Bullion for Goods

European and Indian Merchants in the Indian Ocean Trade, 1500–1800

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14

Bullion for Goods: International Trade and the Economy of Early Eighteenth Century Bengal

THIS CHAPTER SEEKS to analyse the impact of the European companies' trade on the economy of Bengal[1] during the seventeenth and the first two decades of the eighteenth century. This impact was generated by the free play of market forces, unlike in many other parts of Asia where the Europeans already had a significant political and economic lien. Thus, soon after its first contracts with the Malay-Indonesian archipelago in the early years of the seventeenth century, the Dutch East India Company obtained monopsonistic, monopolistic, and other privileges in parts of the archipelago by the treaties it forced local prices to enter into with itself. As part of its attempt to monopolize the spice trade by making smuggling by Asian merchants more difficult and by limiting the total output itself, the Dutch Company decided to confine the production of cloves to Amboina. This involved the mass destruction of clove trees in Ceram and other places.[2] No European trading body or individual merchant could have taken such action in any part of the Indian subcontinent (except Malabar) until after the battle of Plassey in 1757 when the English managed to wrest power from the Mughals in Bengal. In the pre-Plassey period, then, the nature of the impact of the Europeans' trade in Mughal India was determined largely by market forces.[3]

The selection of Bengal region for this analysis was dictated by the

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extremely important role that trade conducted from this region played in the complex of the intra-Asian and the Euro-Asian trade carried on by the European companies. As is well known, the Europeans initially came to Asia in quest of exotic spices, but their commercial interests later became diversified with textiles and raw silk emerging as major items of trade. The position in respect of the Dutch East India Company—a representative case—is presented in Table 14.1. Bengal was a major supplier of both fine textiles and raw silk. Thus, 55 per cent of Asian textiles sent to Holland in 1697 originated in Bengal;[4] raw silk bought in the region constituted 83 per cent of the *total Asian raw silk sold in Amsterdam between 1697 and 1718.*[5] Goods bought in Bengal accounted for 36 per cent of the total Asian cargo exported to Holland at the end of the seventeenth century and for 39 per cent of it in the second decade of the eighteenth century.[6] This made the factory in Bengal the most important Dutch trading establishment in Asia in the early years of the eighteenth century, when Dutch trade in India was probably at its peak. Similarly, the Bengal factory was by far the most important English trading establishment in Asia around this time. Statistical data for analysis in this paper have therefore been drawn from the early years of the eighteenth century.

The analysis is confined to the trade—both Euro-Asian and intra-Asian—carried on from Bengal by the Dutch and the English East India Companies. The French Company's trade from Bengal was insignificant until the close of the period being examined while the

Table 14.1: Exports from Asia by the Dutch East India Company

	1648–50 (% of total exports)	1668–70 (% of total exports)	1698–1700 (% of total exports)
Pepper and other spices	68	43	23
Textiles, raw silk, cotton, etc.	14	36	55
Other items	18	21	22
Total	100	100	100

SOURCE: Calculated from K. Glamann, *Dutch-Asiatic Trade, 1620–1740*, Copenhagen and The Hague, 1958, p. 13, Table 1.

NOTE: The percentages have been rounded off to the nearest complete number. The figures for 1668–70 do not include Ceylon.

Ostenders were yet to make their appearance. Of course, among the Europeans, there were also the individual traders, some of whom were the employees of one or the other of the companies. A limited amount of qualitative information relating to their trade suggests the possibility of its volume being fairly substantial at the beginning of the eighteenth century.[7] But since no firm information on its volume or composition (which, as will be seen, is of crucial importance to the analysis) is yet available, it has not been included in the analysis. Its inclusion would merely tend to enhance the impact of the Europeans' trade on the economy of the region.

It may be noted that the trade flows via the ports of the Bengal region reflected, almost entirely, the trade in the produce of the region alone and for consumption within the region. In other words, entrepôt trade was negligible.

The principal distinguishing characteristic of Euro-Bengal trade (as indeed of Indo-European trade in general) during the seventeenth and the early eighteenth centuries was that the companies paid mainly in silver for the textiles, raw silk, and other goods they bought in Bengal. This implied that Bengal had an export surplus. The first section of this chapter analyses the implications of this surplus for prices, output, income, and employment in the economy. It is shown that during 1709–10 to 1717–18, the trade by the Dutch and the English East India companies sustained an increase of approximately Rs. 34 million per annum in the output and income in the economy of the region. As for employment, it is estimated that the procurement by the two companies sustained between 8.69 per cent and 11.11 per cent of the workforce in the textile manufacturing sector of the province of Bengal. The second section deals with the impact of the companies' trade on the organization of manufacturing production and procurement in the region.

An important issue that must be settled before one can proceed with the analysis is whether the companies' trade represented a net contribution to the growth of trade from the region or only a diversion—total or partial—from other agencies of trade. A part of the goods the companies procured in Bengal was for sale in Europe, the rest being intended for sale within Asia. The procurement for Europe can, for all practical purposes, be regarded as a net contribution to the trade from the region, for the displacement, if any, caused to the overland trade to Europe (which in any case had always been limited in volume) does not appear to have been significant. Within Asia,

trade with markets such as Japan, which were opened up by the Europeans, would also represent a net contribution to the trade from Bengal. The position is somewhat more complex in respect of the other Asian markets in many of which the companies competed with Indian and other Asian merchants operating from Bengal. According to evidence in the shipping lists in the Dutch records, towards the close of the seventeenth century, Asian merchants' trade increased along certain routes such as Bengal-Maldives and declined along others such as Bengal–South-East Asia. A study of the Bengal–South-East Asia trade suggests that the decline in the Asian merchants' trade along this route is not directly attributable to the trade or 'pass policies of the Dutch East India Company, the principal European trading body on this route'.[8] Therefore, an analysis of the impact of the companies' trade can proceed on the assumption that their trade constituted a net contribution to the growth of trade from Bengal.

During 1709–10 to 1717–18, the average annual value of the cargo procured in Bengal by the Dutch East India Company was Rs. 2.27 million[9] and that by the United English East India Company Rs. 1.88 million[10] giving us a total of Rs. 4.15 million per annum for the two companies. Among the items imported by the companies into Bengal, the most important was treasure—mainly silver bullion and coins. Thus, between 1708–9 to 1716–17, treasure accounted for as much as 92 per cent of the value of the total exports from Batavia to Bengal by the Dutch East India Company.[11] Treasure formed 76 per cent of the total English exports to the East Indies between 1707–8 and 1715–16.[12] The heavy dependence of the Indo-European trade (and of Euro-Asian trade in general) on precious metals was essentially an outcome of the inability of Europe to supply goods which could be sold in India in reasonably large quantities at competitive terms. Europe at this time had an undoubted overall superiority over Asia in the field of scientific and technological knowledge, but as yet not the distinct cost advantage that came with the Industrial Revolution in the late eighteenth and nineteenth centuries. This put the Indian producers, with their considerably lower labour costs and a much longer history of sophisticated skills in handicrafts of various kinds, in a position of considerable advantage over their European counterparts in the production of a variety of manufactured goods.[13] Europe was fortunately in a position to export precious metals because of its large imports of these metals in the sixteenth century from the Spanish possessions in America.

Given our belief that the trade carried on by the European companies represented a net contribution to the growth of the foreign trade of Bengal, exports equivalent of the value of the precious metals imported represented an export surplus generated in the economy.[14] In terms of the national income identity $Y = C + I + (X - M)$, an increase in the export surplus $(X - M)$ could be effected either through a decline in consumption (C) or/and investment (I) or/and through an increase in income (Y).[15] The decline in domestic consumption could either be of the export goods themselves or of other goods which would release resources for the production of additional export goods. Such a decline could be associated with a rise in the prices of wage goods (movements in which can be regarded as indicative of movements in the notional 'general price level') or a redistribution of income in the economy in favour of the richer sections, who ordinarily have a lower propensity to consume.

Our existing knowledge regarding the price history of Mughal Bengal is confined to Moreland's assertion that 'there is definite evidence of a large and sudden rise in food prices between the years 1650 and 1660. . .'.[16] Apart from the fact that the 'definite' evidence provided by Moreland is too fragile to bear the weight of a major deduction,[17] the assertion pertains to a decade when the Europeans' trade from Bengal was still in its infancy[18] and, therefore, not particularly relevant for our purposes.

One can reconstruct the broad movements in the prices of provisions in Bengal from evidence found in the records of the Dutch East India Company. For example, letters written by the chief of the Dutch factory at Hughli to the Governor-General and Council at Batavia occasionally contained information regarding these prices. But the principal source of information on prices are the invoices of goods sent from Hughli to Batavia and other places. These invoices often contained, in addition to the usual physical quantities, the commodity-wise value of the consignment, enabling one to calculate the unit values for the relevant years. Since Bengal was the principal supplier of provisions required by the large Dutch establishments at Batavia and Ceylon, rice, wheat, and other provisions often figured in the invoices. It would be reasonable to assume that the quality of the provisions procured by the Company for self use did not vary a great deal between one year and another making the unit values obtained from the invoices broadly comparable over time. Also, in the case of each of the provisions, the amount purchased by the

Company was insignificant in relation to the total marketed output making their prices relatively insensitive to variations in the Company's own purchases. An analysis of the price information for the period 1657–1714 revealed that the prices of none of the four major provisions considered—rice (1658–1707), wheat (1661–1714), sugar (1657–1707), and clarified butter (1658–1706)—displayed a statistically significant upward or downward trend. This suggests a broad stability in the prices of wage goods during the period.[19] This may appear surprising in a situation of continually growing imports of significant quantities of precious metals by the companies. In the somewhat similar case of sixteenth century Europe, the inflow of precious metals from the Spanish possessions in America has indeed been causally linked, through an increase in the supply of money, to the so-called price revolution on the continent.[20] The presumed absence of a similar price rise in Asia in response to the import of precious metals there by the European companies has been ascribed by some to the 'oriental penchant to hoard gold and silver', which allegedly prevented the necessary additions to the money supply in Asian economies.[21] But in fact, the precious metals imported into Bengal, for example, were soon exchanged by the companies into coins either through the royal mints (the Mughal system being one of 'free' coinage) or through the *sarrafs*, for investment in the procurement of export goods. This increase in money stock, however, did not raise wage good prices over time due to offsetting movements in the velocity of circulation in the context of a growing volume of monetized transactions. A part of the savings, which made possible the export surplus, may have been hoarded[22] which would have the effect of lowering the velocity of circulation of money. Also, as argued below, the additional savings arose primarily from an increase in income and output which would raise the volume of transactions. Further, the proportion of total transactions taking place in the monetized sector is likely to have gone up.

There is also nothing to indicate that the distribution of income in Bengal became more unequal in the latter half of the seventeenth and the first two decades of the eighteenth century because of a regressive system of taxation or for any other reason. One can, therefore, rule out a reduction in the propensity to consume as the source of the export surplus associated with the companies' trade. Again, there is no evidence of a decline in investment.

Ruling out a systematic decline in consumption and/or investment

leaves only an increase in output and income as the source of the export surplus associated with the companies' trade. This increase could have been achieved through (*a*) an increase in productivity per unit of input through technological change, (*b*) a reallocation of resources in a way that more of the high value export goods were produced, and (*c*) a fuller utilization of existing productive capacity and an increase in the capacity itself.

Historically, the pressure of export demand on domestic capacity has stimulated technological change. For example, the development in steel of the Bessemer process in 1856 and of the Siemens-Martin process ten years later were results of export pressure. Kindleberger's review of evidence on Britain's growth in both the late eighteenth and the mid-nineteenth century also credits much to technological innovation associated with opportunities to enter foreign markets. But in the case of Mughal Bengal, the evidence in the voluminous company records does not point towards any significant developments along the technological front in the export or any other sector of the economy. This seems to have been essentially the result of the absence of a strong enough motivation for change given the structure of factor endowments in the economy. A situation characterized by a relatively abundant labour supply and a relatively scarce capital supply did not provide a particularly fertile ground for labour-saving technological change, which historically has been the most important variety of technological change. In the manufacture of textiles, for example, the principal differential advantage enjoyed by the Indian industry over its European counterpart consisted in the considerably lower labour costs which it had to bear and a substantially higher level of achievement in sophisticated skills in the production of high quality and artistic textiles available to it. These two circumstances together put the superior quality Indian textiles in an almost unchallengeable position in the world market until the Industrial Revolution in Britain in the latter half of the eighteenth century robbed the Indian textile industry of its cost advantage. Until this time, therefore, there was hardly any pressure for technological change.

That leaves one with (*a*) a reallocation of resources, and (*b*) a fuller utilization of existing productive capacity and an increase therein as the factors accounting for an increase in the output of export and other goods. It is important to realize that while the prices of wage goods did not register a statistically significant increase or decrease during the latter half of the seventeenth and the first two decades

of the eighteenth century, the prices of major export items such as textiles and raw silk did in fact respond to the growing imbalance between the Europeans' demand for these items and their supply. As for textiles, a reasonably large number of observations were available in the Dutch records for only four varieties procured by the Europeans—the *khasas* (fine muslin), *doreas* (fine calico), *gerras* (ordinary calico), and *armosins* (silk).[23] While no price trend emerged in the case of *khasas*, there was an upward trend in the case of all the other three varieties. The average annual rate of price increase in *doreas, gerras*, and *armosins* was 1.88 per cent, 0.68 per cent, and 1.48 per cent respectively. In raw silk, the *tanny* variety, introduced by the merchants from Agra in 1669, was the principal variety the Europeans procured from the early 1680s onwards. The information on this item for the period 1683 to 1717 shows an upward trend with an average annual rate of price increase of 0.89 per cent. In the case of the other variety of raw silk, namely the *tanna-banna*, a statistically significant trend emerged only on the basis of a second degree polynomial showing a decline until about 1675 and a rise from about 1683 onwards.[24] This overall increase in the prices of textiles and raw silk would have constituted a clear signal for reallocating resources to increase the output of these goods. Bengal was one of the most fertile regions of Mughal India and the granary not only for several other parts of the country but also for neighbouring countries such as Ceylon. The availability of a food surplus over and above subsistence created a margin within which a relative shift from food to commercial crops in response to changing demand conditions[25] could be effected without a significant upward pressure on the prices of wage goods.

A fast-growing European demand for Bengal raw silk and textiles would have induced a fuller utilization of existing capacity and subsequently an expansion thereof. Of the principal factors of production, additional land would have been available in abundance and the strictly moderate amounts of capital required to manufacture new spindles, wheels, looms, and other equipment was unlikely to have posed a serious problem, particularly in a situation where the companies provided advances of cash against orders placed by them. As for labour, artisans engaged in the production of raw silk and textiles on a part-time basis may have increasingly severed their links with land and become full-time artisans.[26] It is true that the spinning of high-quality yarn, the weaving of this yarn into high-grade artistic

textiles and some of the processes involved in 'finishing' them were highly skilled and partly caste-based occupations. However, since the time period over which the growth in the companies' demand for textiles took place was quite long (the increase in demand began in the 1670s), one would expect some demographic response in the relevant castes and categories of the workforce to have followed the continuous growth in demand.

The increase in output through a reallocation of resources and the fuller utilization of a growing capacity would, however, appear to have failed to fully match the increase in the Europeans' demand for textiles and raw silk. It is this growing imbalance between demand and supply that would explain the rise in the prices of these items[27] in a situation of overall stability in the prices of wage goods.

To estimate the increase in income and output due to the generation of the export surplus associated with the companies' trade from Bengal in the early years of the eighteenth century, one would need to know the value of the export surplus, the value of additional investment occasioned by the companies' demand for export goods, and the marginal propensity to save in the economy. (A formal model establishing these relationships is set out in Appendix 14.1.) The value of the annual export surplus over the period *1709–10* to *1717–18* is estimated at Rs. 3.32 million.[28] Since reasonably precise estimates are available for neither the annual average additional investment generated by the companies' export trade nor the marginal propensity to save in the economy, one is obliged to postulate broad orders of magnitude. A characteristic feature of pre-modern economies is a large textile industry with a very low capital output ratio.[29] If one assumed a capital output ratio as low as 0.5:1 for Bengal, the lower bound of the annual average additional investment necessitated by the companies' trade works out at roughly Rs. 34,000.[30] For the marginal rate of saving in the economy, the evidence for pre-industrial societies suggests rather low rates of capital formation,[31] and one might assume a figure of 10 per cent of national income,[32] i.e. a value of 10 for the multiplier. An annual average export surplus of Rs. 3.32 million together with an annual average additional investment of Rs. 0.034 million will then generate an increase in income of the order of Rs. 33.54 million per annum attributable to the Dutch and the English companies' trade in the early years of the eighteenth century. An increase in income of this magnitude would have involved a probably significant increase in economic activity in Bengal. But then the resource base of the region appears to have been sufficiently rich for this to be accomplished relatively smoothly.[33]

The employment effect of the companies' trade would be that generated by additional production to meet the export demand less that caused by a decline in domestic production as a result of import substitution. As has been seen already, goods accounted for only a small proportion of the imports by the companies and many of the imported goods (such as spices like cloves, nutmeg, and mace) had no domestic substitutes. The employment reduction effect of the companies' imports would, therefore, have been quite small. In view of this, if one estimated the employment implications of the export of textiles and raw silk alone, which together accounted for nearly 85–90 per cent of the companies' exports in the early years of the eighteenth century,[34] one would obtain a reasonable approximation of the net employment effect of the companies' trade. Given the limitations of the data available, what has been estimated is only the *direct* additional employment generated by the companies' export of textiles and raw silk, ignoring the linkage effects and the multiplier effects.

According to Table 14.2, the number of looms required on a full-time basis to produce for the Dutch and the English companies would have ranged between 15,124 (on the criterion of square yardage handled) and 16,634 (on that of the number of pieces exported). The number of full-time job-equivalents in the textile industry (defined to include spinning, weaving, bleaching, finishing, printing, and embroidering) associated with the employment of these looms would, of course, depend on the assumption one makes regarding the number of workers in the industry per loom. The available evidence suggests that one could proceed on the assumption that the full-time job-equivalents per loom ranged from 5 to 6–1.5 to 2 for weaving,[35] 2.5 to 3 for spinning[36] and 1 for bleaching, finishing, printing, and embroidering. On this basis, the full-time job-equivalents attributable to the Dutch and the English companies' procurement of textiles works out at between 75,620 and 99,804. The corresponding number for raw silk works out at 11,347 (see Table 14.3) giving a total of 86,967 to 111,151 full-time job-equivalents associated with the companies' procurement of textiles and raw silk in Bengal.

In order to form a broad idea of the relative significance of the companies' procurement of textiles and raw silk, we have related in Table 14.4 the full-time job-equivalents attributable to the procure-

textiles and some of the processes involved in 'finishing' them were highly skilled and partly caste-based occupations. However, since the time period over which the growth in the companies' demand for textiles took place was quite long (the increase in demand began in the 1670s), one would expect some demographic response in the relevant castes and categories of the workforce to have followed the continuous growth in demand.

The increase in output through a reallocation of resources and the fuller utilization of a growing capacity would, however, appear to have failed to fully match the increase in the Europeans' demand for textiles and raw silk. It is this growing imbalance between demand and supply that would explain the rise in the prices of these items[27] in a situation of overall stability in the prices of wage goods.

To estimate the increase in income and output due to the generation of the export surplus associated with the companies' trade from Bengal in the early years of the eighteenth century, one would need to know the value of the export surplus, the value of additional investment occasioned by the companies' demand for export goods, and the marginal propensity to save in the economy. (A formal model establishing these relationships is set out in Appendix 14.1.) The value of the annual export surplus over the period 1709–10 to 1717–18 is estimated at Rs. 3.32 million.[28] Since reasonably precise estimates are available for neither the annual average additional investment generated by the companies' export trade nor the marginal propensity to save in the economy, one is obliged to postulate broad orders of magnitude. A characteristic feature of pre-modern economies is a large textile industry with a very low capital output ratio.[29] If one assumed a capital output ratio as low as 0.5:1 for Bengal, the lower bound of the annual average additional investment necessitated by the companies' trade works out at roughly Rs. 34,000.[30] For the marginal rate of saving in the economy, the evidence for pre-industrial societies suggests rather low rates of capital formation,[31] and one might assume a figure of 10 per cent of national income,[32] i.e. a value of 10 for the multiplier. An annual average export surplus of Rs. 3.32 million together with an annual average additional investment of Rs. 0.034 million will then generate an increase in income of the order of Rs. 33.54 million per annum attributable to the Dutch and the English companies' trade in the early years of the eighteenth century. An increase in income of this magnitude would have involved a probably significant increase in economic activity in Bengal.

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Table 14.2: Number of Looms Required to Produce Txtiles Exported by the Dutch and the English East India Companies from Bengal per Annum (1709–10 to 1717–18)

Category of textiles exported	Number of pieces	Output of pieces per loom per year[b]	Number of looms required to produce the pieces of textiles exported	Square yardage per piece[c]	Total square yardage	Number of looms required to produce the square yardage of textiles exported[d]
A. Dutch East India Company						
Fine muslins	49,355	15	3,290	30	1,480,650	
Fine calicoes	33,822	36	939	15	502,330	
Ordinary calicoes	163,213	80	2,040	9	1,468,917	
Silk piece goods	35,072	45	779	12	420,864	
Silk and cotton mixed piece goods	19,929	45	443	12	239,148	
Total	301,391		7,491		4,111,909	
B. English East India Company[a]						
Fine cottons	172,184	24	7,174	24	4,132,416	
Ordinary cottons	61,838	60	1,030	15	927,570	
Silk piece goods	15,689	45	348	12	188,268	
Silk and cotton mixed piece goods	26,588	45	591	12	319,056	
Total	276,299		9,143		5,567,310	
Grand Total	577,690		16,634		9,679,219	15,124

SOURCE: Col. 2, Rows 1 to 5: Calculated from the export invoices for the period in the Dutch records; Col. 2, Rows 7 to 10: Calculated from the *Bengal General Journal and Ledgers Series*, Range 174, vols. 83–99.

contd.

NOTES: [a] The figures for the English East India Company are for the average amount procured in Bengal per annum during 1709–10 to 1717–18. The difference, if any, between this and the actual exports is unlikely to be large.

[b] The following procedure was adopted to arrive at the figures in this column. According to Francis Buchanan-Hamilton, in the early years of the nineteenth century, the average annual output per loom of pieces of *tanzebs* and *malmals* (both fine muslins) of dimensions comparable to those exported by the companies during our period was 24 each. The pieces, manufactured in the *arang* of Maghra in Bihar, were valued at Rs. 5.25 and Rs. 5 each respectively (*An Account of the Districts of Bihar and Patna in 1811–12*, Bihar and Orissa Research Society, vol. II, Table 43, p. 775). Buchanan-Hamilton also suggested that there was an inverse relation between the quality of a piece, as indicated by its price, and the average output per loom. (Thus, in Table 42, p. 774, the average monthly output per loom of *solegazi seatra* valued at Rs. 2.25 is shown to be four pieces while that of a *solegazi* of a comparable size but valued at Rs. 3 to be only three pieces.) Another source of information on the average output of pieces of different varieties of muslins per loom is a 1776 estimate of 'Dacca Cloth Manufactures for Exportation' contained in the Ninth Report from the Select Committee 1783, Appendix 51 and summarized in K.N. Chaudhuri, 'The Structure of Indian Textile Industry in the Seventeenth and Eighteenth Centuries', *The Indian Economic and Social History Review*, 11 (2–3), July–September 1974, pp. 162–3. According to this source, the average output per loom of *cora tanjebs* valued at Rs. 10 per piece was 10 per annum and that of fine mulmuls valued at Rs. 29 per piece, 9.4 per annum. While all this information is clearly inadequate to establish a definitive figure or even a range of annual output per loom, it nevertheless would appear to support an assumption of an output of 15 pieces of muslins of the general quality the companies exported from Bengal per loom per annum.

The corresponding figures for the remaining varieties of cotton textiles, for silk piece-goods, and for the mixed piece-goods have been arrived at on the basis of the average price (assuming a generally inverse relation between price and output) and the average size of the pieces of these varieties of textiles relatively to that of fine muslins.

[c] The figures in this column have been arrived at on the basis of the extensive information available in the records of the Dutch and the English East India companies regarding the sizes of the piece-goods procured in Bengal. In the Dutch records, the range is from 24 to 36 yards for the length and ¾ to 2¼ yards for the width of a piece of muslin. The correspoding figures for a piece of calico are 15 to 18 yards for length and 1 to 1½ yards for width except for varieties such as *dorea* whose sizes were the same as in the case of muslins and the *dasjen* which was an unusually small sized textile—at times only 2 square yards per piece. (The different sizes assumed for the Dutch 'fine calicoes' and 'ordinary calicoes' follow from the good weightage of *dasjens* in the latter category.) For silk and mixed piece-goods, the usual length per piece was 15 yards and the width between ¾ and 1½ yards

contd.

Table 14.2 contd.

except for varieties such as *soosy* where the length of a piece was usually as much as 24 yards and the *charkhana* where it was 17½ yards. The dimensions found in the English records broadly correspond with these figures. For example, the sizes of the *tanzebs*, *khasas*, and *malmals* (all muslins) mentioned in these records were 30 yards for length and between ¾ and 2¼ yards for width.

The Dutch records mention the dimensions in *cobidos* or ells while the English recorded them in *covids*. The cobido or covid (Portuguese for cubit) was a measure with large local variations. According to F.W. Stapel (ed. Pieter van Dam's *Beschryvinge van de Oost-Indische Compagnie*, vol. II, part II, p. 451), the cobido was the equivalent of 27 inches which was also the size of the Flemish ell. The cobido figures have, therefore, been converted into yards at this rate. The figure of 18 inches to a Bengal covid suggested by Moreland (*From Akbar to Aurangzeb*, reprint, Delhi, 1962, p. 338 and *Indian Journal of Economics*, vol. V, part 3, January 1925) and by T. Bowrey (*A Geographical Account of the Countries Round the Bay of Bengal 1669–1679*, Cambridge, 1905) appears to be too low.

[d] The figure in this column has been arrived at on the assumption of an average annual output per loom of 640 square yards of cloth of all varieties exported by the companies. No contemporary estimates of square yardage per loom per annum are available, but according to the *Report of the Fact-finding Committee (Handlooms and Mills)*, 1942, Appendix XXIII, p. 294, the average daily output of cotton saris of 80 x 80 to 100 x 100 counts per throw-shuttle loom per day was 2⅓ square yards. Assuming that this figure of daily output per loom is valid *on the average* for the cloth exported by the companies from Bengal and assuming further a work year of 275 days, we get the per annum per loom output of 642 square yards which has been rounded off to 640 square yards.

Table 14.3: Full-time Job Equivalents Created by the Dutch and the English East India Companies' Export of Raw Silk from Bengal (1709–10 to 1717–18)

The company	Amount of raw silk exported per annum (in bales) (1 bale=76 kg)[a]	Full-time reeling job equivalents[d]	Full-time complementary job equivalents in the raw silk manufacturing sector[e]	Total full-time job equivalents
(1)	(2)	(3)	(4)	(5)
Dutch East India Company	1,544[b]	3,191	4,786	7,977
English East India Company	652[c]	1,348	2,022	3,370
Total	2,196	4,539	6,808	11,347

SOURCE: Col. 2, Row 1: The Bengal export invoices in the Dutch records; Col. 2, Row 2: Bal Krishna, *Commercial Relations between India and England, 1601–1757*, London, 1924, 143–4; Orders lists sent by the Court of Directors in London to their factors in Bengal, Letter Books.

NOTES: [a] These amounts included small quantities of *mochta* silk (florette yarn).

[b] The figure 6,000–7,000 bales (600,000–700,000 lbs. at the rate of conversion indicated) given by Tavernier for the 1670s was wide off the mark [J.B. Tavernier, *Travels in India* (ed. V. Ball), London, 1889, vol. II, p. 2].

[c] The figure for the English East India Company is for the average annual amount ordered from London during these years and not necessarily for the actual average amount exported per annum though the difference, if any, between these two figures is unlikely to be large.

contd.

Table 14.3 contd.

[d] The figures in this column have been arrived at by multiplying those in column 2 by a factor of 2.066. The Dutch silk-reeling unit at Kasimbazar, when operated at its maximum capacity produced, at the close of the seventeenth century, around 1,500 bales of raw silk per annum and employed over 3,000 reelers (the precise number is not indicated). If one assumed that this number was 3,100, the figure one gets is 2.066 reelers per bale reeled.

[e] The figures in this column have been arrived at by multiplying those in column 3 by a factor of 1.5. According to Pieter van Dam, the workers who prepared the raw material (called *patani*) necessary for a seer (1 seer = 2.057 lbs. avoirdupois) of reeled *tanny* raw silk were paid a wage bill of 6¼ annas (16 annas = 1 rupee). As against this, the reelers who reeled this raw material into *tanny* raw silk got 6 annas. The corresponding figures in the case of *tanna-banna* raw silk were 3¾ and 3 annas respectively [F.W. Stapel (ed.), op. cit., vol. II, part II, Appendix IV B, pp. 68–71]. If one assumed that the wages of a reeler were somewhat higher than of a worker engaged in a pre-reeling operation, the assumption of full-time complementary labour of 1.5 in the raw silk manufacturing sector seems justified.

Table 14.4: Proportion of Full-time Job Equivalents Attributable to the Dutch and the English East India Companies' Procurement of Textiles and Raw Silk to Total Workforce in the Textile Manufacturing Sector of the Province of Bengal (1709–10 to 1717–18)

Population in 1801 (millions)[a]	Population in 1711 (millions)[b]	Total workforce (millions)[c]	Workforce in manufacturing sector (millions)[d]	Workforce in the textile manufacturing sector (millions)[e]	Proportion of 86,967 to 111,151 full-time job equivalents to the workforce in the textile manufacturing sector
(1)	(2)	(3)	(4)	(5)	(6)
28.055	19.99	10.00	2.00	1.00	8.69–11.11

SOURCE and NOTES:

[a] This figure is based on D.P. Bhattacharya, *Population in India, 1801–1961 (Based on 1941 area)* (unpublished), Appendix I.

[b] According to the unpublished estimates of Bhattacharya, the compound rate of growth of population in the province during the precensus period 1801–71 works out at 0.37 per cent per annum. Assuming that population grew at the same rate in the eighteenth century, the figure one gets for 1711 is 19.99 million. While there was a major famine in 1770, which reportedly killed one-third of the province's population, we are unable to determine its impact on the average rate of growth of population over the eighteenth century.

[c] Definitive information on participation rates is available only for the census period. The all-persons participation rate for undivided Bengal in 1911—which was a normal year, a reasonably efficient census and the first one in which makers and sellers were adequately differentiated—was 36.1 per cent (unpublished estimate prepared by J. Krishnamurty). This ratio was probably somewhat higher two centuries earlier. This is because some industries with a considerable female workforce participation (such as hand-spinning) have declined in the meantime, probably driving some female workers out of the workforce. Moreover, in order to ensure that the employment implications of the companies' trade are not overstated, it is vital that the size of the workforce is not understated. We have, therefore, used the relatively high participation rate of 50 per cent to obtain the figure in this column.

contd.

Table 14.4 contd.

[d] The census evidence for 1911 for undivided Bengal shows that the proportion of the workforce in the manufacturing sector (all persons) to total workforce was 8.4 per cent (unpublished estimate of J. Krishnamurty). It is believed that the nineteenth century was characterized by a fairly marked decline in the proportion of the workforce engaged in the manufacturing sector to the total workforce (described as the process of de-industrialization). In order to ensure that there is no under-estimation of the workforce in the manufacturing sector, we have assumed that in early eighteenth century Bengal, workforce in this sector accounted for as much as 20 per cent of the total workforce.

[e] The census evidence for 1911 for undivided Bengal shows that the workforce (all persons) engaged in the manufacturing of textiles (excluding jute textiles) accounted for 14.2 per cent of the total workforce in the manufacturing sector (unpublished estimate of J. Krishnamurty). There is a large body of evidence to indicate that the textile industry was highly developed in Mughal Bengal, catering to a large Indian and foreign market. The nineteenth century witnessed a considerable increase in output of cloth per worker because of the emergence of a large cotton textile mill industry in the country. We have, therefore, assumed that the textile industry in early eighteenth century Bengal accounted for as much as 50 per cent of total employment in the manufacturing sector.

ment by the companies to the probable total size of the workforce in the textile manufacturing sector (defined to include the production of raw silk) in the province of Bengal. For this purpose, the province of Bengal appears to be a more appropriate unit than the Bengal region as a whole, for raw silk was procured exclusively and textiles overwhelmingly in the province. Bihar supplied only small quantities of relatively coarse cotton chintz produced at Patna while the procurement in Orissa was confined to small quantities of mixed piece-goods manufactured at Pipli and Balasore. Following the procedure explained in the notes to Table 14.4, the workforce in the textile manufacturing sector has been estimated at one million. Since this is the key figure in the exercise, its broad validity against the population's consumption requirements of cloth has been independently checked. On the assumption of five to six workers to a loom, the number of looms consistent with an estimated million workers would be 167,000 to 200,000. Assuming that the Dutch and the English East India companies together accounted for a third of the total value of the textiles exported from the province in the early years of the eighteenth century, the number of looms producing for the export trade would have been between approximately 45,000 and 50,000 (vide Table 14.2, columns 4 and 7). The remaining 117,000 to 155,000 looms would have produced for domestic consumption, which evidently consisted primarily of the coarser varieties. Assuming that the annual output of cloth of the varieties consumed domestically was 1,237 sq. yd. per loom on the average,[37] an estimated 117,000 to 155,000 looms would have produced approximately 143 million to 192 million sq. yd. of cloth. Since the total population of the province at this time has been estimated at 20 million, this would give a per head availability of 7.25 to 9.6 sq. yd. per annum (an average of 8.41 sq. yd. per annum).

In order to evaluate the plausibility of this level of domestic consumption of cloth per head per annum, one can use recent evidence on per head availability of cloth. The National Sample Survey evidence for West Bengal for the early 1960s shows that this figure was 11 sq. yd.[38] In carrying this estimate backward to the beginning of the eighteenth century, note that over the intervening two and a half centuries the per head consumption of cloth has risen sharply because of the availability of cheaper mill-made cloth.[39] Therefore, the per head per annum consumption of cloth at the beginning of the eighteenth century must have been much less than 11 yd. and is

unlikely to have been larger than 8.41 sq. yd. This would imply that the figure of a million workers in the textile manufacturing sector is not an underestimate, and the relative significance of the companies' trade is not being overstated. As shown in Table 14.4, the full-time job-equivalents created by the companies' trade accounted for between 8.69 per cent and 11.11 per cent of the total workforce in the textile manufacturing sector—by no means an altogether insignificant proportion. Of course, the two companies had reached this position after they had been trading in the province for over sixty years.

In assessing the overall employment effect of the trade carried on by the Dutch and the English East India companies in Bengal, account should also be taken of the linkage and multiplier effects on employment in other sectors of the economy. For example, the companies' trade provided substantial additional job opportunities to the merchant-middlemen dealing with them. However, due to lack of information, these effects cannot be quantified.

The trade carried on by the Dutch and the English East India companies from Bengal also affected the organization of manufacturing production and procurement in the region. For one thing, the process of the localization and specialization of production was intensified. Since a concentration of weavers and other artisans in the *arangs*—localized centres of manufacturing production—enabled the middlemen to reap a variety of external economies,[40] they did everything in their power to promote such a concentration. A corollary of this was the emergence of a pattern of specialization as between different *arangs* in a given area.[41] This trend was particularly marked in the district of Malda in north Bengal where in the 1680s one *arang* already produced only one particular variety of a given category of textiles.[42]

The European companies' trade was also instrumental in the development of a number of comparatively minor trading centres in the region—such as Kasimbazar—into major commercial emporia and in the founding of at least one town that, in course of time, became the largest city in the subcontinent. The English founded Calcutta in 1690 after the conclusion of their conflict with the provincial government; within 25 years or so, the new town had become a major centre of production and commerce. Its inhabitants, besides the English of course, were mainly middlemen and artisans who had come there from places as far-off as Dhaka seeking employment and the protection the English settlement afforded against the oppression of local officials.[43]

The tremendous increase in the Europeans' demand for Bengal textiles from about 1670 led to an increase in the bargaining strength of the artisans vis-à-vis the merchants and that of the merchants vis-à-vis the companies. For example, the Dutch factors made the following statement in the year 1700, 'The middlemen inform us (and on investigation we find that they are speaking the truth) that because of the large number of buyers in the weaving centres and the large sale of textiles, the weavers can no longer be coerced. They weave what is most profitable for them. If one does not accommodate oneself to this situation, then one is not able to procure very much and the supplies go to one's competitors.'[44] An instance of the growing strength of the middlemen vis-à-vis the companies is provided by the refusal, in 1709, by middlemen dealing with the Dutch to accept fresh contracts unless the Company (*a*) gave them an assurance that henceforth in the event of only a limited variation between the quality of the sample given out and of the pieces actually supplied by them, there would be no deduction made from the price mutually agreed upon at the time of the contract, and (*b*) repaid the price deductions made on this count on textiles supplied during the preceding season.

The system of procurement in vogue in Mughal Bengal, which obliged the companies to obtain supplies of export goods by giving out advances to middlemen, gave rise to a whole host of problems. Two of the most serious of these problems were the poor quality of the goods supplied and the emergence of bad debts. With a view to solving the latter problem, so-called joint stock companies were formed at the initiative of the English. (The Dutch, who had taken the initiative in forming these companies on the Coromandel coast, did not get very far in this regard in Bengal.) This experiment represented an innovation in the commercial structure of the region but it unfortunately proved to be abortive. The problem of the poor quality of the raw silk supplied to them prompted the Dutch to establish a silk-reeling unit in the 1650s in their factory at Kasimbazar. When operated at its maximum capacity, the unit employed over 3,000 reelers. In the context of the development of the capitalist system of production in the region, the Dutch silk manufactory was a significant experiment. Manufacturing production on this scale under one roof on a regular wage-employment basis was rare in Mughal Bengal (and for that matter in Mughal India).[45] The imperial workshops (*karkhanas*) were not fully comparable with the Dutch unit for two reasons. In the first place, the goods manufactured in the *karkhanas*

were intended largely for use by the royalty, nobility, and the army rather than for sale in the market. Secondly, many of the big *karkhanas* appear to have operated on the basis of underpaid drafted labour[46] rather than on the basis of free contract labour. Both these factors make the *karkhanas* somewhat ineligible to be treated at par with the Dutch silk manufactory as a significant milestone in the development of the capitalist system of production.

To conclude, the trade carried on by the Dutch and the English East India companies from Bengal during *c.*1630–1720 (prior to the emergence of a colonial relationship) generated a significant increase of income, output, and employment in the region. The estimate of Rs. 34 million per annum provides some idea of the magnitude of the increase in income and output on this score. The companies' procurement of textiles and raw silk would have sustained approximately 87,000 to 111,000 full-time job equivalents, accounting for 9 to 11 per cent of the total workforce engaged in the textile manufacturing sector of the province of Bengal. This rather impressive increase in income, output, and employment took place mainly because the Euro-Bengal trade was not a 'normal' trade involving an exchange of goods for goods, but one involving an exchange of precious metals for goods, implying an export surplus for Bengal.

NOTES

1. 'Bengal' or 'Bengal region' denotes the territory now covered by Bangladesh and the Indian states of West Bengal, Bihar, and Orissa. The 'province of Bengal' includes Bangladesh and West Bengal.
2. M.A.P. Meilink-Roelofsz, *Asian Trade and European Influence in the Indonesian Archipelago between 1500 and about 1630*, The Hague, 1962, pp. 212, 218, 220.
3. The fact that in the pre-1757 period, the European companies were granted certain concessions by the Indian authorities in the matter of customs—and transit—duties payable by them does not alter the basic picture. The undeniable naval power superiority enjoyed by the Europeans during this period enabling them to formally impose the so-called 'passport' system on Indian shipping and, in the process, to exercise a certain amount of leverage with the Indian authorities also leaves this hypothesis practically unaffected. The Europeans were obliged to carefully balance the possible benefits from the use of this leverage against the certain negative results of the displeasure of the authorities earned in the bargain on the smooth functioning of their trade. For details, see my 'Asian Trade and European Impact: A Study of the Trade from Bengal, 1630–1720', in B.B. Kling and M.N. Pearson (eds.), *The Age of Partnership: Europeans in Asia before Dominion*, Honolulu, 1979. Reprinted as Chapter 13 in this volume.
4. Calculated from K. Glamann, *Dutch-Asiatic Trade, 1620–1740*, Copenhagen and The Hague, 1958, p. 144, Table 27. This percentage has been rounded off to the nearest complete number.
5. Calculated from 'General statement of the goods sold, outstanding debts and the unsold goods in the various chambers', Nationaal Archief, The Hague, Verenigde Oost-Indische Compagnie (hereafter V.O.C.) 4588–4590. The data are in value terms. The ratio has been rounded off to the nearest complete number.
6. Figures of the annual value of the total Dutch exports from Asia are available in G.C. Klerk De Reus, *Geschichtlichen Ueberblick Der Administrativen, Rechtlichen und Finanziellen Entwicklung Der Niederlandisch-Ostindischen Compagnie*, Batavia, 1894, Appendix V. The value per annum of the Dutch exports from Bengal was calculated from the export invoices in the letters from the chief Dutch factory in Bengal at Hughli to the Governor-General and Council at Batavia. The percentages have been rounded off to the nearest complete number.
7. Thus the papers of the Dutch East India Company contain numerous references to a large volume of trade carried on from Bengal illegally by the Company's servants. In fact, in 1679 the chief of the Dutch factory at Hughli, Jacob Verburg, constituted in the name of his wife a so-called 'small company' with the specific purpose of carrying on illegal private trade. (For details, see my 'The Dutch East India Company and the Economy of Bengal 1650–1717', unpublished Ph.D. thesis, University of Delhi, 1967.) The records of the English East India Company also contain references to the effect that in the early years of the eighteenth century, the total volume of trade carried on from Bengal by private English merchants matched that by the Company (I am indebted to K.N. Chaudhuri for this information).
8. See my 'Asian Trade and European Impact', in Kling and Pearson (eds.), *The Age of Partnership*.
9. Calculated from the export invoices in the letters from Hughli to Batavia. The years 1709–10 to 1717–18 were selected for this computation because over the first two decades of the eighteenth century, comparable information for the Dutch and the English East India Companies was available to me only for these years.
10. Calculated from 'Bengal General Journals and Ledgers Series', Range 174, vols. 83–99, Oriental and India Office Collection. A £ sterling has been assumed to be equivalent to *f.* 11.2 = approximately Rs. 8.

11. Calculated from the invoices of exports from Batavia representing presumably the value of goods f.o.b. Batavia. Over the period 1663–4 (when information regarding exports from Batavia to Bengal first becomes available) to 1717–18, the proportion of treasure to total exports from Batavia was 87 per cent. It should be noted that a part of the goods and treasure the Dutch Company sent to Bengal used to be obtained within Asia. These proportions, therefore, are not necessarily a true indicator of the pattern of the imports by the Company from Europe.
12. Calculated from K.N. Chaudhuri, 'Treasure and Trade Balances: The East India Company's Export Trade, 1660–1720', *Economic History Review*, 2nd series, 21 (3), December 1968, pp. 497–8. Chaudhuri's figures show that over the period 1659–60 to 1719–20, the proportion of treasure to total English exports to the East was 79 per cent. (For this calculation, the following years were left out because of inadequate information: 1690–1, 1702–3, 1703–4, 1704–5, and 1705–6.)
13. It has also been suggested that the higher value commanded by silver in terms of goods in Asia compared to Europe was an additional factor prompting the Europeans to export silver, rather than goods, to Asia. (See K.N. Chaudhuri, 'The East India Company and the Export of Treasure in the Early Seventeenth Century', *Economic History Review*, second series, 16, 1963.)
14. We take the view that since the precious metals were continually imported in large quantities over a long period of time, the imported bullion is appropriately treated as a means of settling the balance of payments rather than as an item of consumption.
15. To put it differently, X–M will equal S–I where S is the savings in the system. The question, therefore, is how would this excess of savings over investment arise. This could be through a rise in the rate of savings given a level of income or given the rate of savings, through a rise in the level of income.
16. W.H. Moreland, *From Akbar to Aurangzeb*, London, 1923, pp. 178–9.
17. The 'definite' evidence cited by Moreland was a petition in December 1658 by the English factors stationed at Hughli asking for an increase in the allowance for housekeeping charges on account of an alleged trebling in the prices of provisions over the preceding few years (Moreland, *From Akbar to Aurangzeb*, p. 179). The desirability of refraining from accepting such casual and motivated pieces of evidence as conclusive is suggested by the following statement of an essentially similar variety. In November 1661, the English factors stationed at Madras wrote, 'Neither may you ever expect that the commodity [taffetas] can be made here to be afforded as reasonably as in Bengal, *for all provisions of victual, when at the cheapest is here three times dearer than in Kasimbázar and Hughli*, where these taffetas are made' (spellings modernized and emphasis added) [William Foster (ed.) *English Factories in India, 1661–4*, p. 65 (hereafter *English Factories*)]. This statement might, of course, be totally unreliable since it too might have been motivated by an attempt on the factors' part to conceal their inefficiency (or corruption) in not being able to procure textiles locally at reasonable prices. But taken at its face value in conjunction with the statement by the factors at Hughli, it suggests the highly unlikely situation of the prices of provisions in Bengal in, say, 1650 being on the average only one-ninth of those in Madras, assuming, of course, that the Madras prices did not rise between 1650 and 1661. The purported rise in the Bengal prices in the 1650s may indeed never have taken place. One is then forced to conclude that in order to establish a significant change in the prices of provisions in Bengal in the 1650s, one needs evidence more solid than that provided by Moreland.
18. Moreland was wrong in suggesting that the value of the Dutch exports from Bengal had reached the Rs. 2 million mark by 1661 (Moreland, *From Akbar to Aurangzeb*, p. 181). This mark was, in fact, not reached until about the end of the century. The English trade from Bengal in the 1650s was considerably less than that by the Dutch.
19. Over the 61-year period 1657–1717, the observations available were 20 for rice, 24 for wheat, 17 for sugar, and 29 for clarified butter. The trend lines were fitted on the basis of first and second degree polynomials on ordinary and log scale.
20. Earl J. Hamilton, 'American Treasure and the Rise of Capitalism, 1500–1700', *Economica* (27), November 1929, pp. 333–57.
21. Hamilton, 'American Treasure' and Rudolph C. Blitz, 'Mercantilist Policies and the Pattern of World Trade, 1500–1750', *Journal of Economic History*, 27 (1), March 1967, pp. 39–55.
22. It is a moot question whether the increased hoards were a response to an alleged (implicitly irrational) 'penchant for hoarding gold and silver' or reflected a desire to hold savings in a liquid form in the context of the virtual absence of deposit banking facilities and other reasonably liquid channels of investment with a positive return.
23. The number of observations available for *khasas* was 16 over 1658–1702, for *doreas* 10 over 1674–1702, for *gerras* 16 over 1658–1710, and for *armosins* 13 over 1658–1701.
24. The number of observations for the *tanny* variety was 15 over 1683 to 1717 and for *tanna-banna* 17 over 1646 to 1702.
25. An example of the responsiveness of the Bengal farmers to the changing demand conditions is provided by the following case. In 1706, while urging the imperial authorities to withdraw their order banning the Dutch from trading in Bengal, Murshid Quli Khan, the central *diwan* in the province, wrote to say that following the closure of the Dutch

factory at Kasimbazar in 1704, the Hollanders' demand for raw silk had registered a considerable decline leading to a substantial shift of land away from mulberry into rice and pulses. This had had an injurious effect on the exchequer's income from land revenue (it is well known that land revenue accounted for the bulk of the total state revenue in Mughal India) in so far as mulberry lands were assessed at Rs. 3 per *bigha* (in Bengal, the *bigha* was one-third of an acre) while the corresponding rates for rice and pulses—being lower value crops—were only Re. 0.75 and Re. 0.37 per *bigha* respectively. This could be reversed only if the fresh ban on Dutch trade was withdrawn immediately and the Dutch Company persuaded to reopen its factory at Kasimbazar. [Enclosure to the letter from the Dutch factors at Hughli to the Governor-General and Council at Batavia (hereafter H.B.), 9 October 1706, V.O.C. 1730, ff. 63–8.]

26. For example, in the1650s, the Dutch established a silk-reeling unit in their factory at Kasimbazar. When operated at its maximum capacity, the unit employed over 3,000 workers. The Company's records do not refer to any particular problems being faced in manning the unit at the prevalent wage rate even though it represented a departure from the established practice of the artisan working in his cottage free from discipline and supervision and keeping his own hours.
27. Of course, the bulk of the increase in the value of textiles and raw silk exported by the companies from Bengal was nevertheless accounted for by an increase in the physical exports of these goods. Thus, the number of pieces of textiles exported by the Dutch increased from 26,640 in 1665–6 to 2,538,000 in 1717–18 (Export invoice in the Dutch records). Similarly, the number of textiles ordered from Bengal by the court of directors of the English East India Company increased from 243,000 in 1669–70 to 2,450,000 in 1717–18 (Letter Books, Oriental and India Office Collection).
28. A proper measure of the export surplus in any year would be the value of bullion that was used to settle the difference between the value of goods exported from Bengal (f.o.b. Bengal) and the value of goods imported into Bengal (c.i.f. Bengal). The information on imports, being based on the invoices of exports from Batavia, however, relates to values at the Batavia prices rather than to the prices realized in Bengal so that the proportion that bullion constituted in Batavia's exports (92 per cent over the years 1708–9 to 1716–17) would be an inappropriate guide to the extent of the export surplus which would be settled by bullion imports into Bengal. If, however, one expresses the value of bullion (as recorded in the invoices of exports from Batavia) as a proportion of the value of the Dutch Company's exports from Bengal (f.o.b. Bengal) in the following season, that would set a *lower* bound (on the reasonable presumption that on the average they would not

make losses in this transaction) to the extent of export surplus. One finds that this proportion averaged 78 per cent over 1709–10 to 1717–18. Adding a small margin for transport costs and profit mark-up, one can take this ratio to be 80 per cent. One applies this ratio of 80 per cent to the estimate of the annual average value of exports by the companies (Rs. 4.15 million) to obtain a figure of Rs. 3.32 million as the annual value of export surplus generated by Bengal on account of the trade by the two companies in the early years of the eighteenth century.

29. Thus, about the British cotton textile industry, Deane and Cole write, 'Until the spinning inventions of the end of the eighteenth century increased the rate of spinning so vastly, most looms were inadequately utilized and a weaver was typically a farmer who gave only part of his time to his loom. . . . In such circumstances the amount of new fixed capital required was quite small in relation to the output it would generate' (P. Deane and W.A. Cole, *British Economic Growth 1688–1959*, Cambridge, 2nd edn., 1969, p. 277).
30. This figure has been arrived at on the following basis. If one compared the annual average value (f.o.b. Batavia) of the bullion imported by the Dutch into Bengal during the period 1678 to 1687 (which is the first decade during which information is available for all the ten years) with that during the period 1708 to 1717, and then divided the difference by the number of the intervening years, one would get the lower bound of the annual average increase in the export surplus associated with the Dutch Company's trade from Bengal during this period. This figure works out at Rs. 37,476. The figure for the Dutch Company was next converted into that for both the companies in the ratio of 2.27:4.15 on the basis of the Dutch share in the two companies' export trade from Bengal. The figure thus obtained was Rs. 68,513 which on the basis of a capital output ratio of 0.5:1 gives a figure of approximately Rs. 34,000 as the annual average value of the additional investment associated with the companies' trade.
31. Thus for Britain, Gregory King's estimates suggest an annual rate of capital formation at the end of the seventeenth century of between 3 per cent and 6 per cent of national income (Deane and Cole, *British Economic Growth*, p. 260). Even for the second half of the nineteenth century, Kuznets' evidence shows that net national savings as a percentage of net national product (NNP) was 10.9 per cent for Britain and only 3.4 per cent for Japan and 3.1 per cent for Italy (S. Kuznets, *Modern Economic Growth, Rate Structure & Spread*, Yale, 1966, Table 5.5, pp. 248–50).
32. This figure would in fact seem to be on the liberal side. For it is important to realize that the admittedly highly unequal distribution of the national product in Mughal India was accompanied by a significant amount of conspicuous consumption by the upper strata of the society.

33. In a recent work (S. Chaudhuri, *Trade and Commercial Organization in Bengal 1650–1720*, Calcutta, 1975, pp. 238–9, 247–8), it has been argued that the bulk of the bullion the European companies imported into Bengal was transferred out of the province to northern and western India mainly through the increased appropriation of surplus by *mansabdar* officials who came to the province on temporary assignments. This mechanism of transfer is used to rationalize the absence of a rise in the price level in the province consequent upon the additional import of precious metals.

Leaving aside for the moment the empirical validity of the proposition, such a purely monetarist line of reasoning hides the real phenomenon of the generation of an export surplus (which makes the import of precious metals possible in the first place) and the effects of this process on output and employment which are of significance. Note further that for the empirical validity of this proposition, the mere *existence* of an appropriation and transfer of surplus from Bengal by whatever agency is not enough. Since, as is well known, this was not a new phenomenon, what is required is an *increase* in the extent of such transfers year after year to account for the increased inflow of bullion on account of the companies' trade. An illustration of the existence of such a transfer at a time when the inflow of precious metals by the companies was admittedly negligible would be the confiscation (and transfer out of the province) in 1658 by Subahdar Shah Shuja of the bullion several Gujarati merchants of Kasimbazar and the Dutch factors had earlier deposited at the Rajmahal mint for being minted into coins. The *subahdar* needed funds for use outside the province in his campaign for the Mughal throne and had asked these merchants and the Dutch for a loan of Rs. 400,000 and Rs. 100,000 respectively. It was the refusal to meet this demand that led to the aforementioned confiscation of the bullion (H.B. 27 October 1658, V.O.C. 1227, ff. 178–9; letter from the Dutch factors at Hughli to the Board of Directors in Amsterdam (hereafter H. XVII.) 12 May 1659, V.O.C. 1229, ff. 891–vo; letter from the Governor-General and Council at Batavia to the factors at Hughli, 7 July 1659, V.O.C. 759, ff. 421–2; H. XVII. 25 August 1659, V.O.C. 1230, ff. 286-vo). Therefore, the cases cited by Chaudhuri while demonstrating the continued existence of such transfers do not constitute an adequate basis for establishing an increase of the required order. Finally, it is easily seen that the basis of the analysis is unaffected even if there indeed was such an increase in the transfer out of Bengal. Assuming that this increased appropriation of surplus left the savings rate unchanged, the only consequence of such an increase would be a corresponding reduction in the amount of bullion that would otherwise have gone into hoards in the region.

34. In 1701–2, for example, raw silk accounted for 47.5 per cent and textiles for 39.4 per cent (making a total of 86.9 per cent) of the Dutch Company's exports from Bengal (calculated from the export invoices in the Dutch records). Corresponding figures, provided by S. Chaudhuri, for the English East India Company were 22 per cent for raw silk and 71 per cent for textiles (making a total of 93 per cent). (Chaudhuri, *Trade and Commercial Organization in Bengal*, Appendix B, Table 3).

35. The Textile Enquiry Committee, 1954, suggested a figure of 1.25 weavers per handloom (GOI, Ministry of Commerce and Industry, *Report of the Textile Enquiry Committee*, 1954, Delhi, vol. I, pp. 16–17). The same figure was suggested by the Pakistan Fact-finding Committee on Handlooms, 1956 (Pakistan, Ministry of Industries, *Report of the Fact-finding Committee on Handlooms*, Karachi, 1956, p. 21), though a member of the Committee, Dr A. Sadeque, suggested an alternative estimate of 2.25 weavers per loom (p. 217). (I am grateful to J. Krishnamurty for drawing my attention to these references.) But these figures apparently relate to all cotton textiles while the European procurement in early eighteenth century Bengal was confined largely to the relatively superior varieties where the weaver-loom ratio seems to have been substantially higher. Thus, discussing the cotton manufactures of India, Edward Baines wrote, 'When chequered muslins are wrought, three persons are employed at each loom: the *lungri* pulls the thread to form the pattern, the *dobarah* twists the thread, and the *binkarai* weaves' (Edward Baines, *History of the Cotton Manufacture in Great Britain*, London, 1966, first printed in 1835, p. 71). The ninth report of the Select Committee 1783 also suggested a figure of three weavers to a loom producing Dhaka muslins [Appendix 51, summarized in K.N. Chaudhuri, 'The Structure of Indian Textile Industry in the Seventeenth and Eighteenth Centuries', *The Indian Economic and Social History Review*, 21 (2–3) June–September 1974, p. 162]. And then, of course, there were silk and mixed textiles for which contemporary information is not available. Taking all these facts into account, the average figure of 1.5 to 2 weavers to a loom for the varieties procured by the companies would, if anything, appear to be an underestimate.

36. The ninth report of the Select Committee 1783 mentioned a figure of 80,000 women spinners for a total of 8,400 looms, i.e. an average of 9.5 spinners to a loom. But these figures relate exclusively to Dhaka muslins and the women spinners may have been working only part-time. Evidence pertaining to pre-industrial Britain where the textile technology on the whole was not very different from that in early eighteenth century India (see, for example, Irfan Habib, 'The Technology and Economy of Mughal India', *The Dev Raj Chanana Lectures*, 1970, mimeographed) suggests that the number of spinners to a loom ranged between 3 and 6. [For example, 'Spinning had always been the slowest of the textile processes, and, while the treadle-wheel increased the speed

slightly, three to five spinsters were still required to keep one weaver supplied with yarn' (Charles Singer et al. (eds.), *A History of Technology*, Oxford, 1957, vol. III, p. 161). Again 'We know that a single loom provided work for five or six spinning wheels' (Paul Mantoux, *The Industrial Revolution in the Eighteenth Century*, New York, 1961, p. 208).] In order to ensure that there was no overstatement of the employment implications of the companies' trade, a figure of 2.5 to 3 full-time spinning job-equivalents to a loom has been assumed.

37. According to the *Report of the Fact-finding Committee (Handlooms and Mills)* 1942, the average daily output of a throw-shuttle loom was 2⅓ sq. yd. for fine cotton *saris* of 100 x 100 and 80 x 80 counts, 5¼ sq. yd. for grey *dhotis* of 20 x 20 counts and 7½ sq. yd. for *khaddar* [GOI, *Report of the Fact-finding Committee (Handlooms and Mills)*, 1942, Appendix XXIII, p. 294. The figures in column 6 have been converted into sq. yd. on the basis of the dimensions indicated in column 3]. On this basis, it has been assumed that the daily output of cloth per loom of the varieties consumed domestically in Mughal Bengal was 4½ sq. yd. on the average. On the further assumption of 275 work days a year, the average annual output per loom works out at 1,237 sq. yd.
38. This figure was 9.76 sq. yd. for rural areas and 16.92 sq. yd. for urban areas. Attaching weights of 80:20 to the rural and the urban areas respectively, one gets the figure of 11 sq. yd. as the average availability per head per annum (*NSS*, 17th Round, September 1961–July 1962, no. 184 'Tables with Notes on Consumer Expenditure', pp. 69–71 and 137–9. The figures for mill-made cloth, handloom cloth, and *khaddar* have been combined).
39. Thus, it has been estimated that the average annual consumption of cotton per head in Akbar's time was only 6 to 11 kg as against 22.1 kg in 1961–2 (Ashok Desai, 'Population and Standard of Living in Akbar's Time', *The Indian Economic and Social History Review*, 9 (1), March 1972, Table 5, p. 56).
40. The middleman would now have to operate over a smaller geographical area involving considerable saving of time and effort. The facilities of bleaching and printing of textiles—operations usually undertaken after the textiles had been collected from the weavers—available at these centres at fairly standardized rates, further added to the profits of the middleman (Report submitted by Dutch factor Cansius who had been deputed to procure textiles in Malda, 7 September 1670, V.O.C. 1278, ff. 2173–4).
41. Thus, in the district of Pipli in Orissa, the *arang* of Mohanpur specialized in the production of *hamhams*, *gerras* (both ordinary calicoes), *sologazis* (fine calico) and *adathis* (fine muslin); that of Danton in *doreas* (fine calico) and *soosies* (silk); that of Olmara in *chaklas* and *rumals* (both fine calicoes) and *alachas* (silk) while the *arang* of Casuri produced only super-fine cotton textiles (Instructions by Director De Haze to Van den Hemel, the new chief factor at Pipli, 1 February 1675, V.O.C. 1313, ff. 79–81vo).

42. Thus, the *arang* producing *malmals* (fine muslin) was reported to be at a distance of two days' journey on foot from that specializing in the production of *khasas* (fine muslin), while the one producing *doreas* (fine calico) was another 1½ days' journey further up (H.B. 11 January 1684, V.O.C. 1384, ff. 419–20). It might be mentioned here that before the Europeans came, the district of Malda specialized in the production of textiles for Persia. Thus, the trend towards specialization of production existed—though to a much smaller extent—even before the Europeans arrived on the scene (Cansius Report, 7 September 1670, V.O.C. 1278, ff. 2173–4).
43. Explanation by the Dutch factors why the orders were not supplied in full, 1710, V.O.C. 1796, f. 205.
44. Explanation by the Dutch factors why the orders were not supplied in *full, 1700, V.O.C. 1638, f. 17.*
45. It is true that a large number of workers had to be assembled for the purpose of constructing forts and other big buildings, as well as ocean-going vessels. But in these cases, as Moreland (*India at the Death of Akbar*, pp. 173–4) has pointed out, the organization brought into being did not survive the completion of the particular project for which it had been assembled. The royal mints in the various parts of the empire were undoubtedly fairly big units. But it should be obvious that the implications of the production of coins by individuals employed on a salary basis by the government were somewhat different from those of the production of goods in a manufactory of the type of the Dutch silk-reeling unit at Kasimbazar.
46. H.B. 11 January 1684, V.O.C. 1384, f. 427; Diary kept at the Kasimbazar factory of the English East India Company, 1 December 1681, F.R. Kasimbazar, vol. 2, f. 1.

APPENDIX 14.1

The Model

$$Y = C + I + (X-M)$$
$$C = a + c\,Y$$
$$s = (1-c)$$
$$Y-C = I + (X-M) = I + B$$
$$S = I + B$$
$$\Delta S = \Delta I + \Delta B$$
$$\Delta Y = \frac{\Delta S}{s} = \frac{\Delta I + \Delta B}{s}$$
$$\Delta Y = \Delta Y' + \Delta Y''$$
$$\Delta I = \Delta' I + \Delta'' I$$
$$\Delta B = \Delta B' + \Delta B''$$
$$\Delta Y'' = \frac{\Delta'' I + \Delta B''}{s}$$

where

- Y = Output and income
- $\Delta Y'$ = Change in output resulting from factors other than the companies' trade
- $\Delta Y''$ = Change in output resulting from the change in the companies' export demand
- C = Consumption
- c = Propensity to consume
- I = Investment
- ΔI = Total change in investment
- $\Delta' I$ = Change in investment not arising from the companies' trade
- $\Delta'' I$ = Change in invesment induced by the companies' export demand
- S = Savings
- ΔS = Change in total savings
- s = Propensity to save
- X = Exports
- M = Imports
- B = Bullion received against export surplus
- B' = Bullion received against export surplus associated with the non-Europeans' trade
- B'' = Bullion received against export surplus associated with the companies' trade