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## ENGLISH PRICES AND PUBLIC FINANCE, 1660-1822

THE methods employed in collecting and compiling English trade statistics in the eighteenth century were such that it is necessary to know something about contemporary prices to arrive at even tentative conclusions as to the significance of the trade figures.<sup>1</sup> The problem centered about certain misconceptions as to the origin and nature of the "official valuation" used in computing export and import values.<sup>2</sup> Once the facts were established, certain interesting questions concerning the price record presented themselves. What was the relation of the valuation accidentally adopted to the actual wholesale or retail prices of the commodities concerned? What was the trend of prices in the eighteenth century before the pronounced upswing in the nineties? What was the relation of the price movement to fiscal policies, especially as reflected in changes in public debt and in monetary conditions?

Anyone who has studied this period will realize how difficult it is to obtain information about prices. The prices in Rogers<sup>3</sup> are very fragmentary after 1703 for everything but agricultural products, and Tooke's<sup>4</sup> quotations, upon which Jevons based his index, do not begin until 1782. Even Silberling,<sup>5</sup> who found additional price materials, was able to push his price index back only to 1779. Under these circumstances, I was most grateful to the English section of the International Price History Study

<sup>1</sup> The present study of prices is a by-product of an investigation of English trade statistics and business fluctuations in the eighteenth century, which has been carried on with the assistance of the Bureau of International Research at Harvard University and Radcliffe College and which is now almost ready for publication. The computation of the price indices upon which this article is based was assisted by a grant from the Harvard University Committee on Research in the Trade Cycle.

<sup>2</sup> For a brief discussion of this problem, see the statistical appendix, page 32. The bearing on an interpretation of the trade statistics is manifest. If, for example, the "official valuation" for English exports was based on wholesale prices in 1700 or 1701, and if there was no pronounced tendency for prices to rise or fall for the first three quarters of the century, then the trade statistics were not only a measure of the volume of English exports, but in effect also a rough measure of their value.

<sup>3</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England* (Oxford, 1902), vii.

<sup>4</sup> Thomas Tooke, *Thoughts and Details on the High and Low Prices of the Thirty Years from 1793 to 1822* (second edition, London, 1824).

<sup>5</sup> Norman J. Silberling, "British Prices and Business Cycles, 1779-1850," this REVIEW, v (1923), pp. 219-62.

when they offered to make available to me certain price series for the eighteenth century.<sup>6</sup>

Dr. Gilboy has described in an earlier article the nature and extent of these series, and has presented a cost of living index and an index of real wages based on this material.<sup>7</sup> The present article presents a price index for consumers' goods from 1660 to 1822 and a similar index for producers' goods from 1660 to 1800—with comments on some of the factors which influenced prices in this period.

These indices are obviously subject to many limitations, as must be the case with any eighteenth century material. The number of series is small, and many important commodities are not represented at all; the fact that many of the prices are contract prices results in a certain lack of sensitiveness in the year-to-year fluctuations for some commodities; and, finally, the fact that the prices are quoted for harvest years has led to some confusion in interpolating and in comparing with other series. Despite these limitations, the indices have supplied the first rough outlines on an otherwise blank canvas. They give additional meaning to the trade statistics mentioned above, and also make possible generalizations about price movements in a period when England was laying the foundations for the industrial revolution, expanding her commerce, and building up a banking system.<sup>8</sup>

The following five unweighted price indices are presented in this article:<sup>9</sup>

(1) Consumers' goods, 1660/1-1696/7 (1696/7 = 100)

(2) Producers' goods, 1660/1-1696/7 (1696/7 = 100)

(3) Consumers' goods, 1695/6-1822/3 (1700/1 = 100)

<sup>6</sup> This English Price History Study will be published under the title "Prices and Wages in England from the 12th to the 19th Century." It is expected that Volume II (the first to be published) will appear early in 1938.

<sup>7</sup> Elizabeth W. Gilboy, "The Cost of Living and Real Wages in Eighteenth Century England," this REVIEW, xviii (1936), pp. 134-43.

<sup>8</sup> For a detailed critical discussion of the statistical difficulties, see the statistical appendix.

<sup>9</sup> Detailed information as to the constituent series and tables presenting the five indices may be found in the statistical appendix. For an explanation of the system of designating years, see note about harvest years in the statistical appendix.

(4) Producers' goods, 1695/6-1800/1 (1700/1 = 100)

(5) Consumers' goods exclusive of cereals, 1695/6-1822/3 (1700/1 = 100)

The index of consumers' goods for the years 1660/1-1696/7 is based on only five series (broadcloth, kersey, leather backs, tallow candles, and wheat). This number is, of course, inadequate, but it was desirable to get some picture of price movements during the Restoration and after the Revolution of 1688. The producers' goods index for this early period is based on ten series.

The commodities in the consumers' goods index after 1696 have already been discussed by Dr. Gilboy. They represent for the most part items of food and drink. In a total of 31 items, there are only nine articles representing the prices of fuel, light, and clothing, as compared with 22 articles of food and drink. The clothing group is made up of certain staple materials purchased on contract by the Admiralty or such institutions as Greenwich Hospital and Westminster School.<sup>1</sup> As these prices frequently remained unchanged for years at a time, this group had very little influence on the year-to-year movements of the final index.

The producers' goods index is made up almost entirely of articles used in building, shipbuilding, and mining operations. The list for the earlier period (1660/1-1696/7) differs considerably from that for the later period (1695/6-1800/1), and the total number of series is small at all times. Bricks, copper, hemp, lead, and train or whale oil appear in both indices. Before 1696 we also have fir timber and two kinds of deals, as well as duck and tarr. These were all imported and were used primarily for the navy, though deals and timber were also used for building houses and for shoring up the walls of mines. After 1695, the index includes coal, glue, leather backs, lime, two kinds of tiles, and tallow, as well as the series running through both indices. There is no series for iron at any time, but the non-ferrous metals are well represented. It is unfortunate that we have no wood or timber series after 1696.

Many of these articles were imported. This was especially true of the naval stores, such as deals, timber, duck, tarr, hemp, train oil, and

tallow, which came principally from the Scandinavian countries, Russia, and Sprutia (Prussia). The prices of such articles fluctuated considerably—especially in time of war, when the sources of supply might be cut off, and when the demand was considerably increased by the necessity for repairing and enlarging the royal navy. This effect of war on the prices of producers' goods is most marked in the early index, which contains a large number of naval stores. Striking advances of prices occurred during the war with the Dutch (1664-67) and at the beginning of William's War against France (1689-97). In the earlier period, the necessity for rebuilding London after the great fire of 1666 was also a factor.

The difficulty of obtaining a sure and sufficient supply of naval stores for war purposes led the British government—in an early effort to secure self-sufficiency in raw materials—to encourage their production in the North American colonies by means of bounties.

The producers' goods index after 1696 does not fluctuate as widely as the earlier one. The later index includes a much larger proportion of domestic goods. Certain individual series, such as those for coal, train oil, and hemp (of which the last two were imported), continued to fluctuate widely. Coal was brought to London by sea, and the cost of transportation was a substantial proportion of the London price. These costs were always high in time of war, when shipping was at a premium. The variations in the price of coal in London in the course of a single winter were sometimes extreme. A protracted cold spell would exhaust the supplies on hand and cause prices to double or treble.<sup>2</sup>

In attempting a classification of producers' goods in the late seventeenth and early eighteenth centuries, it must be remembered that in the era preceding the industrial revolution such goods were very different from what they became later. Building, shipbuilding, mining, and canal construction (after 1760) were the large-scale operations requiring capital investment. The buildings were largely of wood, bricks, and stone, and the ships were wooden sailing vessels. The building and operation of both merchant ships and the royal navy required hemp, sail

<sup>2</sup> T. S. Ashton and J. Sykes, *The Coal Industry of the Eighteenth Century* (Manchester University Press, 1929), pp. 252-53.

<sup>1</sup> See note on clothing group in the statistical appendix.

cloth, cordage, copper, iron, lead, pitch, tar, and train oil, as well as timber of all kinds. We get some idea of the materials used in mining from the account of the increase in prices between 1791 and 1798 of materials used in copper mines (Table 1).<sup>1</sup>

TABLE 1.—PRICES OF MATERIALS PURCHASED BY THE MINES

Materials	In the year 1791	In the year 1798	Advance per centum
Deals	£ 7. 10 per cwt.	£ 10. 10	40
Timber	10 d. per foot	1s. 4d.	60
Powder	£ 4. 10 per cwt.	£ 10	120
Ropes	£ 1. 12 per D°	£ 2. 12	40
Coals	£ 2. 10 per wey	£ 3. 10	40
Candles	7 s. per dozen	8s. 3d.	17
Leather	1s. 5d. per lb.	2 s.	40
Boiler plates	£ 1. 10 per cwt.	£ 1. 18	27
Iron	18 s. per D°	£ 1. 4	33
Labor	£ 1. 10 per month	£ 2. 5	50
	to	to	
	£ 2. 2 per D°	£ 3. 3	50

The movements of the group indices for consumers' and producers' goods may be followed on Charts 1 and 2. Clearly the price of corn (and therefore the price index for consumers' goods) was greatly affected by good and bad harvests. As will be shown later, prices in general rose during periods of credit inflation associated with heavy war-time expenditures and government borrowing operations. The subsequent discussion will be concerned with these two problems: (1) the influence of corn prices; (2) the relation of prices to government finance and credit conditions.

<sup>1</sup> Reports of Committees of the House of Commons, 1785-1802, Volume X, *Report on Copper Mines and Copper Trade*, Appendix No. 8.

THE INFLUENCE OF CORN PRICES

Corn prices fluctuated more violently and rose much more rapidly during the eighteenth century than did other prices. This must be borne in mind in connection with Dr. Gilboy's cost-of-living index, in which the cereal group is heavily weighted.<sup>2</sup> The following three indices are shown on Chart 1:

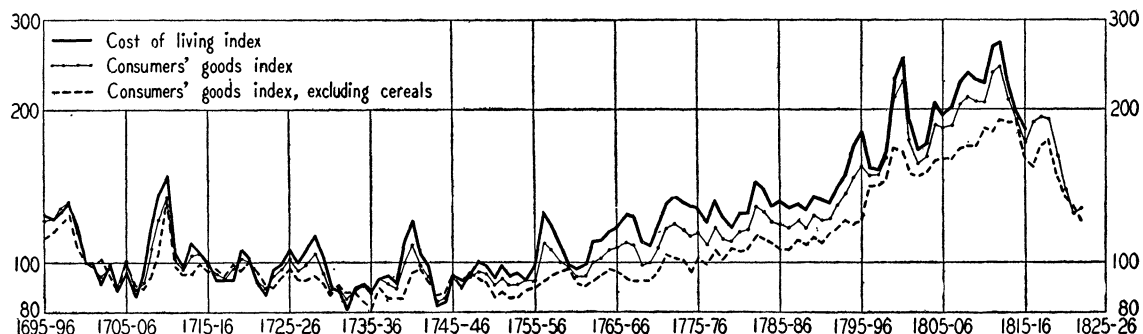
- 1) Cost-of-living index (the 9 cereals having a weight of 50 per cent),
- 2) Consumers' goods index (the 9 cereals having a weight of about 30 per cent),
- 3) Consumers' goods excluding cereals (the cereals having no weight).

Dr. Gilboy gave the cereal group in her cost-of-living index a weight of 50 per cent of the total.<sup>3</sup> Animal products, the prices of which tended to move with corn prices, were given a weight of 20 per cent. The two groups, with a combined weight of 70 per cent, dominate the index. Since the consumers' goods index is an unweighted index made up of 31 articles, the 9 cereals have an influence of about 30 per cent. The cereals and animal products combined have a weight of about 42 per cent. In the index for consumers' goods excluding cereals, animal products contribute 4 out of 22 series, or 18 per cent of the total. We find, as we should expect, that the effects of good and bad harvests or of wars, which increased the demand for food, are reflected most strikingly in the cost-of-living index and least of all in the index which excludes cereals. The consumers' goods index,

<sup>2</sup> The terms "corn" and "cereals" are used interchangeably in this article. The group is made up of the various grains listed and also of bread and biscuit. See page 33.

<sup>3</sup> Gilboy, *op. cit.*, p. 135.

CHART 1.—INDICES OF THE COST OF LIVING AND OF THE PRICES OF CONSUMERS' GOODS IN LONDON, ANNUALLY (1700/1 = 100. Logarithmic vertical scale)



with cereals weighted only in proportion to the number of series, occupies a middle position.

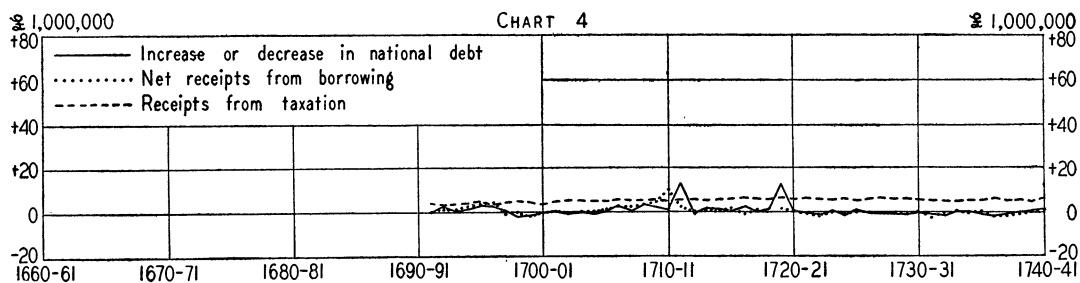
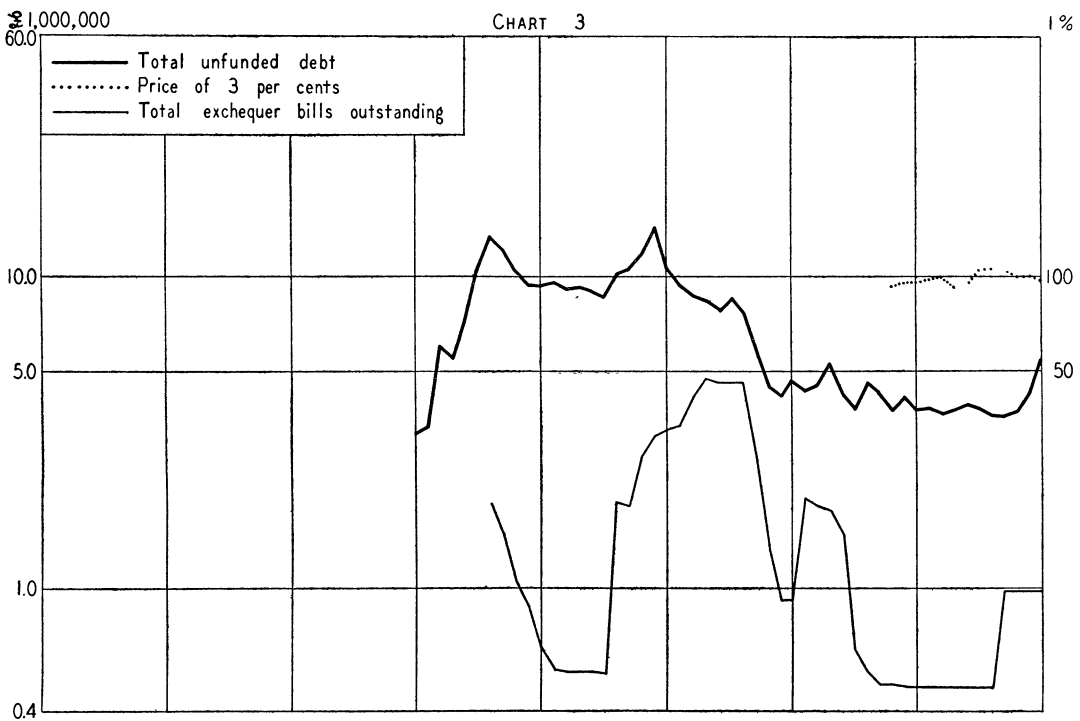
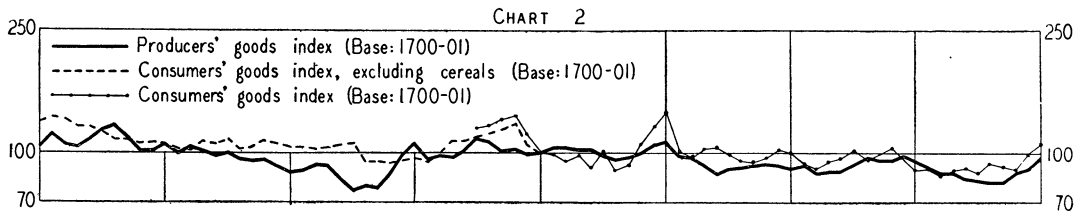
Prices for corn were relatively low in 1700, the base year for all the indices, and continued low for a few years. By 1709 and 1710, however, corn prices had risen considerably, and there-

after the cost-of-living index was almost always higher than the other two, while the index excluding cereals remained relatively low. After 1750 corn prices advanced rapidly, and the spread between the three indices increased. The difference in level becomes especially marked

CHART 2.—INDICES OF THE PRICES OF CONSUMERS' GOODS AND OF PRODUCERS' GOODS IN LONDON, ANNUALLY  
(Logarithmic vertical scale)

CHART 3.—THE UNFUNDED DEBT OF GREAT BRITAIN AND THE PRICE OF CONSOLS, ANNUALLY  
(Logarithmic vertical scale. Scale for debt at left, for 3 per cents at right.)

CHART 4.—TAX REVENUE, NET BORROWING, AND THE INCREASE IN THE NATIONAL DEBT OF GREAT BRITAIN, ANNUALLY  
(Arithmetic scale)





after 1790, in the years when the harvests were deficient.

In commenting on the character of the seasons from 1688 to 1792, Tooke states that the harvests were extremely bad in the years 1692

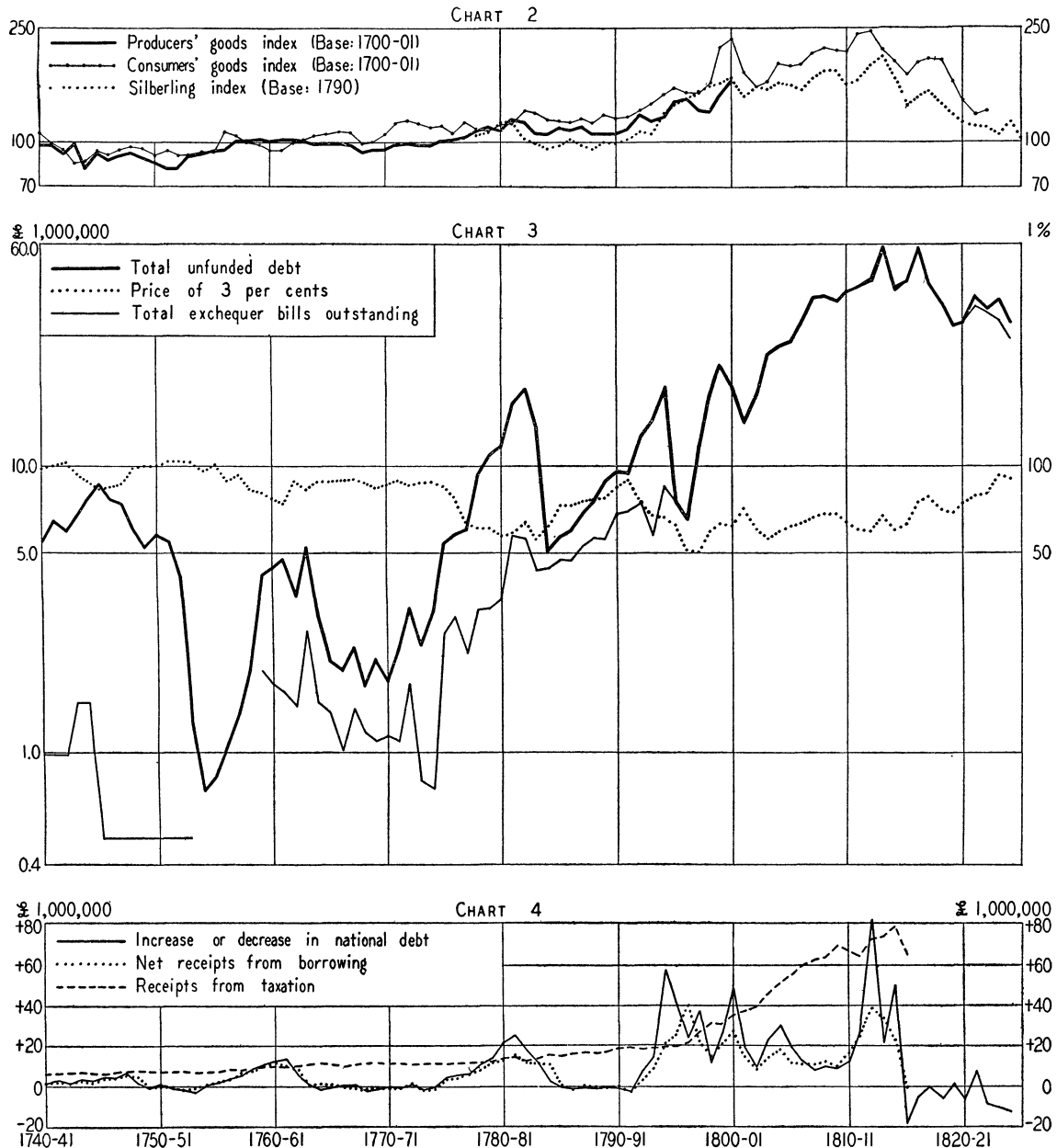
to 1699, 1709, 1710, 1740, 1756, 1765 to 1776, 1782, 1794, 1795, 1799, 1800, and from 1807 to 1812.<sup>1</sup> We find that these deficient harvests are reflected in substantial advances in the cost-of-

<sup>1</sup> Tooke, *op. cit.*, Part III.

CHART 2.—INDICES OF THE PRICES OF CONSUMERS' GOODS AND OF PRODUCERS' GOODS IN LONDON, ANNUALLY  
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(Arithmetic scale)



living index. There are three intervals when a series of bad harvests occurred in succession, and food prices remained very high for several years (1692-99, 1765-76, and 1807-12). In 1709-10, 1794-95, and 1799-1800, there were two successive years of scarcity and high prices. Corn was imported on a large scale in the scarce years after 1794, and payments to the continent for imports of corn during the Restriction period were instrumental in turning the foreign exchanges against England in such years as 1796, 1800, 1801, and 1810.<sup>1</sup>

The sensitiveness of corn prices to the effects of good and bad seasons, and the importance of the food crops in the general economy in the early eighteenth century, may well have led Tooke to overestimate the importance of harvests in his discussion of prices in the Restriction period.<sup>2</sup> Abundant or deficient harvests were, indeed, reflected in the year-to-year movements, but there were other elements influencing the trend of prices over long periods. Among these were certain credit and currency conditions.

From the middle of the seventeenth to the middle of the eighteenth century there were no violent price changes such as those which followed the Napoleonic and the Great Wars. Prices tended to decline gradually or to move along a horizontal line for nearly a hundred years, from 1660 to 1755 (Chart 2). One notable exception to the general trend appeared between 1688 and 1713—from the Glorious Revolution to the Peace of Utrecht—when prices rose from 1688 to 1698, fell irregularly to 1706, and rose to 1710. After 1755 all prices began to rise, with each peak higher than the preceding one. The rising tendency was much accelerated after 1790, but the fact must be emphasized that the spectacular behavior of prices during the French wars was the continuation of a movement under way for many years. All three indices (producers' goods, consumers' goods, and consumers' goods exclusive of cereals) took part in the advance, but the index of consumers' goods rose most rapidly because of the influence of corn prices.

<sup>1</sup> For a discussion of this problem, see Norman J. Silberling, "Financial and Monetary Policy of Great Britain during the Napoleonic Wars," *The Quarterly Journal of Economics*, xxxviii (1924), pp. 214-33.

<sup>2</sup> It is even possible that he may have assumed bad harvests in certain years from the fact that corn prices were high.

## INFLUENCE OF GOVERNMENT FINANCE

The major upward movements of prices in this long period took place in years when government expenditure was so large that extensive borrowing was necessary. Pertinent information about the fiscal operations of the British government for the years 1692 to 1825 is presented in Charts 3 and 4, and also in Tables 6 and 7 in the statistical appendix. The receipts from taxation, the net receipts from borrowing, the increase each year in the national debt, the total of the unfunded debt, the total amount of exchequer bills outstanding, and the price of the "three per cents" are charted year by year.<sup>3</sup> An explanation of the sources and significance of the figures is given in the statistical appendix and in the notes accompanying the tables.

Charts 3 and 4 are placed below Chart 2 (with its price indices) to facilitate comparison of changes in commodity prices, government borrowings, revenue from taxation, the size of the unfunded debt, and the price of government securities.

These three charts indicate that prices rose most when either the total unfunded debt was large or when borrowing was relatively heavy in proportion to revenue raised by taxation. Sometimes both of these conditions existed simultaneously, as in the years 1695-97, 1709-11, 1780-84, 1794-95, 1799-1801, and 1812-14. In all these years the advance in prices was striking.

Revenue from taxation increased very gradually and was subject to no serious fluctuations until the end of the eighteenth century, when it mounted rapidly as a result of new taxes imposed by Pitt to meet the huge expenses of the French wars. From 1692 to 1800 ordinary expenses of the government were met by taxation. The extraordinary expenses which necessitated loans were invariably the result of wars. After 1800, war expenses were met in considerable part by taxation.

Table 2 indicates to what extent Great Britain financed herself by taxes and to what extent by loans during those years in which she was engaged in major wars.<sup>4</sup>

<sup>3</sup> The price of consols (bearing 3 per cent interest) is given annually beginning with 1729.

<sup>4</sup> For an explanation of the source of the figures in Table 2, see Table 6, statistical appendix.

Borrowing was especially important during the three wars in the second half of the eighteenth century. In the Seven Years War (1756-63), the American Revolution (1776-85), and the first part of the French War (1793-1802), more than 40 per cent of current receipts were raised by loans. The proportion of total expenditures met by borrowing was especially high in 1795, 1796, 1797, and 1798. During the second half of the French War, from 1803 to 1815, despite the vastly larger expenditures

TABLE 2.—PERCENTAGE OF GOVERNMENT RECEIPTS RAISED BY TAXATION AND "NET" BORROWING

Years*	Raised by taxation	Raised by "net" borrowing
1689-1697	67.7	32.3
1702-1713	75.3	24.7
1740-1749	71.1	28.9
1756-1763	56.6	43.4
1776-1785	59.1	40.9
1793-1802	59.0	41.0
1803-1815	78.4	21.6
1793-1815	69.6	30.4

\* The years given are those in which the borrowing or funding for war purposes was extensive. The actual dates of the beginning and ending of hostilities follow:

May 1689-Sept. 1697	War with France, terminated by Peace of Ryswick
May 1702-March 1713	War of the Spanish Succession—Peace of Utrecht
Oct. 1739-Oct. 1748	War of the Austrian Succession—Treaty of Aix-la-Chapelle
May 1756-Feb. 1763	Seven Years War—Peace of Paris
June 1775-Sept. 1783	American Revolution and War with France and Spain—Treaty of Versailles
Feb. 1793-March 1802	War against France—Treaty of Amiens
May 1803-Nov. 1815	Napoleonic War—Treaty of Paris

made necessary by expanding war activities, nearly four-fifths of the total receipts were raised by taxes and only a little more than one-fifth by borrowing. In the two years 1813 and 1814, when war expenses were enormous, the proportion met by borrowing was approximately one-third.

These percentage figures differ by a wide margin from those presented by Silberling in his article on "The Financial and Monetary Policy of Great Britain during the Napoleonic Wars," in which he discussed this problem.<sup>1</sup> He concluded that, for the entire period 1793-1816,

<sup>1</sup> *Ibid.*, Table 3.

46.8 per cent of total British net receipts was raised by taxation (revenue) and 53.2 per cent by means of loans. For the second phase of the war, from 1803 to 1815, his table indicated that just 50 per cent of net receipts was derived from taxes and 50 per cent from loans. On the basis of the information contained in Tables 6 and 7 and summarized in Table 2, my impression is that a much larger proportion of net receipts was derived from taxation and a much smaller proportion from loans. According to these calculations, 41 per cent of net receipts was raised by loans from 1793 to 1802 and 21.6 per cent from 1803 to 1815. For the entire period 1793 to 1814, taxation accounted for 69.6 per cent and loans for only 30.4 per cent of net receipts. Chart 4 indicates that after 1797 and 1798 proceeds from taxation greatly exceeded proceeds from loans. The explanation of these differences rests on the fact that Silberling used a figure for gross borrowing which did not take into account the reduction of loans that was going on concurrently with new borrowing.<sup>2</sup> A large volume of exchequer bills and other short-term securities was retired each year with money raised by new issues of the same type, and the funded debt was being reduced through the operations of the sinking fund.

That Pitt and his successors made a really heroic effort to keep the national debt within bounds after 1797 is obvious from the record of taxation in the second phase of the war. Gladstone<sup>3</sup> pointed out that sums raised by taxation were sufficient to pay the expenses of the civil government, the whole outlay for the war, and interest on the debt as it stood before 1793. Additional loans were needed to pay charges on that part of the debt which had accumulated so rapidly and at such high interest rates after 1793. This drastic fiscal policy after 1800 probably contributed as much as anything else to preventing the paper pound from depreciating more in terms of the metallic currencies. Except for the years 1800-02 and 1809-15, the premium on gold or silver was always less than 10 per cent, and even in the worst year, 1813, it was less than 37 per cent. Much the same may

<sup>2</sup> For a complete explanation see columns 1, 2, and 3 of Table 6, statistical appendix.

<sup>3</sup> Quoted by Silberling in the article "Financial and Monetary Policy of Great Britain During the Napoleonic Wars," p. 219.



be said of the exchange on Hamburg.<sup>1</sup> This record compares very favorably with the experience with paper currencies during and since the Great War.

Table 3 gives some idea of the apportionment of government expenditures during typical years of peace and war.

TABLE 3.—EXPENDITURES OF GREAT BRITAIN\*  
(Unit: £1,000,000)

Year	Interest and management of public debt	Civil government	Army, navy, ordnance, and war expenditures	Total expenditures†
1692 (war)	0.20	0.66	3.39	4.25
1697 (war)	1.04	0.87	5.99	7.92
1700 (peace)	1.25	0.70	1.25	3.20
1711 (war)	1.81	0.67	12.66	15.14
1721 (peace)	3.31	1.00	1.56	5.87
1738 (peace)	2.06	0.86	1.78	4.72
1748 (war)	2.84	1.00	8.10	11.94
1754 (peace)	2.82	1.04	2.16	6.03
1761 (war)	3.82	1.26	16.03	21.11
1774 (peace)	4.61	1.09	3.86	9.98
1782 (war)	7.36	1.74	20.16	29.23
1789 (peace)	9.43	2.15	4.45	16.02
1797 (war)	13.59	3.03	41.03	57.65
1813 (war)	24.04	7.92	70.65	102.61
1816 (peace)	28.71	8.53	25.79	63.03

\* Parliamentary Papers, 1868-1869, Vol. 35, Part I, pp. 428-41.

† The figures in this column do not agree precisely with those for "approximate total expenditure" given in Table 6. A footnote under the latter table explains how the figures for approximate expenditure were derived.

The years of peace selected were those in which expenses were low, whereas the years of war selected were those in which expenses were very high. By 1700 the charges on the national debt exceeded expenditures for the civil government and were equal to the cost of maintaining the army and navy in time of peace. This charge grew rapidly until 1717, when it constituted nearly 60 per cent of total expenditure. It was then substantially reduced as a result of Walpole's conversion operations in 1717 and 1727. The government was able to borrow at 5 and then 4 per cent (instead of at 8 and 6 per cent, as had been the case from 1694 to 1716). Interest on the public debt increased by about 50 per cent during the Seven Years War (1756-63) and doubled as a result of the American Revolution. In 1789 the annual charges exceeded nine mil-

<sup>1</sup> R. G. Hawtrey, *Currency and Credit* (London, 1923), p. 276.

lions and were again nearly 60 per cent of the total cost of government in time of peace. At the end of the French Wars in 1815, these charges were just under twenty-seven millions.<sup>2</sup>

The expenses of the civil government were modest and increased very slowly to 1800. The change after 1800 is due partly to a difference in the methods of bookkeeping.<sup>3</sup> The cost of collecting and managing the various branches of the revenue is included under expenditures of the civil government beginning with 1801, but not before that year.

The expenses of the army and navy varied greatly. They were relatively large in the wars from 1689 to 1713 and again after 1756. The War of the Austrian Succession (1739-48) appears not to have put much financial strain on the country. The American Revolution was costly, and the Napoleonic Wars were long sustained and expensive beyond all precedent. By 1813 and 1814, total government expenditure was in excess of 100 million pounds a year, and was ten times as great as it had been just before the American Revolution. Less than 8 per cent of this was for the civil government. The remaining 92 per cent was either for war purposes or for interest on the public debt.

Present-day interest in the possible effects of government borrowing and expenditure on prices suggests that we turn to events in England over a long period when conditions were much simpler than they are at the present time, and observe the possible relation of prices to government expenditure and government borrowing.

We should expect increased government expenditure based on borrowing to have a twofold effect on prices:

1) The specific effect on those commodities purchased by the government for which demand is immediately increased. (In eighteenth century England, prices of such things as naval stores, military supplies, and clothing and food for the armed forces would have been directly acted upon by government purchases.)

2) The indirect effect on *all* prices of some degree of credit inflation either caused by or reinforced by fiscal operations of the government.

We should also expect the stimulating results

<sup>2</sup> The figure is even larger if interest on the Irish debt is included, as is often done in discussions of the national debt.

<sup>3</sup> See note 4 under Table 6.

of government expenditure in some lines to spread over other industries both as a consequence of purchases of raw materials and of increased consumer buying, following upon more employment and larger incomes in the industries first affected. An increased demand for certain articles may also lead to commercial adoption of inventions and technical changes which eventually have a revolutionary effect on industrial and commercial progress. In considering the relation between industrial expansion and a rising price level, it is hard to say which may be cause and which effect. Sometimes the necessary capital for new industries or products will be forthcoming only in an atmosphere of optimism, such as is produced by rising prices. At other times, the necessity for cutting costs during a depression may lead to important technological advances, and to such a reduction in price that consumption and production are vastly increased.

A discussion of such problems as these is beyond the scope of this article. I should like to remark, however, that the two periods of large government expenditure and rising prices (from 1689 to 1711 and from 1755 to 1814) were also periods of development and change in commerce, finance, and industry. I need only point out that in the earlier period there was a great impetus to company promotions of all kinds. The New East India Company, the Bank of England, and the South Sea Company were only three among a vast number of organizations founded in those years. In the latter period there were revolutionary changes in the technique of textile and iron production, the development of the steam engine, a tremendous increase in production of English manufactures and a corresponding increase in exports of those manufactures. The prosperity brought about by these changes enabled Pitt to raise the taxes necessary for carrying on the war. At the same time, government purchases contributed to the boom in industry and trade.

#### VOLUME OF CREDIT

We shall leave these more complicated problems and turn now to a consideration of the influence of government borrowing on the volume of credit. Credit transactions were far more extensive from 1660 to 1800 than has been commonly realized. Charts 2, 3, and 4 show that

considerable increases in public borrowing were accompanied by rising prices. This was especially true in years when the unfunded debt was large, as in 1695-97, 1709-11, 1780-84, 1794-95, 1799-1801, and 1813-14. The unfunded debt undoubtedly had much more influence on prices than the funded debt, because it led more directly to increases in the circulating medium.

The short-term obligations of the government, which made up the unfunded debt, either circulated as credit instruments themselves or were bought up by the Bank of England, which issued bank notes in place of them. The credit instruments consisted mainly of tallies, army bills, navy bills, exchequer orders, and exchequer bills. Tallies<sup>1</sup> were originally notched sticks which were given as receipts by the exchequer to revenue collectors. The stick was split, one half being retained by the exchequer and the other half given to the collector. Eventually these tallies were issued as security to people who made advances to Charles II and were also used by him in paying for supplies. This practice was continued by his successors. Sometimes revenue was anticipated by a whole year, and tallies would be at a considerable discount. The tallies became negotiable and passed from hand to hand. As it was difficult to write legible endorsements on sticks of wood, paper orders or assignments of revenue (exchequer orders) were authorized in 1667. The army and navy bills were similar orders issued by those departments in payment for supplies. These devices were all methods of mortgaging the expected revenues. When the total of such obligations was equal to three or four years' revenue, as was the case from 1695 to 1697 and again from 1709 to 1711, they were accepted with reluctance and circulated at a discount of from 10 to 30 per cent. A part of the rise in prices shown by our indices in the two periods mentioned above is explained by the fact that admiralty prices counted heavily in the indices and that navy bills were at a considerable discount at times. This was especially true in 1710, when they were issued on a very large scale.

In 1696 exchequer bills were issued for the first time because of the shortage of coin resulting from the calling in of clipped and worn

<sup>1</sup> See *Accounts and Papers*, 1857-58, Vol. 33, pp. 84-105, for an account of the various forms of the public debt, their origin, and progress.

coin during the recoinage which lasted from 1696 to 1698. This shortage at a time when the Bank was issuing its notes in exchange for depreciated tallies made it necessary for the Bank of England to suspend specie payments from the middle of 1696 to the end of 1697. Bank of England notes circulated at a discount which soon reached 16 per cent and once was as high as 24 per cent. The exchequer bills which the government issued at this crisis "were payable to bearer, bore interest at 3d. per cent per day, passed current quite freely, and were issued for amounts as low as £1."<sup>1</sup> During the Restriction period, a century later, the exchequer bills were usually in large denominations, and many of them were held as short term investments.

The government obligations which made up the unfunded debt were only a few of many credit instruments which circulated after 1660.<sup>2</sup> Among others were notes of the goldsmiths and checks on "running cash" accounts kept with the goldsmiths, who were the private bankers of the later Stuart period. From 1694 on, there were the notes of the Bank of England, and these notes expanded and contracted in response to changes in the unfunded debt of the government. Only a small number of country banks issued notes before 1750, and their notes did not become important until the third quarter of the eighteenth century. The bill of exchange—both foreign and inland—was a very common method of financing trade and industry from an early date. The surplus funds of the agricultural counties in the south and east were utilized for developing the industry of the midlands and the north of England by means of these bills, which passed from hand to hand by endorsement. In some parts of the country, bills of exchange were used in place of bank notes. This was true of the regions around Liverpool and Manchester until quite a late date.

The fiscal problems of the government in this period were often intimately connected with the financial operations of the great companies, which were founded primarily for the purpose of lending money to the government. The Bank of England was chartered in 1694 to lend £1,200,000 to the government; the New East

<sup>1</sup> A. E. Feavearyear, *The Pound Sterling: A History of English Money* (London, 1931), p. 133.

<sup>2</sup> For a detailed account see Feavearyear, *op. cit.*, and W. T. C. King, *History of the London Discount Market* (London, 1936).

India Company was given a monopoly of trade to the Indies in 1698 in return for a loan of £2,000,000; and the South Sea Company was founded in 1711 for the purpose of funding some £10,000,000 of floating government debt in exchange for its own stock. The bubble of 1720 resulted from the methods by which this company funded the remainder of the national debt existing at that time. Other companies made additional loans to the government from time to time, and the Bank of England always helped keep up the value of tallies and exchequer bills by holding a certain proportion of them. The suspension by the Bank in 1696 and 1697 was the consequence of its effort to maintain government credit. The depletion of the Bank's reserves which led to the suspension of specie payments a century later in 1797 is to be attributed in part, at least, to the discount of a huge volume of short-term bills for the government in 1794 and 1795 at the outbreak of the French wars.

In gauging the importance of these credit instruments, something needs be known about the amount of coin in circulation. It does not seem to have been large at any time nor to have increased very much between 1660 and 1800. During the recoinage (1696-98) all the silver which was very much clipped and worn was called in and recoinced. The total amount of new silver issued in these three years was £6,800,000.<sup>3</sup> Very little gold was in circulation at this time. The total of gold and silver may have been less than the value of tallies outstanding, which was supposed to have amounted to £8,000,000 during part of this period. Almost no silver was coined thereafter, as the mint price overvalued gold and undervalued silver. From 1695 to 1740 about £17,000,000<sup>4</sup> in gold was coined. Much of the silver issued during the recoinage was probably melted down and exported as bullion despite the law forbidding the melting or export of English coins. Bank officials testifying before the Bullion committee estimated the total coin circulating in England in the three years preceding the Bank restriction of 1797 as under £20,000,000. This figure excluded gold held by the Bank. In years of commercial activity and large government expenditures, coin in circulation must have been far less important quantitatively than the sum

<sup>3</sup> Feavearyear, *op. cit.*, pp. 130-31.

<sup>4</sup> *Ibid.*, pp. 145-46.

of bank notes, bills of exchange, deposit accounts, and short-term government paper.

The borrowing operations of the government certainly resulted either directly or indirectly in changes in the volume of fiduciary currency in circulation. The unfunded debt increased the circulation in the form of tallies, navy bills, and exchequer bills or in the form of Bank of England notes, which were issued in exchange for the government obligations. Government expenditures stimulated private business and increased transactions which required the use of transfers or checks on "running cash" (or bank deposits) and of bills of exchange. Purchase of consols and annuities by private investors also led to credit inflation in a number of ways. Private investors might either borrow from the banks to pay for these securities or use them as collateral for loans. We know little about the volume of such transactions, but they had probably become extensive by 1780. Feavearyear, in commenting on the crisis of 1783 and the drain of the reserves of the Bank of England, states, "The Directors grew very much concerned about the position, and began to look for some remedy. It was the practice at that period, when a loan was issued, for merchants and other persons of substantial credit who wished to subscribe, to draw a short-term bill upon their bankers, who discounted the bill at the Bank of England. Thus the Bank would finance a large part of the loan for the time being."<sup>1</sup> Silberling, who is our authority for the Restriction period, writes in his article on "British Financial Experience, 1790-1830" that "The use of government securities as collateral for private loans at the local bank is a topic upon which further research is needed to furnish sufficient information, but presumably the practice occurred on a considerable scale and in this manner the borrowing operations of the government contributed indirectly to the volume of the currency."<sup>2</sup>

### CONCLUSION

In conclusion, we may say that the high prices from 1689 to 1711 and the rising prices after 1755 occurred simultaneously with a relatively large volume of government expenditure for war purposes, met to an appreciable degree

<sup>1</sup> *Ibid.*, p. 164.

<sup>2</sup> Norman J. Silberling, this REVIEW, I (1919), p. 297.

by borrowing. This borrowing resulted in credit inflation, sometimes slight and sometimes considerable. At intervals financing of the unfunded debt put a real strain on the Bank of England and its resources, and extensive increases in the unfunded debt always had a direct and immediate effect on the volume of credit. A gradual advance in prices took place between 1755 and 1790, and was accompanied by extensive industrial changes, canal building, agricultural enclosure, and commercial expansion. The advance in prices was much accelerated between 1790 and 1800, and culminated in 1810 or 1814, depending on the price index we use.<sup>3</sup>

In the period of rapidly rising prices after 1790, the relation between government borrowing, the size of the unfunded debt, and price movements is especially noticeable even over relatively short periods. Prices rose most rapidly between 1794 and 1801—the years of heaviest government borrowing. Net receipts from borrowing reached a high point in 1797 and then declined substantially, whereas tax revenue rose steadily from 1798 to 1815 with only a slight halt in 1811 and 1812. (See Chart 4.) After 1801 and until the closing years of the war, credit expansion was the result of industrial and commercial demands rather than of government necessities. Prices rose, but more moderately than in the preceding period. Then the heavy expenses of the Spanish campaign from 1812 to 1814 led to extensive government borrowing—much of it in the form of exchequer bills—and prices again rose rapidly. Both prices and the unfunded debt were at their maximum in 1814.

The relation between price movements and fiscal policy from 1660 to 1822 is sufficiently regular to be of interest to contemporary students of public finance. This interest should be the greater in that there is a certain similarity between conditions in that period and at the present time with respect to outside influences. The eighteenth century was a period of economic nationalism with many restrictions on international trade and gold movements. Today we achieve much the same results by means of protective tariffs, quotas, gold embargoes, and exchange regulations. It is scarcely neces-

<sup>3</sup> According to Jevons, the peak of prices occurred in 1810, but according to Silberling, whose index appears on Chart 2, the peak occurred in 1814.



sary to point out that fiscal policy may influence prices to a much greater degree in a closed national economy than in a world of international free trade. It is now recognized that the possible

consequences of government borrowing and spending may be of great social significance. A study of past experiences should be of some assistance in mapping out wise fiscal policies.

CAMBRIDGE, MASSACHUSETTS

ELIZABETH BOODY SCHUMPETER

### STATISTICAL APPENDIX

#### *The Official Valuation and English Trade Statistics*

The official reports on trade statistics in England state that, from 1697 to 1854, the total value of England's foreign trade was derived by using a purely formal value figure (the "official valuation") in connection with the quantity figures reported by importers and exporters. Since little was known about the relation of this valuation to actual prices at the beginning of the period, and not much was known about the trend of prices between 1697 and 1780, most economic historians concluded that the foreign trade value totals reported had little meaning except as reflections of year-to-year changes in the physical volume of trade.

It was possible to establish the fact that the official valuation remained unchanged over most of this period, though it was not adopted in 1696 or 1697 as was commonly assumed, nor was it the valuation in the Book of Rates (1660). Between 1697 and 1700, there was obviously an effort to determine some kind of average wholesale price for each year, and the valuation changed from year to year as a consequence. For exports of English merchandise, there were few changes in valuations after 1700 or 1701. This seems to have been the accidental result of neglect and laziness on the part of the official in charge of the accounts rather than the consequence of a deliberate policy. The values used in those years eventually became the "official valuation." The situation with respect to the valuation of imports and re-exports was somewhat different. There were frequent changes in these valuations as late as 1725.

#### *Description of the Series*

The series in the consumption-goods group have already been described by Dr. Gilboy in her article in this REVIEW for August, 1936. Her remarks are equally applicable to the series in the producers' goods index from 1695/6 to 1800/1. A few of the series in the earlier index (1660/1-1696/7) were not supplied by the English Section of the International Price History Study, as has been already mentioned in the text. These prices (Deals Ordinary, Deals Sprutia, Duck, Timber Firr, and Tarr Stockholm) represent purchases by the admiralty, however, as do most of our original series. They were taken from a document in the Public Record Office, London, entitled *An Account of the Prices of the Naval Stores as they have been bought for the Service of the Crown since the year 1660 to 1696, sent to the Board from the Commissioners of the Navy* (P. R. O., London, Colonial Office 389, Vol. 15). This document quotes prices for nearly 200 articles. Among them were several species of Canvas, Deals, Hemp, Masts and Sparrs, Plancke, Oyle, Pitch, Rafters, Rozin, Tarr, Bowspritts, Yards, Firr Timber, and Wainscotts. Many of the quotations were at very irregular intervals. Only the five mentioned above occurred year after year so that they could be included in an annual index.

The series included in each index are as follows:

#### *Consumers' goods, 1660/1-1696/7 (1696/7=100)*

Broadcloth	} Sources for these are the same as for consumers' goods, 1695/6-1822/3.
Kersey	
Leather backs	
Tallow candles	
Wheat	
	} Prices of wheat at Eton College. (Tooke and Newmarch, <i>History of Prices, 1792 to 1856</i> , new edition, p. 387.)

#### *Producers' goods, 1660/1-1696/7 (1696/7=100)*

Deals Ordinary	} Prices of naval stores bought for the service of the Crown. (From a document in the Public Record Office, London, Colonial Office 389, Vol. 15.)
Deals Sprutia	
Duck	
Timber Firr	
Tarr Stockholm	
Bricks	} Sources for these are the same as for producers' goods, 1695/6-1800/1.
Copper Wrought	
Hemp	
Lead	
Train Oil	

#### *Consumers' goods, 1695/6-1822/3 (1700/1=100)*

##### I. Cereals

Barley, Beans, Biscuit, Bread, Flour, Oats, Peas, Rye, Wheat

##### II. Animal products

Beef for salting, Butter, Cheese, Hogs (pork)

##### III. Beverages and condiments

Ale, Beer, Cider, Hops, Malt, Pepper (white), Raisins, Sugar, Tea (Bohea)

##### IV. Candles and coal

Candles (tallow), Coal

##### V. Clothing

Broadcloth, Hair, Hats, (felt), Kersey, Leather backs, Linen (Brussels), Linen (Irish), Stockings (blue yarn)

These series are the same as those used by Dr. Gilboy in obtaining her index of the cost of living. For details as to source and interpolation, see "The Cost of Living and Real Wages in Eighteenth Century England," this REVIEW, XVIII (1936), pp. 136, 142, and 143.

#### *Consumers' goods (exclusive of cereals), 1695/6-1822/3 (1700/1=100)*

The series used are the same as those given above, except that the nine articles making up the cereal group are omitted.

#### *Producers' goods, 1695/6-1800/1 (1700/1=100)*

Bricks, 1660/1-1800/1	} The source of these series is in all cases the Admiralty Accounts—either The Treasurers' Ledgers and Bill Books or the Treasurers' and Contract Ledgers. Prices for Hemp, Tallow, and Train Oil were interpolated from Tooke at the end of the period.
Coal, 1683/4-1826/7	
Copper, 1660/1-1775/6	
Glue, 1695/6-1777/8	
Hemp, 1660/1-1793/4	
Lead, 1660/1-1800/1	
Leather backs, 1660/1-1792/3	
Lime, 1695/6-1778/9	
Pan-tiles, 1695/6-1800/1	
Plain tiles, 1695/6-1800/1	
Tallow, 1695/6-1779/80	
Train oil, 1660/1-1782/3	



*Statistical Methods*

The methods employed were the simplest available, because it was felt that the original data were so crude that they did not justify the employment of any elaborate statistical methods. Each group index is a simple unweighted arithmetic mean of the series composing it.

The base is the year 1700/1, except for the two seventeenth century indices (consumers' goods and producers' goods, 1660/1-1696/7), where the base is 1696/7. This was done because a number of series in the earlier indices were not available after 1696/7. There were two overlapping years between the earlier and the later indices—the years 1695/6 and 1696/7. To make these indices comparable on our charts, the earlier indices were transferred to a 1700/1 base by assuming that the relationship in the two overlapping years held throughout the period. For producers' goods the index was 10 per cent higher on the 1700/1 base than it had been on the 1696/7 base. For consumers' goods exclusive of cereals the index on the 1700/1 base was a little less than 16 per cent higher than it had been on the 1696/7 base.

*Note on the Clothing Group in the Consumers' Goods Index*

The clothing group is not really representative after 1790. A number of series drop out in 1792 and 1795, and cotton fabrics are never included. The absence of a series representing the prices of cotton goods is not significant before 1775, but becomes increasingly so thereafter. The domestic cottons worn in England before the inventions of the late 1760's were not pure cottons, but cottons and linens mixed. They were coarse fabrics and seemed to have had a price range similar to that for a corresponding grade of linen. In the last quarter of the eighteenth century, however, cloth made entirely from cotton became increasingly important both for domestic use and for export. In 1803 the official value for cottons exported was greater than that for woollens, and topped the list of British exports. With no quotations for cottons, and with several of the other series dropping out, the textile group index is much impaired after 1790.

*Difficulties with Respect to Harvest Years, Fiscal Years, and Calendar Years*

The years for which these prices are quoted are harvest years. The harvest year extended from the beginning of October in one year to the end of September in the following year or from Michaelmas to Michaelmas. Many of the official English accounts were kept for years which ended at Michaelmas (September 29). This was true of the accounts of government receipts, expenditures, and the national debt given in Tables 6 and 7. The question arises as to how such a year is to be designated. Is the year from October, 1700, to September, 1701, to be called 1700 or 1701? Unfortunately there seems to be no uniform practice. The English section of the International Price History Committee would write it "1700"; in almost all other connections (including the revenue and debt accounts mentioned above), it would be written either "1700/1" or "1701." Since only three months of the harvest year fall into the first of the calendar years, and nine months in the second, the latter practice seems less likely to cause confusion. In the case of grain prices, however, the period following the harvest would be most important, as Rogers frequently stated. (See *History of Agriculture and Prices*, Vol. II, p. xi.) This may be

the explanation of the practice of the English Price History Committee.

In making comparisons between price movements and the financial operations of the government, it is not feasible to refer to the same twelve months as 1700 for one purpose and as 1701 for another. I shall, therefore, take the precaution of using the somewhat awkward combination 1700/1, 1701/2, 1702/3, etc., in referring to prices for harvest years. In Dr. Gilbo's article these prices would be described as for the years 1700, 1701, 1702, etc. My revenue and debt statistics for 1700, 1701, 1702, etc., are for the years ending at Michaelmas 1700, 1701, 1702, etc.

The use of the harvest year may be well suited to agricultural prices, but is not so well suited to other prices, and it makes the problem of comparison with other series very difficult. Dr. Gilbo, for example, finds the high point of her cost-of-living index in the harvest year 1812, whereas Silberling and Tucker find their peaks in 1813. The harvest year 1812 ends at the beginning of October in 1813. I have attempted to cope with this difficulty by calling it the year 1812/3. One also encounters considerable confusion in interpolating missing years from other series where it is not clear whether the quotations apply to harvest years or calendar years; or even if it is clear, it is hard to decide what to do about it.

*Sensitiveness of Contract Prices*

The fact that these prices were contract prices results in a certain lack of sensitiveness from year to year for some but not all of the series. Most of the institutions mentioned above as the source of these price quotations bought their supplies under some sort of contract. It might have been for a few months, or for a year, or for several years. Short-term contracts were frequently renewed again and again without any change of price. Among the prices which sometimes went on at the same level for years were those for domestic building materials, such as brick, tiles, lime, lead, and copper; many of the common textiles (broadcloth, kersey, linen, and felt hats), glue, leather backs, beer, cider, and refined sugar. The most striking example is to be found in the case of the broadcloth for Westminster School and Abbey, which was bought for 8 shillings a yard for nearly a hundred years from 1703 to 1801. Other prices fluctuated widely from year to year. This was true of the prices for all the cereals and animal products, coal, cordage, hemp, salt, tallow, tallow candles, timber, and train oil. In general, it may be said that the prices of food, fuel, and imported raw materials changed considerably and frequently despite the existence of contracts. In these cases, the contracts must have been for brief periods.

*Reliability of the Price Indices over Long and Short Periods*

These three difficulties mentioned—the small number of series, the use of harvest years, and the existence of contract prices—are all much more important with respect to short periods than they are in connection with long-time trends. The indices may not always be accurate with respect to year-to-year changes. For this reason I have given up temporarily the attempt to find traces of short-time cyclical movements in prices either by studying these price indices alone or by using them in connection with other series for trade, security prices, and customs and excise revenue. The indices do, however, give a reasonably good idea of the trend of prices over long periods, and reflect the influence of conditions which acted on prices

for several years at a time or with special violence in a single year.

Notes to accompany Tables 6 and 7 (see pp. 36, 37):

Table 6

Footnote 1:

<sup>1</sup> These figures are taken from a Parliamentary report on Public Income and Expenditure. See Accounts and Papers, 1868-69, Vol. xxxv.

Footnote 2:

<sup>2</sup> The financial year ended at Michaelmas from early times down to 1799 (September 29 before 1752, when the calendar was changed, and October 10 after the change). Beginning with 1800, the financial year practically coincides with the calendar year except that it ends as of January 5 of the following year. The fact that the year 1800 ends on January 5, 1801 sometimes causes confusion.

Footnote 3:

<sup>3</sup> The items in this column are obtained by subtracting those of column 2 from column 1. The accounts for the receipts and expenditures of Great Britain in this period are presented in such a way that it is very easy to become confused as to the net proceeds from borrowing each year. The principal items are as follows:

Receipts	Expenditures
a) Balance at beginning of year	a) Total expenditure consisting for the most part of

b) Net income (mostly revenue from taxation)

c) Total raised by creation of debt

payments for interest and management of the public debt, charges of the civil government, and payments for the army, navy, and ordnance departments

b) Total applied to reduction of debt (both funded and unfunded)

c) Balance at the end of the year

Total receipts

Total expenditures

The total receipts are equal to the total expenditures. The figure for *net receipts from loans* is obtained by subtracting the total applied to the reduction of debt from the total raised by the creation of debt. A glance at column 2 will indicate the possibilities of serious error if this is not done.

Table 7

Footnote 1:

<sup>1</sup> These figures were taken from a parliamentary report on the National Debt of Great Britain. See *Accounts and Papers*, 1857-58, Vol. xxxiii.

Footnote 2:

<sup>2</sup> It is assumed that these figures are for the end of the Michaelmas quarter down to 1800, and that thereafter they are for the end of the year or for January 5 of the following year. See corresponding note, Table 6. It is possible that for certain years, notably 1712, these figures may be for some other period within the financial year.

TABLE 4.—ANNUAL PRICE INDICES FOR CONSUMERS' GOODS AND PRODUCERS' GOODS, ENGLAND, 1660/1-1696/7  
(1696/7 = 100)

Year <sup>1</sup>	Consumers' goods	Producers' goods	Year <sup>1</sup>	Consumers' goods	Producers' goods	Year <sup>1</sup>	Consumers' goods	Producers' goods	Year <sup>1</sup>	Consumers' goods	Producers' goods
1660/1	109	96	1670/1	92	97	1680/1	90	79	1690/1	83	97
1661/2	113	105	1671/2	89	91	1681/2	90	80	1691/2	82	87
1662/3	111	97	1672/3	88	96	1682/3	88	84	1692/3	86	89
1663/4	105	95	1673/4	94	92	1683/4	89	83	1693/4	95	88
1664/5	105	101	1674/5	101	89	1684/5	91	75	1694/5	95	92
1665/6	101	108	1675/6	96	91	1685/6	92	69	1695/6	96	101
1666/7	96	112	1676/7	89	87	1686/7	81	71	1696/7	100	100
1667/8	96	102	1677/8	90	85	1687/8	81	70			
1668/9	92	92	1678/9	95	86	1688/9	80	77			
1669/70	93	92	1679/80	93	82	1689/90	82	89			

<sup>1</sup> See note on harvest years in the statistical appendix.

TABLE 5.—ANNUAL INDICES OF ENGLISH PRICES, 1695/6-1822/3  
(1700/1 = 100)

Year <sup>1</sup>	Consumers' goods	Consumers' goods (exclusive of cereals)	Producers' goods	Year <sup>1</sup>	Consumers' goods	Consumers' goods (exclusive of cereals)	Producers' goods	Year <sup>1</sup>	Consumers' goods	Consumers' goods (exclusive of cereals)	Producers' goods
1695/6	121	112	112	1740/1	108	95	97	1785/6	119	106	113
1696/7	122	115	109	1741/2	99	97	97	1786/7	117	106	111
1697/8	128	119	101	1742/3	94	91	91	1787/8	121	111	113
1698/7	132	124	102	1743/4	84	86	98	1788/9	117	108	107
1699/1700	115	107	99	1744/5	85	87	81	1789/90	124	112	107
1700/1	100	100	100	1745/6	93	94	91	1790/1	121	109	107
1701/2	99	99	104	1746/7	90	89	86	1791/2	122	113	111
1702/3	94	102	104	1747/8	94	95	89	1792/3	129	117	124
1703/4	98	95	102	1748/9	96	93	91	1793/4	136	121	119
1704/5	89	88	102	1749/50	95	91	88	1794/5	147	119	122
1705/6	101	100	98	1750/1	90	85	85	1795/6	154	122	138
1706/7	88	90	95	1751/2	93	87	81	1796/7	148	142	141
1707/8	92	89	97	1752/3	90	85	81	1797/8	148	142	129
1708/9	107	94	100	1753/4	90	85	89	1798/9	160	146	128
1709/10	122	104	106	1754/5	92	88	91	1799/1800	212	168	144
1710/11	135	131	109	1755/6	92	89	93	1800/1	228	166	162
1711/12	101	98	98	1756/7	109	92	94	1801/2	174	149	...
1712/13	97	95	96	1757/8	106	94	101	1802/3	156	148	...
1713/14	103	95	91	1758/9	100	96	101	1803/4	161	151	...
1714/15	104	99	86	1759/60	98	97	102	1804/5	187	158	...
1715/16	99	96	89	1760/1	94	91	101	1805/6	184	159	...
1716/17	95	97	90	1761/2	94	90	102	1806/7	186	159	...
1717/18	93	94	91	1762/3	100	92	102	1807/8	204	167	...
1718/19	97	99	92	1763/4	102	94	101	1808/9	212	169	...
1719/20	102	96	91	1764/5	106	97	99	1809/10	207	169	...
1720/1	100	100	89	1765/6	107	96	99	1810/11	206	183	...
1721/2	92	96	91	1766/7	109	93	99	1811/12	237	181	...
1722/3	89	91	86	1767/8	108	92	98	1812/13	243	190	...
1723/4	94	89	87	1768/9	99	92	92	1813/14	209	189	...
1724/5	97	93	87	1769/70	100	92	94	1814/15	191	190	...
1725/6	102	97	92	1770/1	107	96	94	1815/16	172	160	...
1726/7	96	92	97	1771/2	117	103	98	1816/17	189	155	...
1727/8	99	92	95	1772/3	119	102	99	1817/18	194	170	...
1728/9	104	94	95	1773/4	116	101	98	1818/19	192	174	...
1729/30	95	91	98	1774/5	113	96	98	1819/20	162	148	...
1730/1	88	86	95	1775/6	114	102	101	1820/1	139	135	...
1731/2	89	90	90	1776/7	108	99	102	1821/2	125	129	...
1732/3	85	87	86	1777/8	117	106	104	1822/3	128	121	...
1733/4	88	87	86	1778/9	111	102	110				
1734/5	89	84	83	1779/80	110	106	113				
1735/6	87	81	82	1780/1	115	105	110				
1736/7	93	89	81	1781/2	116	106	120				
1737/8	91	85	81	1782/3	129	113	117				
1738/9	89	85	87	1783/4	126	111	108				
1739/40	100	85	89	1784/5	120	109	107				

<sup>1</sup> See note on harvest years in the statistical appendix.

TABLE 6.—PUBLIC FINANCE OF GREAT BRITAIN IN TIME OF WAR FROM 1689 TO 1816<sup>1</sup>  
(Unit: £ 1,000,000)

Year <sup>2</sup>	Gross receipts from loans	Expenditure for reduction of loans	Net receipts from loans <sup>3</sup>	Net income <sup>4</sup> (revenue from taxation)	Approximate total expenditure <sup>5</sup>	Percentage tax revenue to total expenditure	Year <sup>2</sup>	Gross receipts from loans	Expenditure for reduction of loans	Net receipts from loans <sup>3</sup>	Net income <sup>4</sup> (revenue from taxation)	Approximate total expenditure <sup>5</sup>	Percentage tax revenue to total expenditure
	(1)	(2)	(3)	(4)	(5)	(6)		(1)	(2)	(3)	(4)	(5)	(6)
1689-91	7.88	4.89	2.99	8.61	11.60	74.2	1760	14.46	5.20	9.26	9.21	18.47	50.0
1692	3.06	2.81	0.25	4.11	4.36	94.3	1761	17.84	5.76	12.08	9.59	21.67	44.3
1693	5.18	3.38	1.80	3.78	5.58	67.8	1762	16.71	6.58	10.13	9.46	19.59	48.3
1694	5.14	3.57	1.57	4.00	5.57	71.8	1763	12.56	4.39	8.17	9.79	17.96	54.5
1695	6.30	3.84	2.46	4.13	6.59	62.6	1776	7.99	4.86	3.13	10.58	13.71	77.2
1696	5.06	1.68	3.38	4.82	8.20	58.7	1777	10.58	6.28	4.30	11.11	15.41	72.1
1697	6.67	2.57	4.10	3.30	7.40	44.5	1778	11.50	5.49	6.01	11.44	17.45	65.5
1698	3.29	3.77	-0.48	4.58	4.10	111.7	1779	14.39	6.42	7.97	11.85	19.82	59.8
1699	2.88	3.20	-0.32	5.16	4.84	106.6	1780	19.11	7.72	11.39	12.52	23.91	52.4
1700	1.12	2.36	-1.24	4.34	3.10	140.0	1781	19.40	7.08	12.32	13.28	25.60	51.7
1701	2.06	2.26	-0.20	3.77	3.57	105.6	1782	22.74	7.49	15.25	13.76	29.01	47.5
1702	3.30	3.08	0.22	4.87	5.09	95.7	1783	17.38	5.93	11.45	12.68	24.13	52.5
1703	3.42	3.67	-0.25	5.56	5.31	104.7	1784	18.14	6.85	11.29	13.21	24.50	54.0
1704	3.92	3.51	0.41	5.39	5.80	92.9	1785	16.60	5.64	10.96	15.53	26.49	58.6
1705	4.22	3.71	0.51	5.29	5.80	91.2	1793	12.44	8.76	3.68	18.13	21.81	83.1
1706	5.40	3.67	1.73	5.28	7.01	75.4	1794	22.96	14.01	8.95	18.73	27.68	67.7
1707	6.10	3.13	2.97	5.47	8.44	64.8	1795	32.53	11.24	21.29	19.05	40.34	47.3
1708	5.69	3.19	2.50	5.21	7.71	67.6	1796	35.58	10.05	25.53	19.39	44.92	43.1
1709	8.77	4.93	3.84	5.21	9.05	57.5	1797	53.08	13.04	40.04	21.38	61.42	34.7
1710	7.78	3.31	4.47	5.25	9.72	54.0	1798	37.02	14.71	22.31	26.95	49.26	54.7
1711	14.96	4.72	10.24	5.18	15.42	33.6	1799	43.57	29.31	14.26	31.78	46.04	68.8
1712	5.67	3.08	2.59	5.75	8.34	68.9	1800	46.49	25.37	21.12	31.59	52.71	59.9
1713	3.03	2.85	0.18	5.78	5.96	97.0	1801	59.74	32.54	27.20	35.90	63.10	56.9
1740	2.16	1.90	0.26	5.75	6.01	95.7	1802	42.50	28.08	14.42	37.40	51.82	72.2
1741	3.95	2.75	1.20	6.24	7.44	83.9	1803	30.86	22.16	8.70	39.13	47.83	81.8
1742	5.10	2.60	2.50	6.42	8.92	72.0	1804	32.86	18.80	14.06	46.54	60.60	76.8
1743	5.59	3.54	2.05	6.57	8.62	76.3	1805	53.01	34.80	18.21	51.15	69.36	73.7
1744	6.09	2.98	3.11	6.58	9.69	67.9	1806	51.01	39.12	11.89	55.71	67.60	82.4
1745	5.18	2.90	2.28	6.45	8.73	73.8	1807	49.98	38.86	11.12	59.79	70.91	84.3
1746	7.44	3.56	3.88	6.25	10.13	61.7	1808	59.34	48.35	10.99	62.92	73.91	85.2
1747	7.72	3.47	4.25	6.96	11.21	62.1	1809	58.73	46.42	12.31	64.10	76.41	83.8
1748	8.61	3.43	5.18	7.20	12.38	58.2	1810	59.32	49.54	9.78	69.56	79.34	87.7
1749	8.02	3.01	5.01	7.49	12.50	59.9	1811	64.97	48.41	16.56	67.50	84.06	80.3
1756	4.77	1.98	2.79	7.01	9.80	71.5	1812	80.70	55.32	25.38	64.67	90.05	71.8
1757	6.35	3.15	3.20	7.97	11.17	71.4	1813	105.30	66.87	38.43	72.81	111.24	65.5
1758	8.74	3.29	5.45	7.95	13.40	59.3	1814	88.89	55.22	33.67	74.29	107.96	68.8
1759	10.29	3.06	7.23	8.15	15.38	53.0	1815	95.49	72.62	22.87	78.61	101.48	77.5
							1816	55.84	55.98	-0.14	65.16	65.02	100.2

<sup>1,2,3</sup> For notes, see p. 34.

<sup>4</sup> The total receipts of Great Britain are made up of *net income* and *receipts from loans* (total raised by debt creation). *Net income* consists almost entirely of revenue derived from taxation. In 1696, for example, most of the net income came from the customs, excise, and land tax. Small amounts were accounted for by stamp duties, the post office, poll taxes, and income from crown lands. At the end of the eighteenth century, an income tax was also contributing substantial amounts.

The figures are for *net income* down to 1800 and thereafter for *gross income*. The principal difference is that the figures for gross income include the costs of the collection and management of the various taxes. The difference is not sufficiently large to impair the value of the figures for the purposes for which they are being used.

<sup>5</sup> The items in this column have been obtained by adding those in columns 3 and 4. Column 5 really represents income available for expenditure but, as Silberling pointed out in the article quoted above (Q. J. E., February, 1924): "Since total income and total expenditure usually coincided within a very small margin (representing balances), the figures hold equally well as showing the proportion of revenue and borrowing to expenditure." This is substantially true if we correct the figures for receipts from loans by subtracting the expenditures for the reduction of loans and arrive at a figure which represents net borrowing each year. Because Silberling did not do this, his conclusions as to the percentage of total expenditure met by taxation differ substantially from those presented in column 6.



TABLE 7.—NATIONAL DEBT OF GREAT BRITAIN IN TIME OF WAR FROM 1691 TO 1816<sup>1</sup>  
(Unit: £1,000,000)

Year <sup>2</sup>	Exchequer bills outstanding	Unfunded debt	Funded debt	Total debt: funded and unfunded	Increase or decrease (-) in total debt <sup>3</sup>	Year <sup>2</sup>	Exchequer bills outstanding	Unfunded debt	Funded debt	Total debt: funded and unfunded	Increase or decrease (-) in total debt <sup>3</sup>
1691	....	3.13	....	3.13	....	1760	1.93	4.15	97.58	101.73	10.46
1692	....	3.31	....	3.31	0.18	1761	1.74	4.39	109.58	113.97	12.24
1693	....	5.90	....	5.90	2.59	1762	1.63	4.71	121.56	126.29	12.32
1694	....	5.53	1.20	6.73	0.83	1763	1.46	3.56	128.58	132.12	5.83
1695	....	7.24	1.20	8.44	1.71	1776	2.60	5.34	125.11	130.45	4.41
1696	0.05	10.38	1.20	11.58	3.14	1777	2.95	5.72	130.11	135.84	5.39
1697	1.88	13.32	1.20	14.52	2.94	1778	2.23	6.00	136.11	142.11	6.27
1698	1.50	12.25	3.20	15.45	0.93	1779	3.15	9.39	143.11	152.51	10.40
1699	1.05	10.60	3.20	13.80	-1.65	1780	3.16	10.94	155.11	166.06	13.55
1700	0.88	9.41	3.20	12.61	-1.19	1781	3.44	11.64	176.11	187.76	21.70
1701	0.65	9.35	3.20	12.55	-0.06	1782	5.71	16.45	196.36	212.81	25.05
1702	0.55	9.57	3.20	12.77	0.22	1783	5.59	18.51	211.36	229.88	17.07
1703	0.54	9.13	3.20	12.33	-0.44	1784	4.34	13.69	227.24	240.93	11.05
1704	0.54	9.16	3.20	12.36	0.03	1785	4.37	5.10	238.23	243.33	2.40
1705	0.54	8.94	3.20	12.14	-0.22	1793	7.46	12.66	232.06	244.72	7.31
1706	0.53	8.52	3.86	12.39	0.25	1794	5.80	14.38	244.94	259.32	14.60
1707	1.88	10.18	5.06	15.24	2.85	1795	8.41	18.49	297.39	315.88	56.56
1708	1.83	10.45	5.06	15.52	0.28	1796	7.41	7.41	349.95	357.36	41.48
1709	2.63	11.69	7.24	18.93	3.41	1797	6.57	6.57	375.16	381.73	24.37
1710	3.06	14.10	7.24	21.34	2.41	1798	11.69	11.69	406.83	418.52	36.79
1711	3.19	10.63	11.77	22.40	1.06	1799	17.61	17.61	413.54	431.15	12.63
1712	3.32	9.35	25.57	34.92	12.52	1800	22.04	22.04	435.15	457.19	26.04
1713	4.10	8.62	26.08	34.70	-0.22	1801	19.03	19.03	485.18	504.22	47.03
1740	0.98	4.17	42.74	46.91	0.52	1802	14.35	14.35	508.92	523.27	19.05
1741	0.98	5.43	42.74	48.17	1.26	1803	17.86	17.86	515.16	533.02	9.75
1742	0.98	6.39	45.14	51.53	3.36	1804	24.55	24.55	531.64	556.19	23.17
1743	0.98	5.95	46.94	52.89	1.36	1805	26.31	26.31	559.62	585.94	29.75
1744	1.49	6.69	49.74	56.43	3.54	1806	27.14	27.14	577.84	604.98	19.04
1745	1.49	7.67	51.74	59.41	2.98	1807	31.70	31.70	585.96	617.66	12.68
1746	0.50	8.54	55.73	64.27	4.86	1808	38.76	38.76	586.83	625.59	7.93
1747	0.50	7.64	61.13	68.77	4.50	1809	39.07	39.07	596.41	635.48	9.89
1748	0.50	7.39	68.06	75.45	6.68	1810	37.79	37.79	606.42	644.20	8.72
1749	0.50	6.00	71.13	77.13	1.68	1811	40.92	40.92	615.52	656.44	12.24
1756	....	0.82	73.75	74.57	2.08	1812	42.53	42.53	640.35	682.88	26.44
1757	....	1.07	76.75	77.82	3.25	1813	44.75	45.55	717.51	763.06	80.18
1758	....	1.37	81.75	83.12	5.30	1814	56.99	57.78	727.77	785.55	22.49
1759	....	1.93	89.34	91.27	8.15	1815	41.44	42.23	792.03	834.26	48.71
						1816	44.46	44.46	772.76	817.23	-17.03

<sup>1,2</sup> For notes, see p. 34.

<sup>3</sup> It will be observed that the increase or decrease in the national debt by no means agrees with the amount of money actually available each year as a result of borrowing operations (net receipts from loans in Table 6). This is shown clearly in Chart 4. The differences are especially striking in 1711, 1712, 1720, 1780 to 1783, and after 1794. It seems likely that some funding operation begun in 1711 was not completed or recorded in the national debt statistics until 1712. The great increase in the debt in 1720, when there was no new borrowing, can be explained by the fact that the South Sea Co. took over and funded terminable annuities which had no capital value appearing in the accounts of the public debt. In stating the public debt, the treatment of terminable annuities (annuities for lives or terms of years) was always a difficult matter because they were sold as income and not as capital. It is my impression that sometimes they are included, and that at other times they are not included in the figures given above.

The principal reason for discrepancies from 1780 to 1783

and after 1794 may be attributed to the system of selling consols bearing a low rate of interest at a considerable discount. Usually the debt was increased by more than the increase in net receipts from borrowing because bonds were issued bearing less than the prevailing rate of interest. Sometimes, however, the operation of Pitt's Sinking Fund brought about just the opposite result. The fund would buy up at a considerable discount consols bearing 3 per cent interest and retire them. Simultaneously the government might issue a smaller volume of new bonds at 4 or 5 per cent. The retiring and funding operations during the French wars are most confusing and difficult to understand. In contemporary discussions of the financing of a given year, it is almost never clear as to whether the writer's figures are for (a) gross receipts from borrowing, (b) net receipts from borrowing, (c) the increase in the funded debt, or (d) the increase in the total debt, funded and unfunded.

For the most part, the authors appear to be unaware of these distinctions.