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*A Quantitative Approach to the Study of
the Effects of British Imperial Policy
upon Colonial Welfare: Some
Preliminary Findings**

HISTORIANS have long debated whether the American colonies on balance benefited or were hindered by British imperial regulation. George Bancroft thought the regulations worked a definite hardship on the colonies. George L. Beer believed these regulations nicely balanced and that the colonies shared in the general advantages. Lawrence Harper, in a now classic article, actually attempted to calculate the cost and found that British policies "placed a heavy burden upon the colonies."¹ Oliver Dickerson wrote that "no case can be made . . . that such laws were economically oppressive,"² while Curtis P. Nettels, writing at the same time to the same point, stated: "British policy as it affected the colonies after 1763 was restrictive, injurious, negative."³ It is quite evident that a difference of opinion exists among reputable colonial historians over this important historical issue.

In this paper an effort is made to meet this issue head on. I shall attempt to measure, relative to a hypothetical alternative, the extent of the burdens and benefits stemming from imperial regulation of the foreign commerce of the thirteen colonies. The main instruments of this regulation were the Navigation Acts, and we shall confine our attention to evaluating the effect of these Acts upon colonial welfare. Various other imperial regulations such as the Rev-

* The paper is a progress report on one aspect of a larger study of the effects of British imperial policy upon colonial welfare. All computations in this study are preliminary and subject to revision. I have benefited from conversations with many persons, especially Douglass C. North and James Shepherd. The former was especially helpful in pointing out several errors in a previous draft. Since I did not take all his advice, he is not responsible for any errors that may remain. J. N. Sharma and James Livingston served ably as my research assistants. The National Science Foundation provided support for the project on which this paper is based. Due to space limitations an appendix explaining how the calculations were made has been deleted, but it is available to the interested reader from the author.

¹ "Mercantilism and the American Revolution," *Canadian Historical Review*, XXIII (Mar. 1942), 3.

² *The Navigation Act and the American Revolution* (Philadelphia: University of Pennsylvania Press, 1951), p. 55.

³ "British Mercantilism and the Economic Development of the Thirteen Colonies," *JOURNAL OF ECONOMIC HISTORY*, XII, No. 2 (Spring 1952), 114.

enue Acts, enacted after 1764, the modification of naturalization and land regulations, the interference with colonial issues of paper money, and the various regulations discouraging manufactures will not be dealt with in this paper. The assumption is that the direct effects of these regulations upon the economic welfare of the American colonists were insignificant compared to the effects of the Navigation Acts.⁴

The hypothesis of this paper is that membership in the British Empire, after 1763, did not impose a significant hardship upon the American colonies. To test this hypothesis I shall endeavor to bias the estimates against the hypothesis, thus not attempting to state what actually would have happened but only that it would not have amounted to as much as my estimate. The end result will, therefore, err on the side of overstating the real costs of the Navigation Acts to the thirteen colonies.

The traditional tools of economic theory will guide the preparation of these estimates. Two series of estimates will be prepared where possible: one, an annual average for the period 1763-1772, based upon official values; the other, for the single year 1770. The official trade statistics for the year 1770 have been adjusted to make them more accurate.⁵

I

Is it legitimate for the historian to consider alternative possibilities to events which have happened? . . . To say that a thing happened the way it did is not at all illuminating. We can understand the significance of what did happen only if we contrast it with what might have happened.

MORRIS RAPHAEL COHEN⁶

All attempts at measurement require a standard to which the object being measured is made relative or compared. In the case of this paper, the colonies either on balance benefited or were burdened by British imperialism, relative to how they would have fared under some alternative political situation. The problem is to pick the most probable alternative situation.

⁴ The effects of British regulations not considered in this paper will be taken into account in the larger study now in process.

⁵ The statistics on colonial exports have been adjusted in a manner suggested by James Shepherd and used by him in preparing his balance of payments for the colonial period. Imports, due to a lack of prices, were adjusted by the Schumpeter-Gilboy price index.

⁶ Quoted in Robert W. Fogel, *Railroads and American Economic Growth* (Baltimore: Johns Hopkins Press, 1964), p. 17.

The only reasonable alternative in this case is to calculate the burdens or benefits of British regulation relative to how the colonies would have fared outside the British Empire but still within a mercantilist world. Considered within this political environment there is little doubt that prior to February 1763, when the Treaty of Paris was signed, the American colonies on balance benefited from membership in the British Empire. Before that date, the colonies were threatened on two sides by two superior colonial powers. C. M. Andrews has pointed out that, before 1763, in addition to remaining within the protection of Great Britain, the American colonies had only one other alternative: domination by another European power, probably France or Spain. Clearly, from a colonial point of view, belonging to the British Empire was superior to membership in any other.⁷

The French and Indian War ended the menace of foreign domination through the cession to Great Britain of Canada by the French and of Florida by Spain.⁸ Immediately, thereupon, several Englishmen voiced their fears that these spoils of victory, by removing the foreign threat, made inevitable the independence of the American colonies.⁹ Even the French Foreign Minister, Choiseul, lent his voice to this speculation when, soon after the Treaty of Paris, he predicted the eventual coming of the American Revolution. In 1764, Choiseul went so far as to send his agents to America to watch developments.¹⁰ Knollenberg has pointed out that English suspicions of a desire for independence on the part of the colonies do not prove that the suspicions were well founded.¹¹ They do, however, suggest that an independent America was, by 1763, a distinct possibility; and thereafter the American colonists possessed another alternative to membership in a European empire. This alternative was an independent existence outside the British Empire but still within a mercantilist world.

The alternative situation that I shall employ to calculate the economic effects of the Navigation Acts after 1763 is that of a free

⁷ JOURNAL OF ECONOMIC HISTORY, XII (1952), 114.

⁸ In 1790, nearly 80 per cent of the residents of the United States traced their origin, or that of their ancestors, to the British Isles.

⁹ Bernhard Knollenberg, *Origin of the American Revolution: 1759-1766* (New York: Collier Books, 1961), p. 18.

¹⁰ Max Savelle, "The American Balance of Power and European Diplomacy, 1713-78," in Richard B. Morris, ed., *The Era of the American Revolution* (New York: Columbia University Press, 1939), p. 162.

¹¹ Knollenberg p. 19.

and independent thirteen colonies outside the British Empire. This new nation would, therefore, be subject to most of the same restrictions hindering foreign nations attempting to carry on commerce with the eighteenth-century British Empire.¹²

II

Had the wealth and economic potential of the thirteen Atlantic colonies depended solely on farming, their growth history might have paralleled that of many another slowly developing agricultural settlement. However . . . an indigenous commercial economy developed, unique in colonial history and conducive to sustained growth.

GEORGE ROGERS TAYLOR¹³

This “unique” commercial economy developed within the British Empire subject to the rules and regulations of the Navigation Acts. The American colonies in a sense grew up with the empire, which after the successful conclusion of the Seven Years’ War in February 1763, was the wealthiest, most populous colonial empire in the world. It included the kingdom of Great Britain and Ireland with the outlying islands of Europe; trading forts on the Gold Coast of Africa; enclaves in India, and some minor islands in Asia; Newfoundland, Hudson Bay, Nova Scotia, Quebec, the thirteen American colonies, East Florida, and West Florida on the continent of North America; the Bahamas, Bermuda, Jamaica, Antigua, Barbados, and the Leeward and Windward groups of minor islands in the West Indies, as well as the settlement of Belize in Central America.

The American colonies by 1763 formed the foundation of Great Britain’s Atlantic empire and had become, as a group, England’s most important commercial ally.¹⁴ The basis of this commerce was a vigorous colonial export trade. The total exports in 1770 amounted to £3,165,225. Trade with Great Britain and Ireland accounted for 50 per cent of colonial exports. The West Indies trade constituted another 30 per cent, and commerce with southern Europe and the Wine Islands, another 17 per cent. Trade with Africa and South America accounted for most of the residual.

The colonists, of course, used their exports to purchase imports.

¹² This was certainly the case after the American Revolution.

¹³ “American Economic Growth Before 1850: An Exploratory Essay,” *JOURNAL OF ECONOMIC HISTORY*, XXIV, No. 4 (Dec. 1964), 435.

¹⁴ B. R. Mitchell, *Abstract of British Historical Statistics* (Cambridge [Eng.]: University Press, 1962), p. 312.

They were Great Britain's most important customer and Great Britain their most important supplier. The British Isles shipped to the American colonies in 1768 (a year for which a detailed breakdown is available) £2,157,000 worth of goods, or nearly 75 per cent of all colonial imports, which totaled £2,890,000. Of this, £421,000 were British reexports from northern Europe.¹⁵ The West Indies, the other important source of imports, accounted for 20.5 per cent of the colonial imports; southern Europe and the Wine Islands, 2.9 per cent; and Africa, a little less than 2.0 per cent.

The thirteen American colonies carried on this foreign commerce subject to the constraints of a series of laws designed to alter the trade of the British Empire in the interests of the mother country.¹⁶ This commercial system can be viewed as being made up of four types of laws: (1) laws regulating the nationality, crews, and ownership of the vessels in which goods could be shipped; (2) statutes regulating the destination to which certain goods could be shipped; (3) laws designed to encourage specific primary industries via an elaborate system of rebates, drawbacks, import and export bounties, and export taxes; (4) direct prohibition of colonial industries and practices that tended to compete with English industries or to harm a prominent sector of the British economy or even, occasionally, the economy of a British colony.¹⁷ These laws, it should be stressed, did not regulate the American colonies alone, but with occasional local modifications applied equally to the entire British Empire.

The laws regulating the nationality of vessels were designed to insure a monopoly of the carrying trade of the empire to ships of the empire. In the seventeenth and eighteenth centuries the freight factor on goods traded internationally probably averaged at least 20 per cent, and these laws were designed to insure that this revenue stayed within the empire.¹⁸ The Navigation Acts also insured,

¹⁵ The values of imports are the official values f.o.b. Great Britain. For that reason, they are probably approximately 10 to 20 per cent too low. Import figures for 1768 were used because detailed breakdowns for 1770 were unavailable when this paper was written.

¹⁶ Sir William Ashley thought the regulations of English mercantilism were pious formulas nullified in the actual world of commerce by fraud and evasion when they existed contrary to national commercial habits. Studies by Lawrence Harper have indicated that the burden of the Navigation Acts was in fact felt in transatlantic commerce.

¹⁷ The Molasses Act of 1733 was a law enacted in the interest of the British West Indies. This law taxed foreign molasses sufficiently to make the molasses of the British West Indies competitive. The law was, however, widely evaded.

¹⁸ Export commodities shipped to the West Indies were reputed by one source to be worth £ 275,000 when they left the American colonies and £ 500,000 when

to the extent that they were effective, that England would be the entrepôt of the empire and that the distributing trade would be centered in the British Isles.

The commodity clauses of these various regulatory Acts controlled the destination to which certain goods could be shipped. These enumerated commodities generally could be shipped only to England. The original list contained tobacco, sugar, indigo, cotton-wool, ginger, fustic and other dyewoods. Later, naval stores, hemp, rice, molasses, beaver skins, furs, and copper ore were added. The Sugar Act of 1764 added coffee, pimiento, coconuts, whale fins, raw silk, hides and skins, potash and pearl ash to the list. In 1766, the law was amended to prohibit the direct export of any colonial product north of Cape Finisterre.

There were exceptions and compensations to these commodity clauses which benefited the American colonies. Rice, after 1730, could be directly exported south of Cape Finisterre and, after 1764, to South America. Tobacco was given a monopoly in Great Britain, as its local cultivation was prohibited. While the list appears extensive, of the enumerated commodities only tobacco, indigo, copper ore, naval stores, hemp, furs and skins, whale fins, raw silk, and potash and pearl ash were products of the thirteen colonies, and only tobacco, rice, and perhaps indigo and naval stores could be considered major exports of the colonies that later became the United States.

An elaborate series of laws was enacted by the English Parliament to encourage specific industries in the interest of a self-sufficient empire. These included preferential tariffs for certain goods of colonial origin. A distinctive feature of these laws was an elaborate system of rebates and drawbacks to encourage the exports of certain commodities from England and extensive bounties to encourage the production of specific goods for export to Great Britain.

Most enumerated goods benefited from a preferential duty. These goods were thus given a substantial advantage in the markets of the mother country. Goods receiving preferential treatment in-

they arrived in the West Indies. The freight factor is thus over 30 per cent. The return trip saw excess cargo capacity and therefore lower rates. The freight factor on the return trip was but 5 per cent. Herbert C. Bell, "West Indian Trade before the Revolution," *American Historical Review*, XXII, No. 2 (Jan. 1917), 273-74.

cluded cotton-wool, ginger, sugar, molasses, coffee, tobacco, rice, naval stores, pitch, rosin, hemp, masts, whale fins, raw silk, potash and pearl ash, bar and pig iron, and various types of lumber. Certain of these goods also received drawbacks of various amounts upon their reexport from Great Britain. Foreign goods competing in the English market with enumerated colonial commodities were thus subject to a disadvantage from these preferential duties.

A system of bounties was also implemented to encourage the production of specific commodities in the colonies or to allow the British manufacturers to compete with foreign exports in the colonial markets. The production of naval stores, silk, lumber, indigo, and hemp was encouraged in the colonies with bounties. In the mother country the manufacture of linen, gunpowder, silks, and many nonwoolen textiles was encouraged by a bounty to allow these products to compete with similar foreign manufactures in the colonial markets.

Certain of the colonial commodities favored by legislation were given what amounted to a monopoly of the home market of the mother country. The colonial production of tobacco, naval stores, sugar and sugar products was so favored. In the case of tobacco, the major share of total imports was reexported, so the local monopoly proved not a great boon.

In economic terms, the Navigation Acts were designed to insure that the vast bulk of the empire's carrying trade was in ships owned by Englishmen. The design of the commodity clauses was to alter the terms of trade to the disadvantage of the colonists, by making all foreign imports into the colonies, and many colonial exports whose final destination was the Continent, pass through England. The effect was to make colonial imports more expensive and colonial exports less remunerative by increasing the transportation costs of both. Finally, through tariff preferences, bounties, and outright prohibitions, resources were allocated from more efficient uses to less.

I shall approach the problem of assessing the overall effect of the various British regulations of trade by considering their effect on the following aspects of the colonial economy: (1) exports of colonial products; (2) imports into the colonies; (3) colonial foreign commerce; and (4) colonial shipping earnings. An assessment will then be undertaken of compensating benefits arising from

membership in the British Empire. Finally, an attempt will be made to strike a balance on the total impact of British imperial policy upon the colonial economy.

III

The enumeration of key colonial exports in various Acts . . . hit at colonial trade both coming and going. The Acts . . . placed a heavy burden upon the colonies.

LAWRENCE HARPER¹⁹

In spite of the extravagant language that has been used to condemn the system, the grower of enumerated commodities was not enslaved by the legal provisions of enumeration . . . Enumeration clearly did not hamper the expansion of the tobacco raising business in America . . . It has been assumed by many writers that enumeration imposed a serious burden upon rice planters. The ascertainable facts do not support this assumption.

OLIVER DICKERSON²⁰

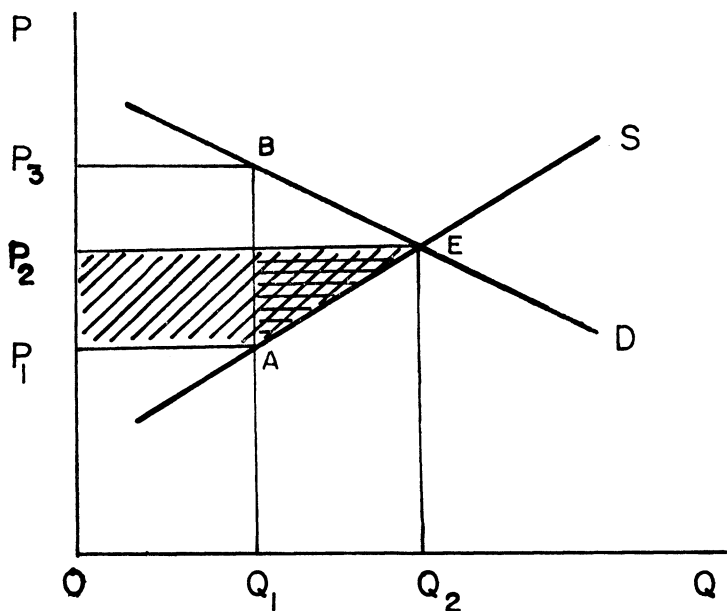
The export trade between the colonies and the mother country was subjected to regulations which significantly altered its value and composition over what it would have been if the colonies had been independent. The total adjusted value of exports from the American colonies to Great Britain in 1770 was £1,458,000, of which £1,107,000, or 76 per cent, were enumerated goods. Such goods were required to be shipped directly to Great Britain. The largest part, 85.4 per cent, of the enumerated goods was subsequently reexported to northern Europe and thus when competing in these markets bore the burden of an artificial, indirect routing through England to the Continent. The costs of this indirect route took the form of an added transshipment, with the consequent port charges and fees, middlemen's commissions, and what import duties were retained upon reexport. The enumerated goods consumed in England benefited from preferential duties relative to goods of foreign production. A few of these enumerated commodities also were favored with import bounties.

The additional transport costs borne by enumerated goods upon their reexport had the effect of lowering the prices received by the colonial producer and depressing the quantity exported. In economic terms, the world market price as shown in Graph 1 would, in the absence of regulation, be P_2 and exports would be Q_2 . The

¹⁹ *Canadian Historical Review*, XXIII (1942), 3.

²⁰ Dickerson, p. 33.

effect of the additional cost of shipment through England is to raise the price to the consumer to P_3 . Colonial exports, consequently, are reduced to Q_1 . Therefore, both consumers and producers suffer from the enumeration of colonial exports whose final destination is not England.



Graph 1

The incidence of this burden depends upon the elasticities of supply and demand for the product. The direct cost to the producer as shown in Graph 1 is the unit burden times the quantity produced ($P_2P_1 \cdot Q_1$).²¹ The burden on the reduced output is equal to the return that would be earned on the additional output over what the resources would earn in their next-best alternative. This cost is illustrated by the shaded triangle in Graph 1 and represents the sum of the direct and indirect burdens.

In order to calculate the direct burden borne by the colonial producers of enumerated goods that were reexported from England, we need to know three separate time series. In the case of tobacco, we need to know the world market price in a European port, the

²¹ Since most tobacco was exported, exports for all practical purposes equal output or production.

price actually received in the colonies, and the actual reexports of tobacco from England—all three of which are readily available.²²

The price that would have existed in the colonies in the absence of enumeration can be estimated, given the above information. It was estimated by dividing the observed Amsterdam price of Virginia tobacco before the Revolution by the ratio of Amsterdam to Philadelphia tobacco prices after the Revolution.²³ The postwar ratio of prices reflects the advantages received by the colonists by shipping directly to northern Europe rather than indirectly through England. This procedure provides us with an estimate of the price of tobacco in the colonies (P_2 on Graph 1) had tobacco not been subject to enumeration. The difference between the estimated price (P_2) and the actual price (P_1) is the unit burden suffered by re-exported colonial tobacco.

Calculated in this manner, the price of tobacco in 1770 colonial America, had the colonies been independent, would have been over 49 per cent higher than it actually was. The average price for the decade 1763-1772 would have been 34 per cent higher than was actually recorded. These higher prices indicate that tobacco planters suffered a burden on the tobacco they actually grew in 1770 of £262,000 and, for the decade, an average annual burden of £177,000.

The direct burden is only a portion of the total colonial loss due to enumeration. The hypothetical higher tobacco prices would certainly have stimulated an increase in the supply of tobacco. Assuming that a 1 per cent increase in price would generate a 1 per cent increase in supply, the resulting increase in supply would have been about 39,000,000 pounds in 1770, or an annual average of 29,000,000 pounds for the decade.²⁴ The loss to the colonies of this foregone

²² For Philadelphia prices, Anne Bezanson, *et al.*, *Prices and Inflation during the American Revolution: Pennsylvania, 1770-1790* (Philadelphia: University of Pennsylvania Press, 1965). For a European port, Amsterdam prices have been used as found in N. W. Posthumus, *Inquiry into the History of Prices in Holland* (Leiden: E. J. Brill, 1946). For tobacco quantities, see *Historical Statistics of the United States, Colonial Times to 1957* (Washington: U. S. Government Printing Office, 1960), series 230-37, p. 766.

²³ Albert Fishlow, discussion of a paper by Gordon Bjork, "The Weaning of the American Economy: Independence, Market Changes, and Economic Development," *JOURNAL OF ECONOMIC HISTORY*, XXIV, No. 4 (Dec. 1964), 565.

²⁴ This amounts to assuming an elasticity of supply of one. This is probably optimistic, since the average exports of tobacco between 1790 and 1793 were 28 per cent greater than the average for the period 1763-72 and 41 per cent greater than for 1770. This suggests on a crude base an elasticity of supply between .8 and .9. Bjork also found that tobacco prices after the Revolution rose sharply.

output is the calculated value of the shaded triangle in Graph 1, which is £64,000 for 1770, or an average of £30,000 for the decade.²⁵ Thus, the total burden on tobacco amounts to £326,000 for the year 1770, or an average of £207,000 for the period 1763-1772.

The calculation of the encumbrance suffered by rice proceeded in the same manner as the calculation of the burden on tobacco, except that Charleston prices were used instead of Philadelphia prices since South Carolina was the center of colonial rice production. The burden on the price of rice reexports was calculated to be an appreciable 105 per cent. This amounted to £95,000 in 1770, or £110,000 average for the decade 1763-1772.²⁶

The indirect loss attributable to the expected increase in rice exports with the increase in price amounted to £25,000 for 1770, or an average of £29,000 for the longer period. In the case of rice, an elasticity of supply of .5 was assumed, due to the limited area of southern marshlands suitable to the cultivation of rice. The whole burden on rice products totaled £120,000 for 1770, or an average of £139,000 for the period 1763-1772.

Tobacco and rice together accounted for the vast bulk of the enumerated products that were reexported and therefore bore most of the burden. If we apply the weighted average of the tobacco and rice burden to the remainder of enumerated reexports, and adjust for the expected increase in supply, we obtain an estimated additional burden of £53,000 for 1770, or an annual average of £35,000 for the ten-year period.

However, to arrive at the total burden on enumerated exports we must allow for the benefits that colonial exports received from preferential duties or bounties. Most enumerated commodities benefited from one or the other: beaver skins, furs, and copper ore appear to be the only exceptions. Enumerated goods consumed in Great Britain amounted to £161,570 in 1770, or an average of £126,716 for the decade. The average preference amounted to 38 per cent of the price of enumerated products consumed in the

²⁵ The indirect burden suffered because of the loss of exports is calculated as the unit burden times the increased output that would have been exported, divided by two.

²⁶ For rice, the prices are to be found in Arthur H. Cole, *Wholesale Commodity Prices in the United States, 1700-1861, Statistical Supplement* (Cambridge: Harvard University Press, 1938). The rice estimate was made on the basis of but one observation in the colonial period (1760). The author considers the rice estimate optimistic.

mother country.²⁷ Again, assuming an elasticity of supply of one, we find that in the absence of these preferential duties the first-order effects would result in a decline in the amount of these enumerated commodities consumed in England of about £61,000 for 1770, or an average of £48,000 for the decade. The benefit of preferential duties to the colonists is the gain enjoyed by those exports that would have been sent to England in the absence of preferential duties had the colonies been independent (or £38,000 in 1770 and £30,000 average for the decade) plus the gain on the commodities actually sent that would not have been sent to England had the colonies been free. This amounted to £17,000 in 1770, or £9,000 as the annual average between 1763 and 1772. The benefit accruing to the colonies from preferential duties thus totals £55,000 for 1770, or £39,000 for the decade average.

TABLE I
NET BURDEN ON COLONIAL FOREIGN COMMERCE

| | 1770 | 1763-1772 |
|--------------------------------|---------------------------------|---------------------------------|
| <i>Exports</i> | | |
| Tobacco | £ 326,000 | £ 207,000 |
| Rice | 120,000 | 139,000 |
| Other | 53,000 | 35,000 |
| Burden | 499,000 | 381,000 |
| Preference | 55,000 | 39,000 |
| Bounty | 33,000 | 35,000 |
| Benefit | 88,000 | 74,000 |
| <i>Imports</i> | | |
| Burden | 121,000 | 144,000 |
| Net burden on foreign commerce | £ 532,000 or \$ 2,660,000 | £ 451,000 or \$ 2,255,000 |

In addition to preferential duties, the Crown annually spent large sums in the form of bounties to promote certain industries. The recorded bounties for the year 1770, for instance, totaled £47,344.²⁸

²⁷ The average preference was figured from statistics presented in tables 2 and 3, found in Lawrence Harper, "The Burden of the Navigation Acts on the Thirteen Colonies" in Morris, ed., *Era of the American Revolution*.

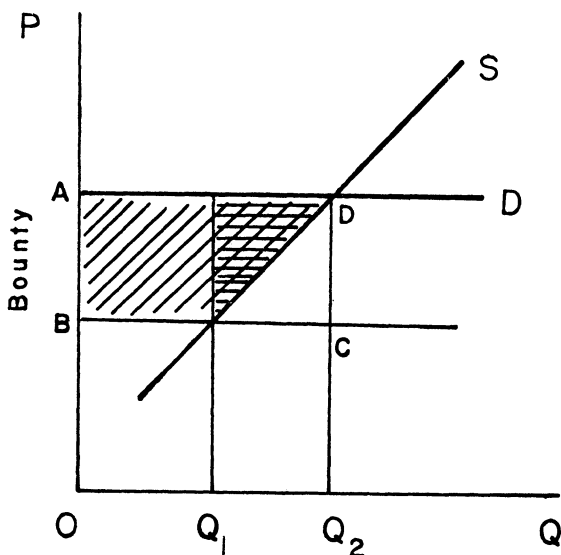
²⁸ Recorded bounty payments for the decade 1763-72 averaged:

| | |
|--------------|----------|
| Indigo | £ 8,065 |
| Naval stores | 32,772 |
| Lumber | 6,557 |
| Total | £ 47,394 |

These payments were designed to divert resources from more efficient uses into industries where they were employed less efficiently but where, for political purposes, they were thought better occupied. Thus it was better to obtain naval stores in the American colonies at a higher cost than to rely upon foreign imports. Part of the bounty, therefore, was a payment for the inefficient allocation of colonial resources and was no gain to the colonies.

The calculation of the approximate proportion of these payments that exceeded the amount required to pay the cost of the inefficiency is not difficult. Since in every case Great Britain continued to import substantial amounts of these commodities from foreign as well as colonial sources, the demand for bountied goods from the colonies can reasonably be assumed to have been perfectly elastic. That is, the colonies could have sold as much of these goods in England as they desired without lowering the market price. This is shown in Graph 2 as a horizontal demand schedule (D) and OB is the market price of the commodity.

The effect of a per-unit bounty is to increase the supply of the commodity; this is shown as an increase in the quantity supplied from Q_1 to Q_2 . The net benefit to the colonies of the total bounty (shown on Graph 2 as the area $ABCD$) is the shaded portion of



Graph 2

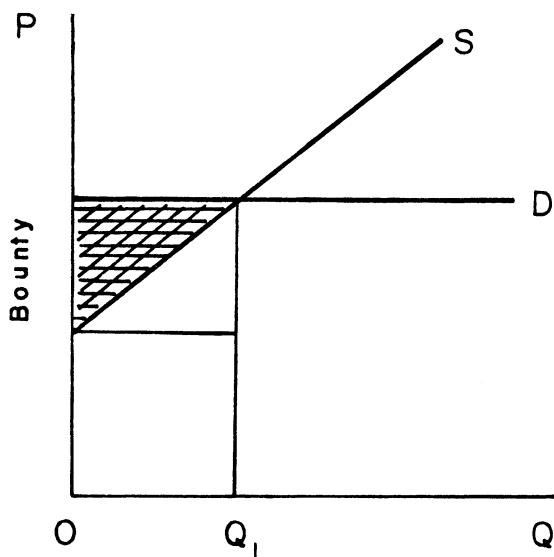
that rectangle. The total bounty payment less the cost of an inefficient use of resources (the unshaded area of the rectangle *ABCD*) gives the net benefit, which must be less than the bounty payment. In order to measure the actual benefit derived by the colonies from the bounty payments we need know only the percentage of the market price represented by the bounty and the elasticity of supply of the commodity.

The export of colonial naval stores was stimulated by bounty payments in significant amounts. The average for the decade 1763-1772 totaled £33,000, and for the year 1770 the payment amounted to £29,803. The average bounty amounted to about 28 per cent of the price; therefore, assuming an elasticity of supply of one, the bounty was responsible for roughly 28 per cent of the exports of naval stores to Great Britain. Figured on this basis, the net gain to the colonists from the bounty on naval stores was 86 per cent of the payment.²⁹ This amounted to an average of £28,000 for the decade, or £26,000 for the single year 1770.

The second largest bounty payments were for the production of indigo; in 1770 this amounted to £8,732 and for the decade an average of £8,065.³⁰ Evidently, the indigo bounty not only stimulated increased output but was responsible for the entire output, since the production of indigo in the colonies disappeared after independence. Therefore, the net benefits of the indigo bounty are derived by calculating the value of the triangle as shown in Graph 3. In

²⁹ The gain to the colonists from the bounty payments was figured in the following manner. The gain is in two parts. First, the unit bounty times the quantity that would have been produced without the bounty gives us the clear gain. In order to find that portion of naval stores that would have been produced without the bounty, we assumed a supply elasticity of one, reckoned the percentage of the price of naval stores that the bounty represented, and thus easily estimated that portion of the supply of naval stores for which the bounty was responsible. The other part would have been produced anyway; on this portion the full amount of the bounty was clear again. On the part stimulated by the bounty, only one half was gain to the colonists.

³⁰ This figure is taken from reports by the London Custom House, retained in Treasury 38, Vol. 363, Public Record Office, London, as originally stated in Dickerson, p. 28, and is accurate. Lawrence Harper "Navigation Acts" (cited in n.27) uses a figure of £ 23,086. While the Dickerson figure may possibly exclude some payments, the Harper figure is calculated on the basis that all indigo received the bounty, which was not the case. Lewis Grey quotes a British official to the effect that about seven eighths of the indigo exported from South Carolina received the bounty, but much less deserved so, being poor in quality. On this basis the payments could have reached as high as £ 20,000 a year. Lewis C. Grey, *A History of Southern Agriculture* (Washington: Carnegie Institution, 1933), p. 292.



Graph 3

the absence of the bounty, no indigo would have been exported. The effect of the bounty was to stimulate an export equal to Q_1 . The net gain to the colonists from the indigo bounty at best is equal to, and is probably something less than, one half the amount of the bounty. We estimated that 50 per cent of the bounty payment for indigo was gain for indigo producers—gain they would not have enjoyed if the colonies had been independent. This totaled £4,400 in 1770, or £4,000 as the annual average for the decade.³¹

The importation of colonial lumber into Great Britain also received a bounty which, according to Beer, totaled £6,557 in 1769.³² Sufficient data are not available to allow a calculation of the gain to the colonists from this payment, but it appears that the bounty was just sufficient to pay the added cost of shipping lumber to England. This payment was necessary to divert lumber from the West Indies, which was the colonies' natural market, and to attract it to England. It appears justifiable to assign the entire payment

³¹ Figured on the basis of an annual bounty of about £ 20,000. Then around £ 10,000 would have been the value of the bounty to the producers of indigo.

³² George Louis Beer, *British Colonial Policy, 1754-1765* (New York: Macmillan, 1907), p. 224.

as the cost of a less efficient use of resources. Nevertheless we shall include 50 per cent as a net gain to the colonists, which amounts to £3,300.

The total net gain to the colonies from the bounties paid for colonial products was, therefore, £33,000 in 1770 and an average of £35,000 for the decade. Our analysis of the effect of the Navigation Acts on colonial exports has included the burden on exports, the benefit of the preferential duties, and the net gain from bounty payments. The sum total of these burdens and benefits is a net burden upon exports of £411,000 for 1770. The average annual burden for the decade 1763-1772 was calculated to be £307,000.

IV

The extra expense of importing competitive European products from England acted as a protective wall which permitted increases in English prices. . . . Those [statistics] which exist tend to confirm . . . the theory that transshipment was costly.

LAWRENCE HARPER³³

The clauses of the Navigation Acts that sought to make England the chief source of supply for manufactured goods were not burdensome There was a distinct effort to make the British market attractive to colonial purchasers.

OLIVER DICKERSON³⁴

British law required that the colonies purchase their East Indian and European goods in England. The colonies actually purchased three quarters of their imports from the mother country, of which about 20 per cent were goods originally manufactured in Europe or Asia. These imported goods also bore the burden of an indirect route to the colonies, analogous to that borne by tobacco destined to be consumed in Europe. This burden was reflected in higher prices for goods of foreign manufacture in the colonies than otherwise would have been the case.

Our method for calculating the burden borne by colonial imports of foreign manufactures is similar to the method used to calculate the cost of enumeration on colonial goods reexported to Europe. Two commodities, tea and pepper, for which both colonial and Amsterdam prices are available, were selected as our sample.³⁵

³³ "Navigation Acts," p. 36.

³⁴ P. 70.

³⁵ Colonial prices are to be found in Bezanson and Amsterdam prices in Posthumus.

Tea and pepper accounted for about 16 per cent of the value of foreign goods imported into the colonies through England. The price that would have obtained in the colonies had they been independent was calculated for these goods exactly as in the case of tobacco. The alternative prices of these commodities, according to our estimates, would have averaged 16 per cent lower than they in fact were.³⁶ Thus, the colonists paid more for their imports of foreign origin than they would have paid had they been independent.

The colonies actually imported foreign goods to the average value of £412,000 for the decade 1763-1772 and of £346,000 for the single year 1770. The burden on the goods, according to our measurement, averaged £66,000 for the decade, or £55,000 for 1770. However, the burden on imports should not be calculated on the basis of foreign goods alone. The burden should also be calculated on goods of English manufacture which were made competitive in the colonial markets by virtue of the artificially increased cost of foreign goods forced to travel an indirect route to the colonies.

The bounty laws benefiting English manufactures which were designed to make English goods competitive with those of foreign manufacture give us a clue to the identity of these English manufactures. If goods of English manufacture required a bounty to compete with similar foreign goods suffering the handicap of an indirect shipment, then the colonists, if independent, would have purchased foreign instead of English goods. Thus, some English goods actually purchased by the colonists would not have been purchased if the colonies had been independent.

Linen was the most important of these goods; the list also included cottons and silks. The colonies thus paid more for most nonwoolen textiles than they would have if they had existed outside the British Empire. The additional monetary loss resulting from the purchase of English rather than foreign goods was calculated to average £73,000 for the decade or £61,000 for 1770 alone.³⁷ The colonists thus paid a total of £116,000 more in 1770 or £139,000 average for the decade for their imports than they would have if independent. If we assume, for convenience, a price elas-

³⁶ Bjork, *JOURNAL OF ECONOMIC HISTORY*, XXIV, (1964), 554, found that goods of foreign manufacture (his Index A) fell dramatically in price after the Revolution, while goods in which Britain had a comparative advantage fell little if at all in price (his Index B).

³⁷ This loss was calculated by taking the percentage unit burden on the price of such imports times their total value.

ticity of demand for imports of one, the colonists would have spent the same amount on imports but they would have received more goods for their money.³⁸

The results of this preliminary investigation into the effects of the Navigation Acts upon the foreign commerce of the American colonies are found in Table 1. The result is an overall burden for the year 1770 of £532,000, and an average of £451,000 for the decade.

V

The fact is that colonial shipowners suffered, directly, and colonial ship-owners, indirectly, under the Navigation Acts.

LAWRENCE HARPER³⁹

Instead of being oppressive the shipping clauses of the Navigation Acts had become an important source of colonial prosperity which was shared by every colony. As a device for launching ships these clauses were more efficient than the fabled beauty of Helen of Troy's face.

OLIVER DICKERSON⁴⁰

The purpose of the various clauses in the Navigation Acts dealing with shipping was to insure that ships built and manned by Englishmen monopolized this aspect of the foreign commerce of the empire. Colonial vessels, for all intents and purposes, were considered English and shared in the benefits of the monopoly.

Calculation of the resultant colonial benefits was hampered by a lack of available data; therefore, the conclusions should be considered tentative. The estimate was constructed in the following manner: an estimated percentage of the total tonnage entering and clearing colonial ports in 1770 that was colonial owned was calculated from the American Inspector General's ledger. Using an estimated average earnings per ton, it was possible to approximate the shipping earnings deriving from the foreign commerce of the American colonies.⁴¹ The total earnings from shipping the foreign commerce of the thirteen colonies were calculated to be £1,228,000, of which 59.4 per cent, or £730,000, was earned by American vessels.

The next question considered was what these earnings would

³⁸ The consumer surplus lost to the colonists because of higher import prices could be easily calculated in the Hotelling-Harberger manner.

³⁹ *Canadian Historical Review*, XXIII (1942), 4.

⁴⁰ P. 32.

⁴¹ See James Shepherd, "Colonial Balance of Payments," p. 691, for a discussion of how this estimate was obtained.

have been had the colonies been independent. Using as a guide what actually did happen between 1789-1792, after the Revolution but before the outbreak of the war in Europe, I found that the colonies' share of the trade carrying their own commerce declined from 59.4 per cent to 53.2 per cent. On this basis, their shipping earnings in 1770 would have been £653,000 instead of £730,000—a difference of £77,000.

However, as we have seen, had the American colonies been independent their volume of foreign commerce would have been greater. Their ships would have carried a portion of the increased amounts of tobacco, rice, and other exports that would have been shipped, as well as a portion of the larger volume of imports.

My calculations suggest that the volume of shipping required to carry this additional output would have amounted to over 53,000 tons. If American vessels had carried the same percentage of this increased volume as they carried of the total volume in 1789, their earnings in 1770 would have increased to over £742,000—or a little more than they in fact were during the late colonial period. The composition of the trade, however, would have been different.⁴²

Thus, it seems fruitless to do more with the effect of the Navigation Acts upon shipping earnings until we know more about shipping rates before and after the Revolution. The best guess, at this time, is that on balance the colonial shipping industry neither gained nor lost from the Navigation Acts.

VI

Indeed, the question ought not be separated from the larger one of the savings offered Americans by the military and naval protection of the British.

STUART BRUCHEY⁴³

The main obligation of the mother country to its colonies in a mercantilist world was to provide protection. In this area lies the significant benefit to the colonies from membership in an empire. The empire of course also performed certain administrative functions for the colonies from which they benefited.

⁴² Colonial vessels probably would have carried relatively less of the trade with the West Indies, assuming that (as happened after the Revolution) they were excluded from the British West Indies. However, they would also presumably have carried relatively more of the transatlantic trade.

⁴³ *Roots of American Economic Growth* (New York: Harper and Row, 1916), p. 74.

Great Britain in the defense of the empire could provide for the protection of the American colonies at very little additional expense to itself. That is to say that the colonies, if independent, would have had to expend more resources in their own defense than did England, just to maintain the same level of protection. Our estimate of the value of military and naval protection provided by the British to the colonists, since it is based in part upon actual British expenditures, is therefore too low.

The value of British military protection was estimated as follows. Great Britain, before 1762, maintained a standing army in America of 3,000 officers and men. After 1762, the size of this troop complement was increased to 7,500 men.⁴⁴ These troops were garrisoned throughout the colonies, including the frontiers where they served as a defensive force against the incursions of hostile Indians. Each man stationed in America cost the mother country an average of £29 a year, or annually a total expense of at least £217,500.⁴⁵

The colonists constantly complained about the quality of the "redcoats" as Indian fighters. Furthermore, they believed the larger standing army in the colonies after 1762 was there not primarily to protect them but for other reasons. However, they found after independence that a standing army of at least 5,000 men was required to replace the British.⁴⁶ Thus the benefit to the colonies from the British army stationed in America was conservatively worth at least the cost of 5,000 troops, or £145,000.

Another large colonial benefit stemmed from the protection offered colonial shipping by the British navy, which included the Crown's annual tribute to the Barbary powers. The ability of the British navy to protect its merchant ships from the ravages of pirates far surpassed anything a small independent country could provide. This the colonies learned to their sorrow following the Revolution.

The value of such protection would be reflected in the rise in marine insurance rates for cargoes carried by American vessels after independence. Unfortunately, until research in process is completed, I do not have sufficient data to directly calculate the value of the protection of the British navy in this manner.

However, this benefit can be tentatively measured in an indirect

⁴⁴ Knollenberg, p. 34.

⁴⁵ Great Britain, *House of Commons Journals*, King George III, Vol. XXXII (1768-1770), sessions no. 1768, 1803.

⁴⁶ *Historical Statistics*, p. 737.

manner. Insurance rates during the 1760's on the West Indies trade one way averaged about 3.5 per cent of the value of the cargo.⁴⁷ Rates to England were higher, averaging 7 per cent. These rates on colonial cargoes existed while colonial vessels were protected by the British navy. During the French and Indian War, the risk of seizure increased the rates to the West Indies, which rose steadily until they reached 23 per cent, while rates to England climbed as high as 28 per cent,⁴⁸ indicating the influence of risk upon marine insurance rates.

The colonists upon obtaining their independence lost the protection of the British fleet. Insurance rates, as a result, must have increased over the prerevolutionary levels. To estimate the approximate rise in insurance rates, we calculated the percentage decline in insurance rates for American merchant vessels following the launching in 1797 of three frigates which formed the foundation of the small, eighteenth-century American navy.⁴⁹

The percentage difference between the rates on an unprotected merchant marine and those charged on the merchant fleet safeguarded by our small navy was applied to the insurance rates prevailing before the Revolution. The weighted difference in rates between a barely protected merchant marine and a totally unprotected one was slightly over 50 per cent.

Applying this percentage to existing prerevolutionary rates, it appears that the average cargo insurance rate, if the colonies had been independent, would have been at least 8.7 per cent of the value of the cargo instead of 5.4 per cent, a difference in rates of 2.7 per cent. Figuring this increase in insurance charges on the value of colonial cargoes in 1770 gives a low estimate of the value derived from British naval protection of £103,000. Three ships were not the British navy and could not be expected to provide equal protection. Marine insurance rates thus probably increased more than 2.7 per cent. An estimate that rates doubled does not seem unreasonable and would raise the annual value of naval protection to £206,000.

The estimate of the value of British protection for the American colonies is thus made up of the adjusted cost of the army in the

⁴⁷ Harold E. Gillingham, *Marine Insurance Rates in Philadelphia, 1721-1800* (Philadelphia: Patterson & White, 1933), pp. 18, 64.

⁴⁸ *Ibid.*

⁴⁹ Charles Goldsborough, *The United States Naval Chronicle* (Washington, 1824), pp. 109-10.

colonies, £145,000, plus the estimated value of naval protection for the merchant marine of £206,000. The estimated total value of the protection afforded the colonies by their membership in the British Empire was thus calculated to be at least £351,000.

By way of a check upon this estimate, the Government of the United States, during its first nine years under the Constitution, found it necessary to spend annually an average of \$2,133,000, or £426,600, for national defense.⁵⁰ This included the purchase of arms and stores, the fortification of forts and harbors, and the building and manning of a small navy. In addition, an independent America had to bear the expense of conducting an independent foreign policy. The support of ministers to foreign nations, the cost of negotiating and implementing treaties, the payment of tribute to the Barbary nations, all previously provided for by Great Britain, now had to be borne by the independent colonies. These expenses alone cost the United States, during the last decade of the eighteenth century, annually over £60,000.

After achieving independence, the United States found it necessary to spend annually about £487,000 to provide certain functions of government formerly provided by Great Britain. This suggests that our estimate of £351,000 for the value of British protection to the American colonists is too low. It is doubtful, in the light of history, whether the new nation was able to provide this type of governmental services of equal quality to those furnished by the British. If not, even the £487,000 a year understates the value of governmental services supplied by Great Britain to her American colonies.

VII

For reasons which have been explained more fully elsewhere we shall reject Beer's claim that there was no exploitation.

LAWRENCE HARPER⁵¹

Exploitation . . . by the home country is an economic myth.

OLIVER DICKERSON⁵²

My findings with reference to the effect of the Navigation Acts upon the economy of the thirteen colonies indicate a net burden of £532,000, or \$2,660,000, in 1770. The average burden for the

⁵⁰ U.S. Congress, *American State Papers, Finance*, III, 14th Cong., 1st sess., 63, 69.

⁵¹ *Canadian Historical Review*, XXIII (1942) 2.

⁵² P. xiv.

decade 1763-1772, based upon official values, was somewhat lower —£451,000, or \$2,255,000. These estimates are near the lowest estimates made by Harper and seem to strengthen his case that exploitation did exist.⁵³

Considering for a moment only the value of the losses on colonial exports and imports, the per capita annual cost to the colonist of being an Englishman instead of an American was \$1.24 in 1770. The average per capita cost for the decade based upon official values was a somewhat lower \$1.20. The benefits per capita in 1770

TABLE 2
SUMMARY OF THE RESULTS

| | 1763-1772 | 1770 |
|-------------------------------------|---------------------------------|---------------------------------|
| <i>Burdens</i> | | |
| Burden on colonial foreign commerce | £ 451,000 or \$ 2,255,000 | £ 532,000 or \$ 2,660,000 |
| Burden per capita ^a | \$ 1.20 | \$ 1.24 |
| <i>Benefits</i> | | |
| Benefit of British protection | £ 351,000 or \$ 1,775,000 | £ 351,000 or \$ 1,775,000 |
| Benefit per capita | \$.94 | \$.82 |
| Balance ^b | | |
| Estimate 1 | \$ —.26 | \$ —.42 |

^a Population for the decade average was figured to be 1,881,000, and for 1770 to be 2,148,000.

^b The balance was obtained by subtracting the per capita benefits from the per capita burden.

were figured to be 82 cents, and for the decade 94 cents. Subtracting the benefits from the burdens for 1770 shows a per capita loss of 42 cents. The estimate for the decade shows a smaller loss of 26 cents a person. It is unlikely, because of the nature of the estimating procedures employed, that these losses are too low. Conversely it is not at all improbable, and for the same reasons, that the estimated losses are too high.

Suppose that these findings reflect the true magnitude of the cost

⁵³ Harper estimated that the burden on tobacco, rice, European goods imported, and the benefits of bounties together added up to a burden of between \$2,560,000 and \$7,038,000. Harper's estimate of the loss on tobacco and rice really measured the area ($P_1.A.B.P_3$) in Graph 1 rather than ($P_1.A.E.P_2$), which is the correct area. However his lower estimate is rather close to ours.

of the Navigation Acts to the thirteen colonies. The relevant question becomes: How important were these losses? Albert Fishlow stated at last year's meetings that he believed that the average per capita income in the 1780's "could not have been much less than \$100."⁵⁴ George Rogers Taylor, in his presidential address, hazarded a guess that per capita income did not grow very rapidly, if at all, between 1775 and 1840.⁵⁵ Therefore, assuming that average per capita income hovered about \$100 between 1763 and 1772, what would it have been had the colonies been independent?

The answer is obvious from Table 2: it would not have been much different. The largest estimated loss on this basis is .54 of 1 per cent of per capita income, or 54 cents on a hundred dollars. Suppose for a moment that my estimates are off by 100 per cent; then, in that case the largest burden would be slightly more than 1 per cent of national income. It is difficult to make a convincing case for exploitation out of these results.

ROBERT PAUL THOMAS, *University of Washington*

⁵⁴ JOURNAL OF ECONOMIC HISTORY, XXIV (1964), 566.

⁵⁵ *Ibid.*, p. 429.