100 of her own, she would be willing to trade to the extent of importing 4000 bales and exporting 20,000: and so on. Similarly, a small quantity of E's goods could meet with so eager a demand in G's market that 10,000 E bales could be disposed of at the rate of 100 for 230 G bales: and so on.
>
> Adding up, we find that G gets for 70,200 of her bales a number of E bales for which it would be worth her while to pay 125,300 of her bales rather than forgo them. The net benefit of the trade to her therefore is 55,100 unit products of her labour and capital.
>
> The arrangement of the figures is rather less convenient for a similar calculation of the gain which E derives from the trade. But they indicate that it would be worth E's while to give 170,000 of her bales for the 70,200 G bales for which she actually gives 90,000: so that her total net benefit by the trade is 80,000 unit products of her labour and capital. The aggregate gain to the world of the trade is thus 135,000 unit products of labour and capital.[104]

Unfortunately, Marshall's argument is somewhat vitiated by faulty arithmetic. Presumably G would have been willing to buy the first 10,000 E bales at the rate of 230G:100E (23,000); the second 10,000 at the rate 175G:100E (17,500) and so on. Adding up, we find that at the equilibrium point (90,000 E bales) the total number of bales which G would have been

---

[103] cf. Viner, *Studies...*, p.570; Allyn A. Young, "Marshall on Consumer's Surplus in International Trade", *Quarterly Journal of Economics*, 39 (1924), pp.144-150 and 498-499.

[104] Marshall, *Money Credit and Commerce*, pp.162-163.

Table 4-4 Marshall's Net Benefit Example

1	2	3	4	5
	Schedule of terms on which E is willing to trade		Schedule of terms on which G is willing to trade	
Number of E-bales	Number of G bales per hundred E bales at which E will part with those in (1)	Total number of G bales for which E is willing to part with those in (1)	Number of G bales per 100 E bales at which G will buy those in (1)	Total number of G bales which G is willing to give for those in (1)
10,000	10	1,000	230	23,000
20,000	20	4,000	175	35,000
30,000	30	9,000	143	42,000
40,000	35	14,000	122	48,800
50,000	40	20,000	108	54,000
60,000	46	27,600	95	57,000
70,000	55	38,500	86	60,200
80,000	68	54,400	82½	66,000
90,000	78	70,200	78	70,200
100,000	83	83,000	76	76,000
110,000	86	94,600	74½	81,950
120,000	88½	106,200	$73^{3}/_{4}$	88,500

Source: Marshall, *Money Credit and Commerce*, p.162.

willing to pay is 111,950 not 125,300, giving a 'net benefit' of 41,750 bales rather than 55,100. Similarly, the 'net benefit' of the trade to E is 60,931 not 80,000.

These arithmetical mistakes would be of no consequence if Marshall had made clear the process by which he arrived at his figures for 'net benefit'. However, since 'net benefit' is clearly analogous to 'consumer's surplus', we can be confident that the procedure followed here is faithful to his reasoning.[105]

There remains the question whether his reasoning was valid. Allyn A. Young, for one, thought not:

> ...the nature and conditions of such gains must be sought in the analysis of costs, not in demand schedules....the study of costs affords the only practicable road to conclusions respecting net gains or losses. Gains come from *economies*. The economies of international trade are by no means an exact measure of its net benefits. But that net benefits are more or less according as the economies secured are more or less, is a justifiable assumption.[106]

Viner is not so dismissive of the applicability of the consumer's surplus concept to foreign trade,[107] but he does criticise Marshall for his use of the reciprocal demand schedule to determine net benefit. His argument, though focussed on the geometrical treatment, applies, *mutatis mutandis*, to the arithmetical example, and since his version of Marshall's diagram is simpler and more cogently explained than the original, it is that which is followed here:

In Fig. 4-16:-

> OG is country G's reciprocal-demand curve, and under equilibrium OH unit's of G's commodity are exchanged for OB units of the commodity of the other country, E. OR is the tangent to OG at O, intersecting BA produced at R. Through P, any point on OG, draw OP_p to cut BR in p; and produce MP to P^1, so that, M^1 being the point at which it cuts HA, M^1P^1 may be equal to A_p. Then G is

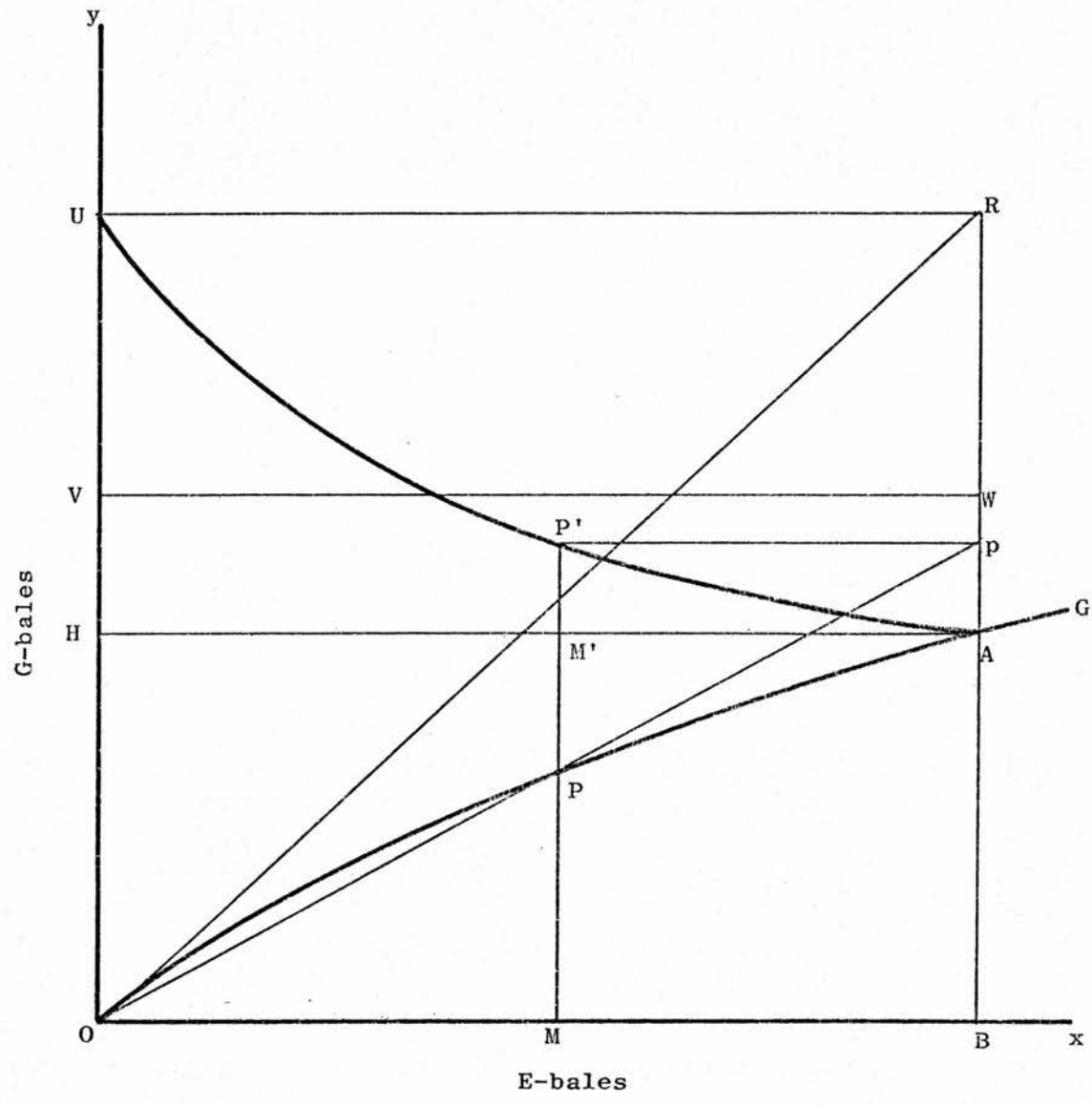
---

[105] cf. Young, *QJE* (1924).

[106] Young, *QJE* (1924), p.150. This corresponds to Marshall's second concept.

[107] See his defense, *Studies...*, p.575.

Fig.4-16



Source: Viner, Chart XVI, p.571.

> willing to pay for the OMth E-bale at the rate of PM G-bales for OM E-bales: i.e. at the rate of $_pB$ G-bales for OB E-bales. Country G therefore obtains a surplus on the OMth bale at a rate which if applied to OB bales would make an *aggregate* surplus of A_p G-bales, or M^1P^1 G-bales. Thus her surplus on that OMth E-bale is equal to $\frac{M^1P^1}{OB}$. If P, starting from O, is made to move along OG, then P^1 will start from U, the foot of the perpendicular drawn from R on OY; and it will trace out a curve UP'A ending at A. Then the aggregate surplus or net benefit which G derives from her trade will be an OBth part of the aggregate of the lines M'P' as P' passes from U to A; that is, it will be an OBth part of the area UHA. Draw VW parallel to OX, so that the rectangle VHAW is equal to the area UHA. Then $\frac{VHAW}{OB}$, = VH, will be country G's net benefit from trade, measured in G-bales.[108]

Viner argues that Marshall's use of the reciprocal-demand schedule is invalid since:

> He assumes that since country G would have been willing to take an OMth E-bale at the rate of B_p G-bales for OB E-bales, but actually gets the OMth bale - as all the other bales - at the rate of AB G-bales for OB E-bales, $\frac{A_p}{OB}$ G bales represents the surplus on the OMth E-bale. But this assumes that country G would have been willing to take an OMth E-bale at the $\frac{B_p}{OB}$ terms even if she had already purchased (OM - 1) E-bales at terms less favourable than $\frac{B_p}{OB}$, and it assumes similarly that country G would be willing to take an OBth bale at $\frac{AB}{OB}$ terms if she had already purchased (OB - 1) E-bales at terms less favourable than $\frac{AB}{OB}$; i.e. it assumes that the rate at which earlier E-bales were actually obtained will not affect the rate at which country G would be willing to buy additional E-bales. The marginal utility to G of the G-bales she retains, will, however, be greater the greater the number of G-bales she has already surrendered, and, therefore, the amount country G would be willing to pay for an OBth E-bale, when all the OB bales are procured at the same price in G-bales, $\frac{AB}{OB}$, must be greater than the price she would be willing to pay for an OBth E-bale, when all the preceding (OB - 1) E-bales had been paid for at prices in G-bales higher than $\frac{AB}{OB}$.[109]

---

[108] Viner, *Studies...*, pp.570-571.

[109] *ibid.*, pp.571-572.

If I understand Viner correctly, his argument can be illustrated by the schedules in Table 4-5 (Fig.4-17). OG is G's reciprocal-demand curve (column 2) which is in equilibrium at the rate of 5 G-bales to 8 E-bales (that is, the point where it would be intersected by E's reciprocal-demand curve were that drawn in). If G were to buy these 8 E-bales in incremental steps, she would pay 1 G-bale for the first E-bale. At 2 E-bales the rate has fallen to 0.855, but having paid 1 G-bale already, her total for two is 1 plus 0.855, 1.855 (column 3). Similarly at stage 3, the rate is 0.7803, but having already bought the previous two E-bales at higher rates, her total for three is now 2.6353. And so on to the 8th E-bale. Viner's OG_1 curve (Fig.4-18) compensates for the higher cost of previous bales and is given here by the curve Oy. At any point on Oy the total of incremental prices brings us back to the reciprocal-demand curve OG; that is, column 7 = column 2.

The difference between the OY and OG curves measures Marshall's net benefit (note that OY - OG does not equal OY - Oy). At the same time they merely represent different aspects of the same reality; thus the data is the same, but different procedures ('all at once' rather than 'one at a time') yield different curves. Marshall's mistake is using the inappropriate procedure; he thinks he is drawing an OG curve, but in fact is drawing an OY curve, and in doing so he is replicating net benefit. Viner is right, the net benefit diagram demands the Oy (Viner's OG_1) curve.

There is an interesting limitation to the net benefit approach that Viner (and Marshall) seem to have overlooked - it only works while OG is elastic. If we take the case where E's demand is so 'urgent' that the equilibrium point moves to A' where G's reciprocal-demand is inelastic, then, since the net benefit is given by subtracting the area under A' from that above (that is, UH'S' - S'A'A$_1'$), and since S'A'A$_1'$ is greater than UH'S', net benefit becomes net loss, which is manifestly absurd (Fig.4-19).

Returning to the situation where OG is elastic, Viner points out that Marshall's net benefit increases as the net barter terms of trade move in G's favour:

Table 4-5 Foreign offer curves and marginal price lines: an illustration

1	2	3	4	5	6	7
E	G	marginal rate (G/E)	real marginal price line Y	adjusted marginal price line y	rate	reconstructed marginal price line
1	1.000	1.000	1.000	1.000	1.000	1.000
2	1.710	0.855	1.855	1.420	0.710	1.710
3	2.341	0.780	2.635	1.893	0.631	2.341
4	2.924	0.731	3.366	2.332	0.583	2.924
5	3.475	0.695	4.061	2.775	0.551	3.475
6	4.002	0.667	4.728	3.162	0.527	4.002
7	4.509	0.644	5.372	3.459	0.507	4.509
8	5.000	0.625	5.997	3.928	0.491	5.000

$G = E^{0.774}$; ie log G = 0.774 . log E / $Y_E = \frac{G}{E}$ & Y_{E-1} / $y = E(G_E - G_{E-1})$

Fig.4-17

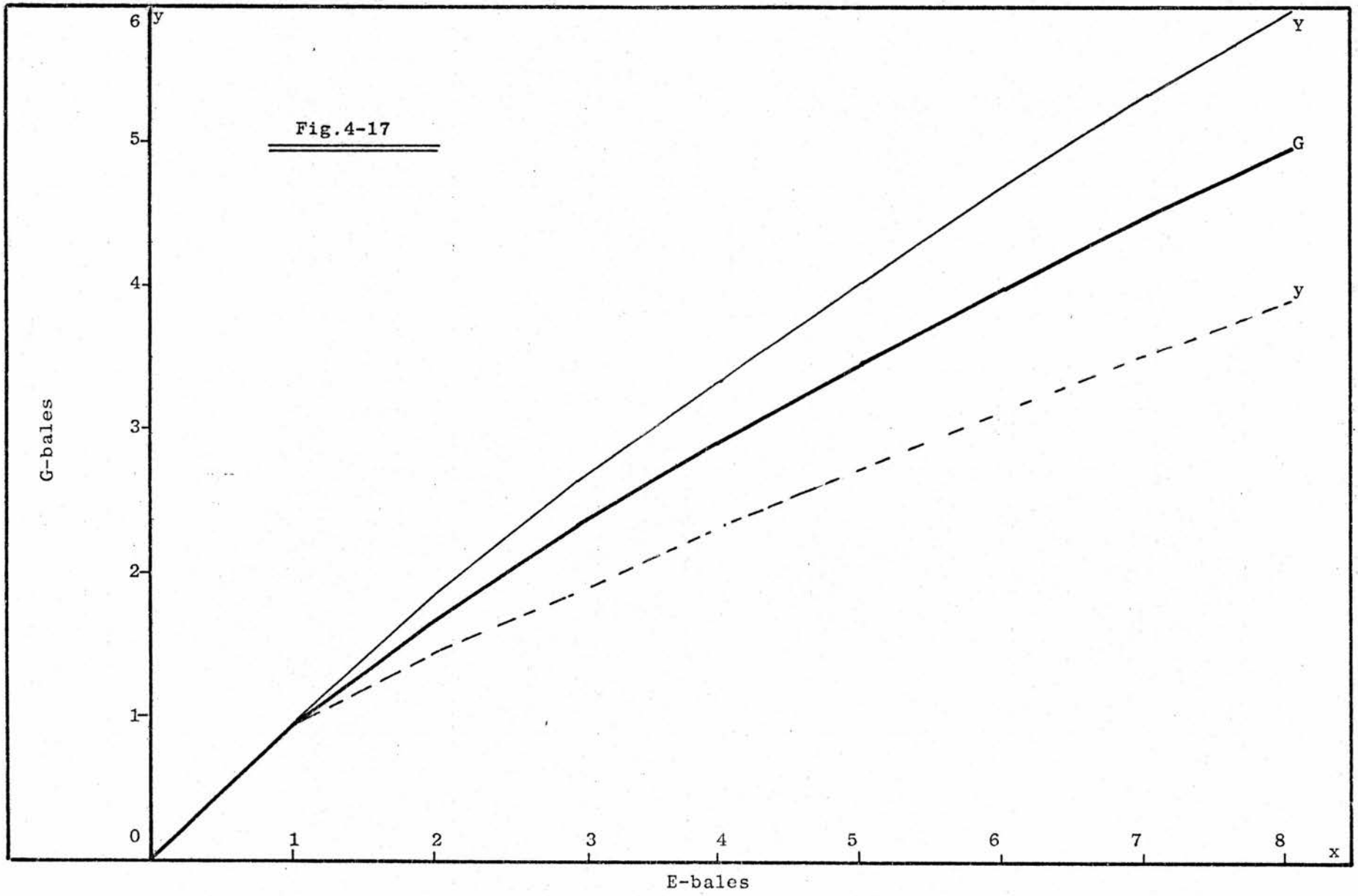
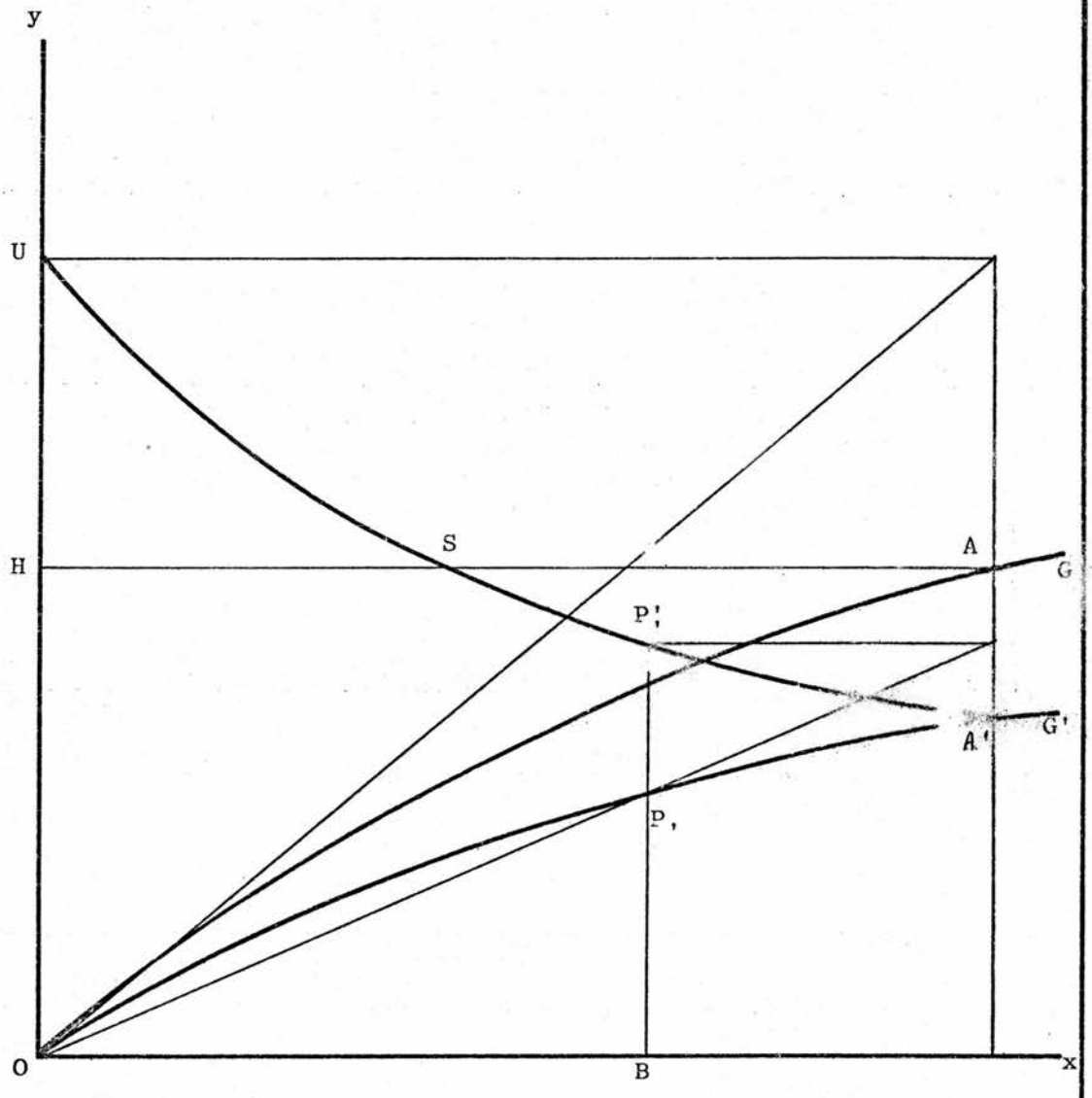
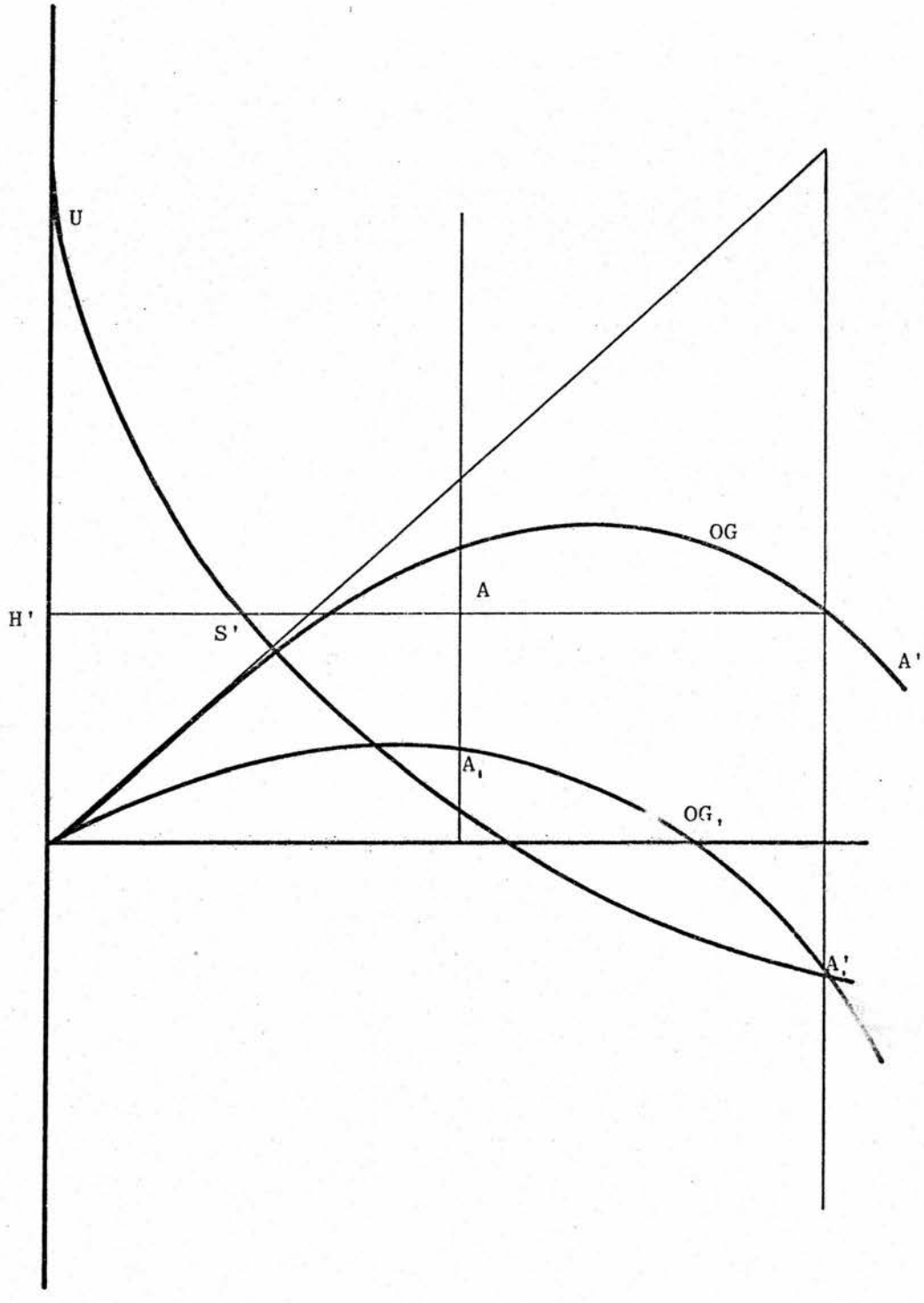


Fig.4-18



Source: Derived from Viner, Chart XVII, p.573.

Fig.4-19



> While the amount of surplus for country G will, therefore, necessarily be smaller than VH in [Fig.4-16], it will increase with any decrease in the price of E-bales in terms of G-bales, provided this decrease in price is not the result of a change in country G's utility curves for G-goods or E-goods - provided, that is, that it is not the result of a change in the OG curve - and if the OG, curve is known it will be possible to determine the amount of change in surplus.[110]

F.Y. EDGEWORTH

The utility approach to gains from trade was taken further by Marshall's contemporary, F.Y. Edgeworth in his *The Pure Theory of International Values*.[111] However, Edgeworth is far from lucid and it is seldom clear just what his argument is. Even Viner, who in his *Studies in the Theory of International Trade* has taken several centuries of economic thought in his stride, prefaces his comments: "Edgeworth's exposition is elliptical and cryptical, and is in part expressed in mathematical terms which I can follow only imperfectly. It is, therefore, with considerable trepidation that I present the following interpretation and criticism of his analysis."[112]

The most important aspect of Edgeworth's analysis for our purposes is that he pays scant attention to the terms of trade. For him, the movement of the equilibrium point along the reciprocal-demand curve away from the origin is the indicator of an increase in 'total net utility' or gains from trade. He does not go as far as Jevons , who argued that a deterioration in the net barter terms of trade would probably indicate an increase in gains from trade on the rather tautological grounds that "he who pays a high price must either have a very great need of that which he buys or

---

[110] Viner, *Studies...*, p.574.

[111] F.Y. Edgeworth, *Papers Relating to Political Economy*, Vol.II (London, Macmillan, 1925), pp.3-60. What Haberler (*International Trade*, p.123, n.7) called his "truly ingenious use of the Marshallian curves" is to be found in pp.31-47.

[112] Viner, *Studies...*, p.576. His comments on Cournot (p.586) are even harsher. Taussig, p.v, refers to Edgeworth's "remarkable comments".

very little of that which he pays for it",[113] but his analysis appears indifferent to any relationship between terms of trade and gains from trade. His briefest case will perhaps suffice to demonstrate his method:

> ABCDEF[114] This is the case of international trade proper, between two countries, regard being had to the interests of the home country only, and immediate or direct effects only being considered; and a certain simplicity in the law of demand and supply for both countries being assumed, a change is supposed to occur in the terms on which the foreigner is willing to trade.
>
> The increase of the supply of foreign produce (in the sense that more of it is offered at each rate of exchange) is represented in fig.2 [our Fig.4-20] by the displacement of the foreign curve OG to OG'. Whatever the direction [consistent with the condition that the equilibrium should be stable - Edgeworth's note] of the native or the foreign curve in the neighbourhood of their intersection, it will be found that in every case the new intersection has travelled along the native curve *away* from the origin. Whence the change is beneficial (If this proposition is not self-evident, I may refer for a proof of it to my *Mathematical Psychics*, p.115) to the native country. Conversely, a dimunition in the offer of foreign goods is prejudicial to the home country; as may be seen by taking the dotted curve as the original one.[115]

This is merely the reverse of the 'Type II shift - the Viner/Graham case' described above, with the increase of reciprocal demand coming from G rather than E.

Edgeworth's indifference to the relationship between terms of trade and gains was criticised by Viner:

> ...in Edgeworth's results the direction of change in the amount of gain from trade and the direction of change in the commodity terms of trade always correspond, whereas...in many types of situations the commodity terms of trade and the amount of gain from trade may move in opposite directions.[116]

---

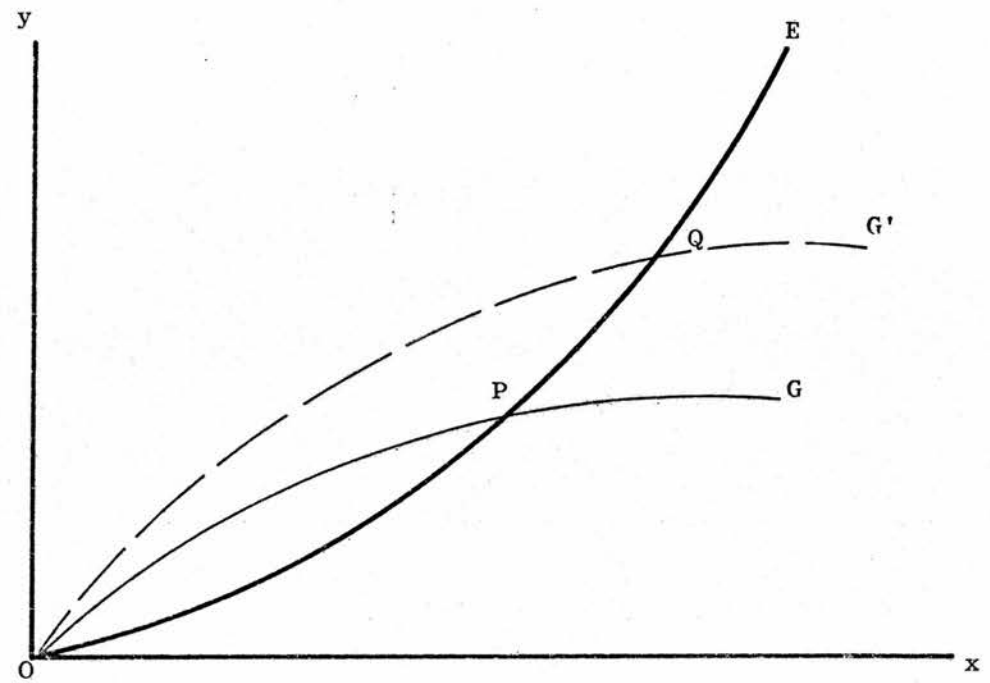
[113] Cited by Viner, p.558. cf. Taussig, p.118; Haberler, p.166.

[114] ABCDEF is Edgeworth's code for the case. For an explanation see his *Pure Theory...*, pp.33-34.

[115] Edgeworth, p.34-35.

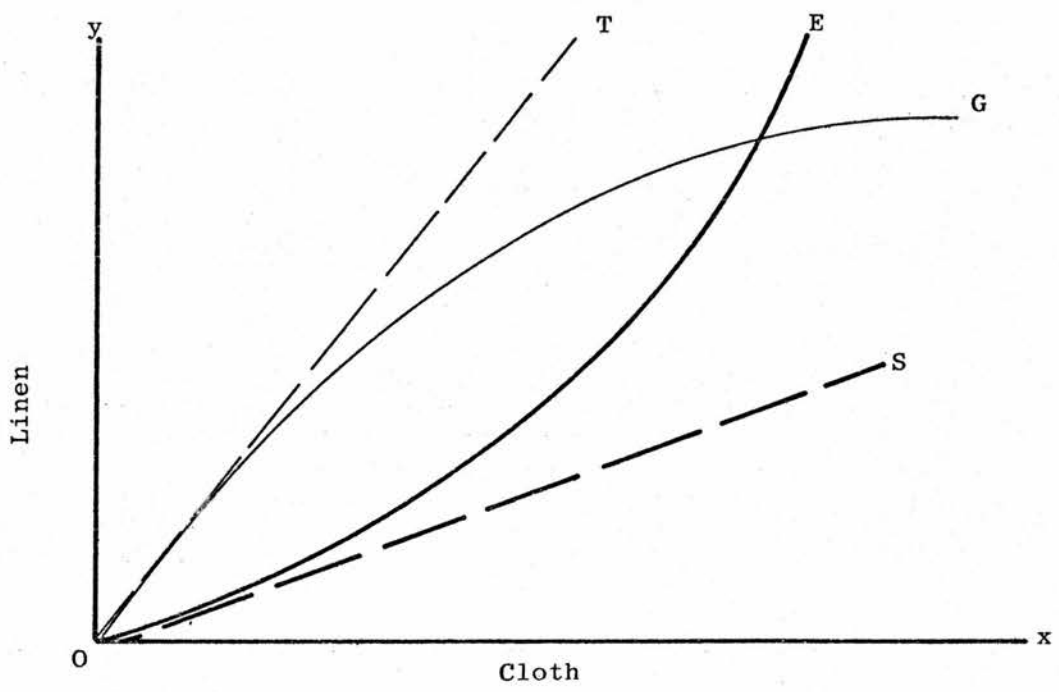
[116] Viner, p.577.

Fig.4-20



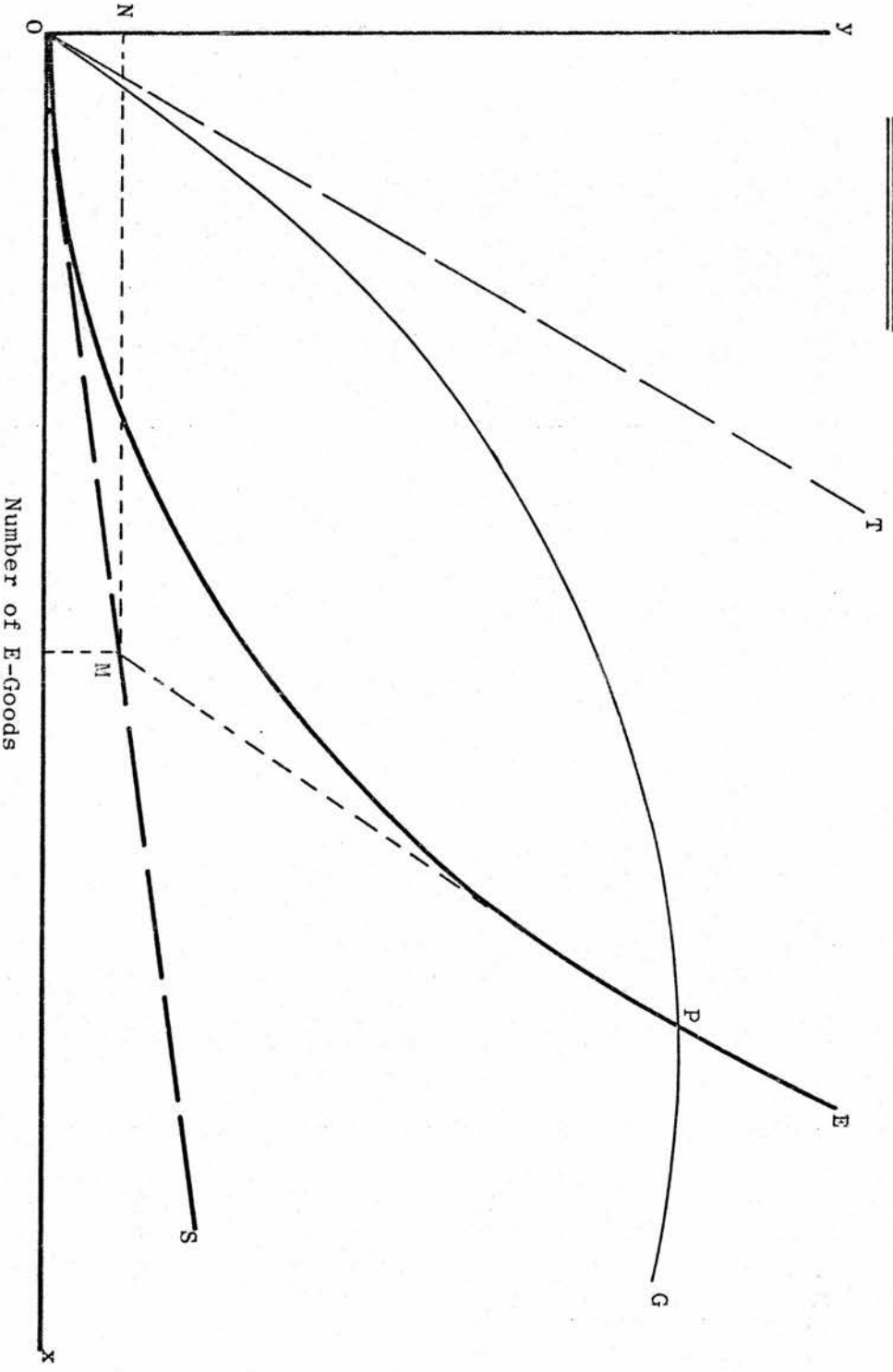
Source: Edgeworth, *The Pure Theory*..., pp.34-35

Fig.4-21



Source: Edgeworth, *The Pure Theory*...pp.32-33

Fig.4-22



Source: Derived from Viner, Chart XV, p.546.

One innovation of Edgeworth's that is of interest here is his application of the indifference curve[117] to foreign trade. His diagram is reproduced as Fig.4-21. As before, OE is England's reciprocal-demand curve and OG, Germany's. OS represents England's comparative costs on the assumption of constant costs. (An increasing costs assumption would give a rising curve.)[118] The equilibrium point must be higher than OS for England to obtain linen cheaper by trade. Similarly for the OT line and Germany.[119]

Viner takes the opportunity when commenting on Edgeworth's diagram to make a general criticism of the Marshallian curve. He argues that the reciprocal-demand curve (OE) will not diverge from the constant-cost line (OS) until "the point on OS is reached which corresponds by its vertical distance from the X-axis to the amount of linen which England would consume and produce in the absence of foreign trade [120] (ON in Fig.4-22 which is a slight simplification of Viner's diagram). That is, trade does not start from zero, but from a pre-trade level of production and consumption. Viner concludes that the reciprocal-demand curve will have "somewhat the appearance of OME".

F.W. TAUSSIG

At the other extreme from the cryptic geometry and utility approach of Marshall and Edgeworth is the down-to-earth, cost-orientated, arithmetic of F.W. Taussig.[121] His exposition is worthy, but rather dull,

---

[117] Although he uses the expression 'indifference curve', this 'curve of constant advantage' as he also terms it is, of course, not the familiar (consumer's) indifference curve but the precursor of the production possibilities curve; that is, a producer's indifference curve.

[118] cf. Viner's comments, *Studies...*, p.547, n.24.

[119] Edgeworth, pp.32-33.

[120] Viner, p.547.

[121] F.W. Taussig, *International Trade* (New York, 1927).

and smacks at times of accounting rather than economics. His illustrations of the workings of comparative advantage are based initially on labour time cost, with interest charges and wage rates subsequently introduced to bring them more into line with the 'real world'. Much of the theoretical section of his *International Trade* is an avowed elaboration of the work of "Ricardo, Mill and their successors",[122] which we need not go into here since the essentials have already been covered. Moreover, since his examples illustrate the application of the classical theory to the type of trade exemplified by that between the United States and Germany (the two countries he uses as examples), it makes that theory no more relevant to the Sino-British type of trade.

There are, however, a few points from Taussig which are of interest here. Firstly, there is his introduction of the concept of the "gross barter terms of trade" to cope with the problem of unilateral transfer (of capital, interest, indemnity, etc.). The net barter terms of trade, then, "regards those goods only which pay for goods; it demarcates any movement of goods which serves for other payments", while the gross barter terms of trade "regards the whole volume of goods, both imports and exports.[123] To put it another way, the net barter terms of trade measures the movement of prices ($Tn = \frac{Px}{Pm}$) while the gross barter terms of trade measures the movement of quantity ($Tg = \frac{Qm}{Qx}$).[124] The distinction arises

---

[122] *ibid.*, p.4.

[123] *ibid.*, p.113.

[124] Taussig calculated the net barter terms of trade by dividing the price index of imports by that of exports. Viner inverted this, arguing quite reasonably that, whilst there was no matter of principle involved, it was more convenient to have a favourable movement represented by a rising index rather than a falling one. (Viner, *Studies...*, p.558, n.9). It is this formulation which has invariably been followed since (cf. Chapter One). This objection does not hold for the gross barter terms of trade, since a favourable movement does coincide with a rising index in Taussig's formula. Nevertheless, Haberler, who did not invert Taussig's net barter formula, did so with the gross barter one (see his table, *International Trade*, p.163), whilst other writers, perhaps to be consistent, have inverted both (see, for instance, Clement *et al.*, *Theoretical Issues in Industrial Economics*, London, Constable, 1967, pp.127-128; Scammell, *International Trade and Payments*, p.131). The dangers of this confusion are indicated by a slip of the pen of the latter writer where he claims that "The higher the ratio [that is, $\frac{Qx}{Qm}$], the better the gross barter terms of trade. A greater quantity of imports can be had for the same volume of exports." The ratio by this formulation, of course, falls for an improvement. It would seem best to use the Viner formulation for the net barter terms of trade and Taussig's for gross barter, then in both cases a rise in the index represents a favourable movement.

because in the classical model trade tends towards equilibrium. If there is an imbalance of trade, there is a resulting movement of specie which in turn affects prices so that the trade returns to balance. There can only be a long-term imbalance if there is an unilateral transfer.

The concept was criticised by, *inter alia*, Viner[125] and Haberler,[126] who pointed out that it failed to differentiate between the causes of an import or export surplus. Payment of reparations was one thing, export of capital (the repayment of principal and interest of which would in time more than swing the terms back) was quite another. The gross barter terms of trade is seldom used today, but it does have a function in analysing the trade between two countries, such as Britain and the People's Republic of China, where unilateral transfer is negligible[127] and exchange rates are unaffected by the balance of trade. It then becomes an indicator of

---

[125] Viner, *Studies...*, pp.562-563.

[126] Haberler, *International Trade*, pp.162-166.

[127] Unilateral transfer is by no means negligible for the total balance of payments of the People's Republic since aid (both ways), deferred payment and remittances from overseas Chinese have been quite important. Indeed, article 37 of the Common Programme of the Chinese People's Political Consultative Conference (29/9/49) charges the government to facilitate remittances from overseas Chinese". See, for instance, Mah Feng-hwa, *The Foreign Trade of Mainland China* (Edinburgh University Press, 1972), chapter 5. There have been no aid flows, of course, between Britain and the PRC, and the question of deferred payments is beyond the scope of this study. As for remittances from overseas Chinese, which Mah estimates as ranging from between about US $100m and $30m (average about $66m) during the period 1950-67 (Mah, pp.173-174), it is highly likely that direct remittances from Britain have been inconsiderable. Most 'overseas Chinese' in Britain come from Hong Kong, Singapore, Malaysia, etc., and it is presumably to their immediate families there that they remit money (whether some of that finds its way to China is, of course, another matter). This is clearly indicated by looking at the destination of postage packages sent from Britain. No figures are specified for China between 1950 and 1962 (in contrast to Hong Kong, Malaya and Singapore) but the following table for 1963-69 is suggestive. These postal packages are, of course, not necessarily from or to Chinese, and the values given are purely notional (cf. Devons, *An Introduction to British Economic Statistics*, p.143, n.3), but the proportional values do suggest that direct remittances to the PRC have been negligible.

Postal packages to selected countries, 1963-9
(£'000)

Year	Hong Kong	Singapore	Malaya*	China	Taiwan
1963	1,018	962	966	75	NS
1964	1,032	- 2,054 -		84	13
1965	1,129	- 2,226 -		85	26

cont'd.

the physical (that is, at constant prices) balance of trade and is utilised in this way in Part D.

The second point has to do with what Taussig calls the "cumulative advantage" of manufactures-exporting countries. Briefly, in agriculture the benefits of internal and external economies of scale are counter-balanced by the tendency towards "diminishing returns in those operations which have to do with the direct culture of the soil",[128] but there is no such countervailing tendency in manufacturing. A manufacturing country then "will not only have a comparative advantage in manufactured goods, but will probably have a growing comparative advantage. The more it produces of such goods, the greater may be its advantage for exporting them."[129] Mining he considers an ambiguous case. It might be added that the tendency towards increasing costs of agriculture will be far stronger in densely populated areas such as India and China than sparsely populated ones such as Africa, North America, etc. (There are exceptions: note the case of Denmark.)

This idea, that increasing costs prevailed in agriculture and decreasing costs in industry, and that international trade, by exacerbating comparative costs, pushed the agricultural country into disadvantageous specialisation and the manufacturing country into advantageous specialisation, was later taken up, for instance, in an article by Graham (his example involved watches and wheat in the U.S. and Britain) which was subsequently criticised by, *inter alia*, Knight, Haberler and Viner.[130] The question is complex,

---

	Hong Kong	Singapore	Malaya*	China	Taiwan
1966	1,182	1,169	1,170	91	26
1967	1,211	1,181	1,102	71	33
1968	1,255	1,180	995	57	32
1969	1,358	1,106	981	53	NS

Source: *Annual Statement*, various years.
NS: not specified
*1963 - Federation of Malaya; 1964-5 - Malaysia including Singapore; 1966-9 - Malaysia excluding Singapore.

[128] Taussig, *International Trade*, p.84.

[129] *ibid.*, p.85.

[130] For Haberler's version of the debate see his *Theory of International Trade*, pp.142-144 and 198-208. For Viner's, see *Studies...*, pp.470-482.

of course, and leads to the fundamentals - what is the long-term effect of trade, is it better to eschew the short-term gains of trade to preserve and develop a balanced, self-reliant economy, and to what degrees should this be done and by what means; in other words, the whole argument between free trade and protection, the pursuit of which is beyond the confines of this study. Nevertheless, there is one further observation that should be made at this point. If there is an underlying general tendency towards a deteriorating *cost* differential between agricultural products and manufactures (that is, with agricultural costs increasing vis-a-vis manufacturing costs), then observation of the more accessible *price* differential, the net barter terms of trade, may well understate the disadvantage of the agricultural country.

The third point from Taussig which is of interest covers his observations on trade between India and Britain.[131] He sees this as a case of 'absolute advantage'.[132] He argues that this trade is of indisputable advantage to both sides but, since money incomes are higher in Britain but the goods traded sell at virtually the same price in both countries, the Englishman "is in a better position as purchaser".[133] The ratio of

---

[131] Taussig, *International Trade*, p.18 and pp.156-160.

[132] Taussig (chapters 2 to 4) distinguishes three cost differentials. The first, "equal differences in cost", where the relative costs of the (2) commodities are the same in both countries, produces no trade. The other two are "absolute differences" and "comparative differences". The former, as he defines it, is merely an unnecessarily confusing special case of the latter. It is doubtful whether "absolute advantage" has any validity within the Ricardian framework. The phrase is most frequently used, as here, in discussing trade between tropical and non-tropical countries. If we are talking about trade in agricultural products, say mangoes for apples, we merely mean that the cost differences are *virtually* absolute and are unlikely to change. But they are not conceptually absolute since both items could be produced in the other country at some cost. If we are talking of trade between tropical agricultural products and manufactures from non-tropical countries, that is quite another matter. Temperate countries do not have an 'absolute' advantage in manufactures, merely a temporary, historically produced, comparative advantage. In the first case, 'absolute' is a redundant distinction; in the second case, it is obfuscating.

[133] Taussig, p.18.

incomes is the mechanism by which the gains of trade are apportioned. At the same time, the prices are determined by the demand schedules in the two countries - "The Orient wants the goods of Europe more than Europe wants those of the Orient."[134] A greater amount of Oriental goods is exchanged for a quantum of European goods:

> And this result is in turn brought about by the distribution of specie. The higher range of European wages, prices, monetary standards, it is to be supposed, results from a steady tendency of specie to be gathered there. As changes take place in the total of specie that constitutes the medium of change thru the world at large, it is to be expected that a larger proportion will make its way to the countries of the West. The general tendency of the flow of specie might then be expected to be away from the East and toward the West.[135]

However, he continues, the movement has been in the opposite direction. He rather lamely invokes Jevon's phrase that India is a sink for precious metals; that is, that they are commodities which are consumed (for decorations and hoarding; the two in India merging somewhat into each other). He also points out that there has been a great increase in supply and that by far most of what was used as a circulating medium went to the West. He confesses, however, that in respect of (classical) theory "the case is troublesome".[136]

F.D. GRAHAM

It is convenient to take up here the ideas of F.D. Graham since he addressed himself specifically to this point, which will serve as an illustration of his criticism of classical and neo-classical theory.

---

[134] *ibid.*, p.157. This may have been true at the time Taussig was writing, and subsequently, but the opposite had certainly held in the past. See, for instance, Andrew L. March, *The Idea of China: Myth and Theory in Geographic Thought* (Newton Abbott, Devon, David and Charles, 1974); G.F. Hudson's classic *Europe and China* (London, Arnold, 1931) or Donald Lach's monumental *Asia in the making of Europe* (Chicago University Press,1965-70). It should also be remembered that Britain only balanced her trade with China with specie and Indian opium and cotton. If Taussig's explanation were sufficient, it should have followed that India, China, etc. would have had higher incomes than Britain.

[135] Taussig, p.157.

[136] *ibid.*, p.158.

The bulk of Graham's theory is contained in two articles in the *Quarterly Journal of Economics*[137] and a subsequent book, *The Theory of International Values*.[138] A succinct summary of his conclusions, in twenty points, is given in the introduction to this book (pages 16 to 18), but perhaps at the heart of his criticism was his assertion that the classical and neo-classical theorists were fundamentally wrong in their concept of a discrete "national demand" and their assumption that "changes in the relative values of internationally traded commodities will have no necessary, or even probable, effects upon their relative supply."[139] On the contrary, he sees an international continuum of goods being produced at fluctuating opportunity costs.

The following lengthy quotation of part of his criticism of Taussig may help to elucidate his general position:

> The terms of trade between Great Britain and India, as I conceive the matter, are determined in the following fashion. India produces, among other things, at an absolute as well as at a comparative advantage with respect to Great Britain, the commodity tea. Whether the foreign demand for tea is "urgent" or not, elastic or inelastic, India, together with other countries, produces so much tea that the price of tea has fallen to the point where it is equally advantageous for the natives of India to produce jute, cotton, wheat, etc. for export. In so doing they become competitively linked with other countries as, for example, the United States. Cotton and wheat of a given grade must sell at the same price in any market, whether they have been produced in India, the United States, or elsewhere. In the long-run a given grade of labor producing cotton or wheat in the United States must, on the assumption of internal mobility of labor, obtain the same wages as similar labor will obtain in textile factories, steel-making, and the like. In the latter case the products will impinge upon the exports of Great Britain. Tea production in India is thus tied, through the international price structure, to the prices of textiles and steel in Great Britain. Productive conditions being unchanged, the price of tea will bear a definite long-run relationship to that of cotton or wheat so

---

[137] *Quarterly Journal of Economics*, "The Theory of International Values Re-examined", Vol.38 (1923), pp.54-86; "The Theory of International Values", Vol.46 (1932), pp.581-618.

[138] F.D. Graham, *The Theory of International Values* (Princeton University Press, 1948).

[139] *ibid.*, p.3.

long as India produces and exports all of these products, while the prices of cotton and wheat will bear a definite long-run price relationship to those of textiles and steel so long as the United States produces and exports all of these. British textiles and steel, grade for grade, will sell in export markets at the same prices as similar American products, and the prices of tea, cotton, and wheat (India's exports) are thus definitely related, via the U.S.A., to those of textiles and steel (Britain's exports). "Urgency" and elasticity of international demand schedules are irrelevant. The native of India, whether he raises tea, cotton, or wheat will obtain a (money) income, relative to that of the American, which will be in proportion to his productivity in wheat or cotton as against the productivity of the American grower of the latter commodities. The American worker of a given grade, whether growing wheat or cotton, or working in a textile or steel mill, will, in turn, obtain a (money) income, relatively to that of his British cousin, which will be in proportion to respective productivities in export textiles or steel. The money income of the British worker is in this, and in no other, way indirectly but very definitely linked with the money income of the native of India. That the income of the native of India is low is due to the fact that he has low absolute productivity in India's marginal export commodities, while that of the British worker in Britain's marginal export commodities is fairly high.

The terms of trade are, in fact, rather unfavourable to India. This is shown, not by the relative height of British and Indian incomes, but by the circumstance that India is, in late years, entering more and more into the production of several typically British goods, while there is no possibility of Britain's entering into the production of most of the typically Indian goods. Rather is England steadily withdrawing from the relative production of certain Indian commodities such as wheat. This all means that England is getting the greater share of the gains from trade. Great Britain is thus somewhat richer, and India somewhat poorer, than if the terms were more favourable to India. The overwhelming reason for the great difference in incomes, however, is not the ratio of interchange but the disparity in absolute productivity of the workers in the marginal export, and most of the domestic, commodities of each country. The ratio of interchange is a minor factor which should be of decisive importance only in the case of small countries with a limited number of exports. If India should greatly raise her absolute per capita productivity in all agricultural products, the terms of trade with Great Britain would, in the absence of other changes, become even more adverse, but the disparity between British and Indian incomes would nevertheless tend to disappear. The present terms of trade are unfavourable to India because the relative cost of production, in India, of all of the

various commodities exchanged in both directions is closer to their relative cost of production in the world at large than is the case with Great Britain. This is, of course, a more or less fortuitous situation which happens to be unfavourable to India. But the low level of Indian incomes is so much more due to deficiencies in absolute productivity, over a range of products sufficient to employ the whole Indian population, that India need not devote any excessive concern to the terms of trade. In any case, so long as productive conditions in India and in the outside world remain substantially as at present, there is no possibility of changing the ratio of interchange very much. The character of the British demand schedule for imports from India, or of the Indian demand schedule for imports from Britain, is in no way responsible for the situation.[140]

JACOB VINER

The doyen of international trade economists of the period was perhaps Jacob Viner, whose main work, *Studies in the Theory of International Trade* has been referred to extensively. It is appropriate then to conclude this chapter by considering his section on different concepts of terms of trade.[141] He lists seven:

1. The Commodity Terms of Trade

This is, of course, the net barter terms of trade and he represents it as:

$$Tc = \frac{\frac{ep_1}{ep_0}}{\frac{ip_1}{ip_0}}$$

[140] *Quarterly Journal of Economics*, Vol.46 (1932), pp.610-612. For a contemporary version of some of the points raised here see chapter 10, "The Terms of Trade and the Dual Economy" of Michael Barratt Brown, *The Economics of Imperialism* (Harmondsworth, Penguin, 1974), specifically his comments on the debate between Emmanuel, Bettleheim and others.

[141] Viner, *Studies...*, pp.558-564.

where i represents import commodities, e export commodities, P the price index number, 1 the base year, o the given or current year. He defines this index as measuring "the trend of the 'physical' amount of foreign goods received in exchange for one 'physical' unit of the export goods". At first sight this formulation is confusing since the net barter terms are usually described in terms of the relationship of price indexes ($\frac{Px}{Pm}$, which of course corresponds at one remove to his formula). 'Notional' might have been a better word than 'physical'.

He agrees with J.S. Mill that this index may not even indicate the direction of changes in gains from trade if costs of production of export commodities are moving in the same direction. This problem leads to:-

2. The Single Factoral Terms of Trade

$$T_{c,f} = \frac{\frac{e_{P_1}}{e_{P_o}}}{\frac{i_{P_1}}{i_{P_o}}} \cdot \frac{e_{F_o}}{e_{F_1}} = T_c \cdot \frac{e_{F_o}}{e_{F_1}}$$

where $\frac{e_{F_o}}{e_{F_1}}$ represents "the reciprocal of the index of cost in terms of quantity of factors of production used per unit of export" and so the single factoral index gives a measure of imports obtained per unit of factors of production.

Viner then extends this by using concepts of utility. Firstly he derives:-

3. The Real Cost Terms of Trade

This is the single factoral terms multiplied by the "reciprocal of an index of the 'disutility coefficients' of the technical coefficients of the export commodities:-

$$T_{c,f,r} = \frac{\frac{e_{P_1}}{e_{P_o}}}{\frac{i_{P_1}}{i_{P_o}}} \cdot \frac{e_{F_o}}{e_{F_1}} \cdot \frac{e_{R_o}}{e_{R_1}} = T_{c,f} \cdot \frac{e_{R_o}}{e_{R_1}}$$

where $\frac{e_{R_o}}{e_{R_1}}$ is the disutility index of exports.

The disutility of exports is, of course, matched by the extra utility of imports. Factors of production are used to produce goods which are exported to pay for imports. These imports have greater 'utility' than could have been obtained by using these same factors for their domestic production. Thus he obtains an index of "relative desirability":-

$$\frac{\frac{i_{U_1}}{a_{U_1}}}{\frac{i_{U_o}}{a_{U_o}}}$$

where U is the average desirability or utility and 'a' are the commodities whose production is foregone in order to produce for export (that is, the opportunity costs). The result of multiplying this utility index by the real cost terms index is:-

4. The Utility Terms of Trade

$$T_{c,f,r,u} = \frac{\frac{e_{P_1}}{e_{P_o}}}{\frac{i_{P_1}}{i_{P_o}}} \cdot \frac{e_{F_o}}{e_{F_1}} \cdot \frac{e_{R_o}}{e_{R_1}} \cdot \frac{\frac{i_{U_1}}{a_{U_1}}}{\frac{i_{U_o}}{a_{U_o}}}$$

Viner then returns to cost concepts by quoting the logical development of the single factoral terms index:-

5. The Double Factoral Terms of Trade

$$T_{c,ff} = \frac{\frac{e_{P_1}}{e_{P_o}}}{\frac{i_{P_1}}{i_{P_o}}} \cdot \frac{\frac{i_{F_1}}{i_{F_o}}}{\frac{e_{F_1}}{e_{F_o}}}$$

He notes that this is usually considered as having the same movement as the commodity (net barter) terms of trade but argues that this is only so with constant and 'historically stable' costs.

6. The Gross Barter Terms of Trade

Viner's comments on this index of Taussig's have already been quoted.

Finally, he points out that it would be useful to combine a per unit index (as all the others are) with the total volume of trade to give:-

7. The Index of Total Gain from Trade

$$T_{c,q} = \frac{\frac{e_{P_1}}{e_{P_o}}}{\frac{i_{P_1}}{i_{P_o}}} \cdot \frac{Q_1}{Q_o}$$

where Q_1, Q_o represent the quantity of trade in the two years. This is a precursor of Dorrance's 'income terms of trade', as indeed the latter makes clear.[142]

Dorrance pointed out that the net barter terms moved favourably when export prices rose in comparison to import prices but that this change in export prices (presuming for convenience that export prices rise while import prices remain stationary) might be due to either increases in

---

[142] G.S. Dorrance, "The Income Terms of Trade", *The Review of Economic Studies*, Vol.16 (1), No.39 (1948-49), p.52, n.6.

"world prices of a country's exports" (that is, an increase in foreign demand) or increase in "internal prices of its export products" (probably due to an increase in production costs). In the first case the 'real foreign income' of the country increases but in the second "it [would be] unable to sell its exports on world markets and thus its real foreign income [would be] decreased." The solution to this ambiguity, he says, is:

> ...to calculate an index of the value (quantity multiplied by price) of exports and the price of imports for any country whose foreign accounts are to be analysed. Then the export value index should be divided by the import price index. The result would be an index which would reflect, for the country concerned, changes in the volume of imports obtainable from its export income (that is, changes in its "real" export income, measured in import terms).[143]

that is,

$$\frac{ep_1\ eq_1}{ep_o\ eq_o} \cdot \frac{ip_o}{ip_1}$$ [144]

In other words, the net barter terms of trade are multiplied by the reciprocal of an index of quantity of exports, giving, in effect, the income obtained from actual exports (price x quantity):-

$$\frac{\frac{ep_1}{ep_o}}{\frac{ip_1}{ip_o}} \cdot \frac{eq_o}{eq_1}$$

This, it will be noted, differs from Viner's 'total gains' index only in that it uses exports rather than total trade for the quantum index.

---

[143] *ibid.*, p.52.

[144] For purposes of calculation this would be re-written:-

$$T_i = \frac{ev_1}{ev_o} \cdot \frac{ip_o}{ip_1}$$

where ev_1 and ev_o are the export values in the two years. This obviates the calculation of export prices.

It will be apparent that, for practical reasons, only three of these terms of trade indexes are utilisable in this study - the net barter, the gross and (in preference to Viner's 'total gains') the income terms of trade.

POSTSCRIPT

It is clear that, despite the ingenuity of these economists of the "Bourgeois Metropolitan Tradition" in fashioning analytical tools, they had not begun, in most cases, to address problems that became increasingly prominent in the post-war world. It can be argued that, in a very real sense, these economists operated in a world of equality between nations, because those who were not equal did not exist or were not perceived to exist or, in the final resort, could be ignored. The nationalism of the post-war world brought decolonisation to the old European empires and, to both those areas in which the new world had long since been brought into being to redress the balance of the old or, like China, had hovered on the brink, a resurgence of nationalism. But this post-war world, whilst it was composed of nations which were politically equal, in,for instance,the United Nations, was one in which there was manifest economic inequality; or rather the economic inequality became problematic because of the political equality. Thus, new questions came to be asked and the old tools turned to analyse relationships now under challenge.