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ABSTRACT

For the past generation scholars have emphasized that the Lower South was one of the most economically successful regions of British mainland North America, and perhaps the most successful. Planters, the primary economic actors, made extensive use of slave labor and created a successful staple-export sector, which by 1774 produced the highest levels of private wealth per capita in the colonies. Focusing on the rapid growth of the primary exports of the Lower South in the colonial period – rice and indigo – most scholars have concluded that standards of living for colonists in the region must have been rising rapidly. Elsewhere we have argued that the conventional view of the economy of the Lower South prior to 1800 is mistaken. Rather, per capita incomes were essentially stagnant from 1720 to 1770, and did not change appreciably between 1770 and 1800. Central to our interpretation is a revised understanding of the behavior of regional exports that indicates that they were much less important as a stimulus to economic growth than has heretofore been believed. This paper describes in greater detail our estimation of regional exports, and documents the reasons why they could not have been a stimulus to intensive growth within the region.

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I. Introduction

For the past generation scholars have emphasized that the Lower South was one of the most economically successful regions of British mainland North America, and perhaps the most successful. [1] Planters, the primary economic actors, made extensive use of slave labor and created a successful staple-export sector, which by 1774 produced the highest levels of private wealth per capita in the colonies.[2] Until recently, however, our knowledge about the economy of the Lower South did not go much beyond such generalities. Writing in 1985, John McCusker and Russell Menard decried the lack of knowledge about this region.[3] Though subsequent work by others has broadened our knowledge, these studies continue to pivot on the centrality of exports as the primary engine of economic growth.[4] Even while scholars have acknowledged the limitations of the "staples thesis" it has nonetheless remained the primary organizing tool in most work on the eighteenth-century American economy.[5]

Focusing on the rapid growth of the primary exports of the Lower South in the colonial period—rice and indigo—most scholars have concluded that standards of living for colonists in the region must have been rising rapidly. Writing in 1998, for example, Marc Egnal suggested

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[1] For the colonial period the Lower South is conventionally defined as including what would become the states of Georgia, North Carolina and South Carolina.

[2] It was rivaled in this regard only by the Chesapeake. In both regions, much of the wealth was in the form of slaves. If measured by nonhuman wealth the differences among regions are reduced substantially, although not eliminated (Alice Hanson Jones, *Wealth of a Nation to Be*. New York: Columbia University Press 1980, 54; Edwin Perkins, *The Economy of Colonial America*, New York: Columbia University Press, 1980, 154).

[3] John McCusker and Russell Menard, 1985, *The Economy of British America, 1607-1789*, ch. 8.

[4] Peter Coclanis, 1989, *Shadow of a Dream*, see esp. pp. 73-93; Joyce Chaplin 1993, *An Anxious Pursuit*, Chapel Hill: The University of North Carolina Press, esp. chaps. 7 and 8; Marc Egnal 1998, *New World Economies*, chap. 1. Egnal discusses a number of factors that contributed to growth, but the key was trade relations with the mother country.

[5] See Egnal, *New World Economies*, p. 4 on the continued usefulness of the staples thesis, along with a discussion of its limitations. According to Egnal, the key features of the staples thesis are that "…the export of primary products was the engine of growth for the colonial economy…[and that] the nature of these exports shaped the pattern of regional development." Egnal, *New World Economies*, 5.

that per capita incomes in the Lower South increased at an annual average rate of 0.9 percent per year from 1713 to 1775, implying that per capita incomes grew by more than 70 percent over the entire period.[6] Recently we have argued, however, that the conventional view of the colonies of the Lower South greatly overstates the rate of economic growth in the region.[7] In fact, our estimates suggest that per capita incomes were essentially stagnant from 1720 to 1770, and did not change appreciably between 1770 and 1800.

What explains the difference between our estimates and previously published figures? Central to our interpretation is a revised understanding of the behavior of regional exports that indicates that they were much less important as a stimulus to economic growth than has heretofore been believed. But even without that revision, it would be surprising to find that exports from this slave-plantation based economy led to rapid growth of output per capita. As McCusker and Menard explained so clearly, when the export staple is a plantation crop it "will have only a minor impact on local industry or the size of the market."[8] In these instances, the impact of export growth is restricted almost entirely to increasing aggregate income via a multiplier effect. Without linkages to further development within the region that could push up labor productivity, per capita income can increase only if export proceeds rise faster than the population.[9]

As we shall show, this did not happen. Previous analysts have been misled by focusing

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[6] Egnal, *New World Economies*, 43.

[7] Peter C. Mancall, Joshua L. Rosenbloom and Thomas Weiss, "Conjectural Estimates of Economic Growth in the Lower South, 1720 to 1800," in *History Matters: Essays on Economic Growth, Technology, and Demographic Change*, ed. By Timothy W. Guinnane, William A. Sundstrom and Warren C. Whatley (Stanford: Stanford University Press, 2004).

[8] McCusker and Menard, *The Economy of British America*, p. 26. Douglass North made the same case for the South in the period 1790 to 1860, when the region came to depend on the export of cotton. See his *Economic Growth of the U.S. 1790-1860*, New York, 1962. See also David Galenson and Russell R. Menard, "Approaches to the Analysis of Economic Growth in Colonial British America," *Historical Methods*, 1980 vol. 13, esp. pp. 13-15.

[9] It is possible that the characteristics of the exporting sectors in other colonial regions were more conducive to growth via what Galenson and Menard call spread and linkage effects.

on only a subset of the most successful exports; failing to take into account both the slower growth of other export commodities and the rapid growth of regional population (and its changing composition), which was linked to the increase in aggregate exports; and ignoring the place of exports in the context of the broader economy. What follows is based on a much more comprehensive measure of regional exports set in the context of the entire economy and on changes in the size and composition of the non-Native American population of the Lower South.

Our result, that the economy of the Lower South experienced growth only in aggregate output and population but not growth in per capita income, harkens back to the argument put forth some time ago by Daniel Scott Smith that the distinctive feature of the early American economy was its rapid extensive growth.[10] This view has been out of favor for some time because the prevailing wisdom had come to accept that there had been growth in output per capita. That evidence against Smith's thesis was not firmly based, however, having been arrived at by assuming that per capita growth in the colonial economy must have been at least as rapid as that in England, or that GDP grew as rapidly as the most successful exports.

As Daniel Scott Smith argued, the absence of growth in per capita income does not mean that the economy of the Lower South was stagnant or unsuccessful. Quite the contrary; over the course of the eighteenth century, the colonies and states of the Lower South experienced rapid extensive growth in economic activity, as well as in population and land under cultivation. Such high rates of extensive growth were, in the words of Dan Smith, "extraordinary by any standard."[11] Moreover, extensive economic growth brought with it an increase in the percentage

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[10] Smith, "A Malthusian-Frontier Interpretation of United States Demographic History before c. 1815," in *Urbanization in the Americas: The Background in Comparative Perspective*, eds. Woodrow Borah, Jorge Hardoy and Gilbert A. Stelter, Ottawa: 1980, p. 17

[11] Smith, "A Malthusian-Frontier Interpretation of United States Demographic History before c. 1815," in *Urbanization in the Americas: The Background in Comparative Perspective*, eds. Woodrow Borah, Jorge Hardoy and Gilbert A. Stelter, Ottawa: 1980, p. 17

of the population under the age of 10, which reduced the share of the population engaged in production. Under these circumstances, simply maintaining a constant level of per capita income should be seen as a remarkable achievement.

II. Exports from the Lower South

Exports were crucial to economic success in colonial British North America. That, at least, is the argument advanced by both historians and economists. Whether one looks at the literature about the colonies taken as a whole, or for any of the major regions (except New England), exports loom large as the primary engine of economic growth. According to the dominant theme found in textbooks as well as scholarly works, enterprising Europeans arrived in North America and through hard work and abundant land created a prosperous and burgeoning economy based on the export of agricultural staples. There is an appealing intuition to this argument. After all, extracting wealth from North America was one of the factors motivating the English since the age of Queen Elizabeth I. As a result, English and Anglo-American authorities often kept careful track of exports from the colonies. And, on the face of it, there are grounds to support the argument: some exports increased rapidly and provided the appearance of economic growth, while population and aggregate GDP expanded at unprecedented rates.

For the Lower South, scholars have routinely emphasized that exports, primarily of rice and indigo, drove this region's economy.[12] Though these exports expanded at rapid rates, that export success did not generate growth of GDP per capita in the region. There are five reasons for this apparent anomaly. First, not all exports grew as rapidly as rice and indigo. Second, the methods of production required large increases in the population and labor force and thus

[12] See for example, McCusker and Menard, *The Economy of British America, 1607-1789*, ch. 8, and citations in footnote 5

forestalled increases in per capita output. Third, some individuals chose to increase their family size rather than enjoy all the potential income themselves, thereby hindering improvements in, and possibly reducing, GDP per person. Fourth, the success of the two staple exports was confined almost entirely to a limited geographic area and a small part of the region's population. Fifth, production and productivity in the domestic sector, which were previously under-emphasized, were important determinants of the region's economic performance.

The central role of exports in prior estimates of the southern economy follows from scholars' extensive use of the records of low country planters and those with whom they organized the regional rice trade. To be sure, exports – especially of rice – grew rapidly and represented a substantial output. But a comprehensive picture of regional export performance requires that we look beyond rice and indigo to consider exports of naval stores and deerskins. Although cotton was the region's primary export in the nineteenth century, it did not emerge as a significant contributor to exports until the 1790s. Consequently it is not a factor in economic growth in the colonial period, but must be considered when measuring economic growth over the longer period to 1800.

Table 1 summarizes data on the quantity and value of these five items along with evidence on the value of all other exports for 1768-1772, drawn from the American Inspector-General's ledgers. According to James Shepherd this is "the only complete source for commodity trade for any years in the colonial period."[13] At the end of the colonial period these five commodities accounted for 80 percent of the value of regional exports. Table 2 presents data on the output and growth of each of these commodities over the course of the eighteenth century. The top panel shows the quantity (three-year averages) of each of the five exports at

[13] "Commodity Exports from the British North American Colonies to Overseas Areas, 1768-1772: Magnitude and Patterns of Trade," Purdue University, Krannert Graduate School of Industrial Organization, Paper no. 258 (October 1969), p. 9.

decadal benchmark dates; the bottom panel summarizes the rates of growth of these exports over selected periods. In 1712, rice exports topped 3 million pounds, and by 1720 had more than doubled to 8.1 million pounds and continued to climb, reaching a temporary peak of 34 million pounds in 1740. That initial period of expansion ended with the start of the international conflict known as the War of Jenkins Ear, which pitted Britain against Spain in a contest for who would control shipping from the Caribbean and Central America. This conflict, as well as King George's War (1744-48), substantially raised shipping and insurance costs and caused a sharp drop in the net prices received by rice farmers.[14]. The depressed conditions persisted for most of the decade, during which planters experimented with other crops, including indigo, which emerged as an important complement to rice.[15] With the return of peace in the late 1740s, rice prices recovered along with exports. In the early 1760s, rice prices began to increase again, and exports shot upward in the decade and a half before the Revolution.[16] By 1770 exports had increased to over 70 million pounds. This expansion implies a compound average annual rate of growth of nearly 5.7 percent from 1712 to 1770.

The upward trajectory of rice exports came to an end with the American Revolution as substantial conflict in the region led to substantial material losses.[17] In 1790, the next year for

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[14] See See Peter C. Mancall, Joshua Rosenbloom, and Thomas Weiss, "Slave Prices and the Economy of South Carolina, 1722-1809," *Journal of Economic History*, 61 (2001),

[15] Because indigo had a much higher value relative to weight than did rice, it could much more easily bear the higher costs resulting from wartime conditions than could a bulky commodity like rice. But the volume of exports did not take off until Britain began to offer a bounty for indigo in 1749 making the crop commercially attractive. Moreover, since it could be grown on lands not suited to rice cultivation, and its peak labor demands did not coincide with those of rice cultivation, planters could add indigo without substantially reducing their commitment to rice (Gray 1958, p. 289).

[16] R.C. Nash, "South Carolina and the Atlantic Economy in the Late Seventeenth and Eighteenth Centuries," *Economic History Review* 45, (1992), 692; Henry C. Dethlof, "The Colonial Rice Trade," *Agricultural History* 56 (1982) 235. During this export upsurge, planters expanded rice cultivation into Georgia and the Cape Fear region of North Carolina. Despite that expansion, South Carolina remained by far the largest producer.

[17] Perhaps the most important effect was the reduction in the slave population occasioned by the war. The conflict interrupted the importation of slaves, and resulted in significant losses to the existing slave

which we have data, exports were almost 42 million pounds; slightly less than they had been in 1760. Although the quantity of rice exported increased during the 1790s, in 1800 it remained well below the peak reached during the colonial period.

Indigo production did not begin in earnest until the 1740s, but as Table 2 reveals, during the next two decades the quantity of indigo exported from the Lower South expanded quite rapidly. In the 1750s, exports of indigo grew at the astonishing rate of 30 percent per year on average.

The growth of rice and indigo exports, however, obscures changes that were taking place in the production of other export commodities. While it is true that rice and indigo became the most important exports in the lower south in the eighteenth century, the rise of those trades came at the expense of others. Planters employed the labor under their control to maintain rice plantations and harvest indigo, which meant they put less labor toward the production of naval stores, beef and pork, or Indian corn.[18] And there was less emphasis on the trade in deerskins, most of which arrived in colonists' hands from native suppliers. The much slower growth of deerskins and naval stores exports can be seen in Table 2.[19] Between 1712 and 1770 the export of deerskins rose at 1.3 percent per year, while naval stores increased at 3.8 percent per year.

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population. Although data are imprecise, it is estimated that approximately 25,000 slaves died, ran away, or were carried off by the British during the war; see Philip D. Morgan, "Black Society in the Lowcountry, 1760-1810," in Ira Berlin and Ronald Hoffman, eds., *Slavery and Freedom in the Age of the American Revolution* (Charlottesville, 1983) 111, and Lewis C. Gray, *History of Agriculture in the Southern United States to 1860* (Gloucester, Mass., 1958) 596. The devastation caused by the war is apparent in the low levels of exports in the immediate post-war period. Although exports rose rapidly in the second half of the 1780s, even at their post-war peak in 1793, Charleston's exports were well below the level of the early 1770s. Gray, *History of Agriculture*, 1020-23

[18] Between 1753/54 and 1768-72, the export of Indian corn increased at only 1.25 percent per year, while the export of beef and pork declined at 0.8 percent per year. The 1753 and 1754 data are from Edmund Burke, *An Account of the European Settlements in America*, 6th ed. London, printed for J. Dodsley, 1777 pp. 259-61; those for 1768-72 are from Shepherd and Walton, *Shipping, Maritime Trade*, Appendix IV, Tables 2-6, pp.211-227

[19] According to Converse Clowse, *Economic Beginnings in Colonial South Carolina* (Columbia, 1971), 178-79 and 222-23, beef and pork exports began to decline when rice initially rose in importance. .

The performance of these four items (rice, indigo, deerskins and naval stores) taken together gives a close approximation to the behavior of total exports over the long term. In 1746-47 these four items comprised 89.3 percent of exports from Charleston, whereas in 1768-72 they made up 89.7 percent of the region's exports.[20] Table 3 presents our estimates of the real volume of all exports from the region expressed in 1840 prices at benchmark dates over the course of the eighteenth century.[21] As the evidence in Table 3 makes clear, although total foreign exports rose at a rather rapid pace —4.27 percent per year between 1720 and 1770 — this was substantially slower than the growth in rice exports alone.[22] The success of rice exports in the colonial period has given a distorted picture about the role of exports more generally, suggesting that the economy of the Lower South was more successful than implied by the behavior of total exports.[23]

III. Putting Export Performance in Context

While exports were crucial for low country rice planters, an understanding of the impact of the export sector on the Lower South as a whole must look more broadly across the region,

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[20] The 1746-47 shares are from Coclanis, *Shadow of a Dream*, p. 81; the 1768-72 figures are from Shepherd and Walton, *Shipping, Maritime Trade*, Appendix IV, Tables 2-6, pp.211-227. If deerskins were excluded the remaining three items would not proxy the movement of total exports as well. The share comprised by rice, indigo and naval stores rose from 67.3 to 82.5 percent.

[21] To construct an index of real aggregate export performance it is necessary to combine data on physical quantities of individual exports based on a constant set of prices that abstracts from general changes in the price level. The details of the derivation of these estimates are provided in the Appendix to this paper. Nash constructed a similar index, but it was limited to exports from South Carolina and did not include deerskins. With those his index shows a somewhat higher rate of growth. R.C. Nash, "South Carolina and the Atlantic Economy in the Late Seventeenth and Eighteenth Centuries," *Economic History Review* 45, (1992).

[22] Over the longer period, total exports are pushed up near the end of the period by the cotton boom of the 1790s.

[23] Export growth is even slower if one takes into account the quantity of agricultural products shipped to other colonies. Shipments to other colonies grew at an average annual rate of just 3.2 percent between 1720 and 1770. As a result the combined value of all external shipments in the colonial period grew at a rate of just 4.1 percent per year.

taking into account not only other exports, but also the enormous economic activity devoted to non-export functions. Georgia, North Carolina, and the backcountry of South Carolina--which are bit players in others' economic histories—need to be integrated into any assessments of regional economic patterns. [24]

The place to begin is with population. As can be seen in Figure 1, the bulk of the region's population in 1700 was concentrated in North Carolina, and though the colony exported some naval stores it remained largely insulated from foreign trade.[25] Georgia was established only in 1732, and prohibited slavery until 1749. Until it eliminated restrictions on slavery its population grew relatively slowly, but during the second half of the century it increased more quickly, expanding to account for about 15 percent of the region's population.[26] Although the growth of rice exports at the beginning of the eighteenth century contributed to the expansion of South Carolina's share of regional population, this figure peaked at 50 percent in 1730 and then declined.

But even within South Carolina, a declining share of population was engaged in export production. The growth of rice exports from the Lower South coincided with the rapid expansion of settlement into the interior regions of South Carolina. For the most part, the settlement of the backcountry consisted of small independent farmers possessing few if any

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[24] Although Peter Coclanis, (*Shadow of a Dream*,. 71-77) focused on the rise and decline of the low country, he made careful and important distinctions between the impact of trade on that subregion and on South Carolina as a whole. He thus brought to the fore the need to better understand the economy of the backcountry, but he did not pursue the implications of the wide variations in economic performance across subregions for economic growth in the Lower South as a whole.

[25] Egnal, *New World Economies*, 114-117.

[26] Although North Carolina was more populous than South Carolina it had far fewer slaves for most of the eighteenth century. Slaves constituted a majority of South Carolina's population for most of the eighteenth century. That colony contained 85 percent of the region's slave population in 1700 and although the numbers of slaves in Georgia and North Carolina grew more rapidly than those in South Carolina, at the end of the century it still accounted for 43 percent of the region's slaves (U.S. Bureau of the Census 1975, Series A-7, and Z-1 to 19).

slaves, and producing only small quantities of marketable crops.[27] As late as 1770, only 6,000 (8.7 percent) of South Carolina's 76,000 slaves lived in the backcountry. In contrast, 30,000 (61 percent) of the colony's 49,066 free inhabitants resided in this region.[28]

That larger share of the population residing in the backcountry was virtually uninvolved in the export trade dominated by the low country. From 1768 to 1772 average annual exports per capita in Carolina's low country averaged £ 3.7 for the entire population, and £ 17.1 for the white population. The backcountry figure was a mere £ 0.5.[29] Nor does it seem that backcountry residents were producing food for the plantations since low country slaves were largely self-sufficient.[30] Residents of rice plantations also relied on hunting to make up for the fact that planters did not give them much meat, and they tended their own gardens, growing a variety of foods, including African foods.[31]

When compared to the growth of population, the success of the export sector looks considerably less impressive, as Table 3 makes clear. While exports were growing at 4.27 percent per year between 1720 and 1770, the region's population was increasing at 4.42 percent per year. Consequently, the real volume of exports per capita was declining on average at 0.15

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[27] Kaylene Hughes "Populating the Back Country," (PhD. diss, Florida State University, 1985),119; George Johnson *The Frontier in the Colonial South* (Westport, CT, 1997), 40-60; Rachel N. Klein, *Unification of a Slave State (*Chapel Hill, 1990) 10-27.

[28] Coclanis, *Shadow of a Dream*, 68. Over the next 20 years, the back country's share of both free and slave population increased, the latter having risen by nearly 400 percent, growing to slightly more than 29,000 by 1790 and accounting for 27 percent of the state's slave population. Klein *Unification of a Slave State*, 253. Although this shift of the population set the stage for the ascendance of cotton at the end of the century, rice planters remained the dominant employer of slaves, and the production of exports was concentrated on the slave-based plantations. The rapid expansion of cotton cultivation beginning in the early 1790s accelerated this shift, so that by 1810 close to 44 percent of the state's slaves were living in the back country.

[29] Coclanis *Shadow of a Dream*, 75.

[30] Philip Morgan, Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake and Lowcountry (Chapel Hill, 1998), 134-143 In the lowcountry, "the discarded parts of Carolina's chief staple, rice, served as cheap food." Ibid, p. 135. See also Hughes, *Populating the Back Country*, chap. 6.

[31] Morgan, *Slave Counterpoint*,

percent per year.[32] Moreover, even the success of the rice industry pales when population growth is taken into account, with the volume of rice exports *per capita* having risen at only 0.3 percent per year between 1720 and 1770.[33]

Rather than serving as an engine of growth, the export sector is better understood as a source of short-run instability. Exports, especially rice and indigo, rose more rapidly than population in some decades and no doubt served to propel the region's economy ahead in those years, but these times were intermingled with periods when exports grew slowly or even declined. The net result is that over the entire colonial period population grew more rapidly than exports, and thus exports per capita declined.

There are two reasons why export growth could not keep ahead of population growth. The production of exports rose rapidly in the Lower South primarily because the labor input had increased rapidly, and that in turn required an increase in the population. Furthermore, economic success fueled other demographic changes that made growth in GDP per capita difficult to achieve. In the lower South of the eighteenth century, the methods of production yielded little in the way of improvements in agricultural output per worker.[34] Instead, the increase in the volume of rice and indigo exports was predominantly the direct result of an increase in the amount of slave labor applied to the cultivation of those products. To some extent, the increased labor input

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[32] As discussed below, the picture looks slightly different when exports are compared to the free population alone.

[33] The growth of exports was slower after 1770, which resulted in a poorer performance over the longer period from 1720 to 1800 when total exports *per capita* declined at 0.6 percent per year. Even rice exports *per capita* declined over the longer period, due to a fall in production after 1770.

[34] Although the shift in the locus of production from upland areas to the low country and the adoption of tidal irrigation suggest productivity gains might have occurred in rice farming, we estimate that long term productivity improvements in the region's farm sector were modest at best, and may have been negative. The annual rate of advance between 1720 and 1800 fell in a range between minus 0.2 and plus 0.3 percent per year. See Peter C. Mancall, Joshua Rosenbloom, and Thomas Weiss 2002. "Agricultural Labor Productivity in the Lower South, 1720-1800," *Explorations in Economic History* 39 (2002), 390-424, Table 2.

to rice and indigo came from a reduced production of other goods, but to a far greater extent it required an increase in the slave population. And, because the natural rate of growth in the slave population was extremely low (although higher than in the Caribbean) the increase in the number of slave workers was achieved by importing them.[35] Indeed, as Figure 2 illustrates, during the colonial period decadal variations in slave imports into the region closely paralleled changes in the volume of exports. Although these imported slaves may have been of working age, and thus did not negatively affect the worker/population ratio, they nevertheless increased the population. Indeed, even the slave population grew faster than exports.[36] Between 1720 and 1770, when the volume of exports from the Lower South to foreign destinations increased at 4.2 percent per year, the slave population was rising by 4.8 percent.

Meanwhile, the composition of the free population was changing in ways that reduced the worker/population ratio. The overall labor force participation rate for the entire colony is a function of the participation rates for specific population groups and the relative importance of the different groups. In this economy, slaves had a higher participation rate than free persons, free males had a higher participation rate than free females, and those aged 10 and over had higher participation rates than those younger. Initially the colonial population of the Lower South consisted largely of males of working age. Over time, and in part as a result of economic

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[35] For comparisons of slave fertility and mortality in British North America with that of other western slave societies, see Lorena S. Walsh, "African American Colonial Population," and Stanley Engerman, "Population History of the Caribbean," in Michael Haines and Richard Steckel, eds. A *Population History of North America,* (Cambridge, Eng., 2000), 198-209, 505-510. For the Lower South, we estimated that in almost every decade of the eighteenth century slave imports exceeded the increase in the stock of the slave population. See Peter C. Mancall, Joshua Rosenbloom, and Thomas Weiss, "Slave Prices and the Economy of South Carolina, 1722-1809," *Journal of Economic History*, 61 (2001), Table 2

[36] The slave population did grow more slowly than rice exports alone which could imply that there was some productivity advance in rice production. See Nash, "South Carolina and the Atlantic Economy," Table 6, 689; as well as Mancall, Rosenbloom and Weiss "Agricultural Labor Productivity in the Lower South, 1720-1800," Table 2. On the other hand, it may simply reflect the reallocation of slave labor into rice cultivation and out of other, less profitable, activities.

success in the export trade, the number of women and children increased. More women migrated to the colonies, and successful farmers and planters married and chose to have more children.

The trends in the composition of the population that influenced the labor force participation rate are shown in Figure 3. As can be seen, the slave share of the regional population increased from 39 percent in 1720 to 43 percent in 1730, but thereafter the share dipped slightly and recovered, so that by 1774 the share was at the same 43 percent it held in 1730. These changes in the slave share of the population would have helped push up the labor force participation rate in the 1720s, but not thereafter. The trends in the shares of the other population groups -- the male share of the free population, the adult share of the male population, and the adult share of the slave population -- were all downward. That is to say, the components of the population that were increasing were those with lower participation rates which resulted in a decline in the average participation rate for the entire colony. As a result of these demographic shifts the participation rate remained steady at 0.49 between 1720 and 1740, but declined thereafter to 0.47 in 1774. As a consequence, if there were no increase in labor productivity, GDP per capita would have declined by 4 percent between 1720 and 1774.[37]

These demographic shifts could be interpreted as an indication of economic success and prosperity, but the standard indicators of economic output, which measure the value of goods and services produced, do not reflect any increased value for this behavior. Indeed, the standard measure such as GDP per capita could decline as the output was shared with additional family members.

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[37] After 1770, all the changes in the composition of the population, especially the decline in the slave share of the population, worked to reduce the labor force participation rate from 0.47 in 1774 to 0.39 in 1800. With no increase in labor productivity, GDP per capita would have declined by 17 percent in the last quarter of the century.

IV. Exports and Production for Domestic Consumption

The focus on the export trade of the low country in the decades prior to the Revolution also masks what was happening in the rest of the regional economy, where most production was taking place. Even if the export trade had grown faster than it did, and faster than the population, its impact would still have been restrained simply because the value of exports abroad amounted to only 25 percent of the region's total output.[38] The dominant part of GDP was production for the domestic market, which normally comprised around 75 percent of the regional economy, and most of this was produced in the backcountry.

Although the disparities between the colonies in the Lower South and the subregions within those colonies have been pointed out by other scholars, their implications for the course of economic growth have not been pursued in previous discussions of the region's economic history. To understand the performance of the entire region requires more than an analysis of low country rice exports. A more comprehensive assessment demands analysis of all the basic components of output: firewood, shelter, nonagricultural output and food production.

Given the importance of food, estimates of its value are essential to gauging the size of the domestic sector. Regrettably there are no time series data on the **production** of food in the eighteenth century, but a series can be obtained by estimating the value of food **consumed** and making allowance for the import and export of food items. Despite the lack of a widely accepted time series for food consumption, there is enough information about the diets of colonists and slaves to permit a reasonable approximation of the likely values of food consumed.

Existing documents provide evidence on the diet or its components, and on the value of

[38] John McCusker put the share at 25 to 30 percent for the colonies as a whole; see "Estimating Early American Gross Domestic Product," *Historical Methods* 33 (2000), 155-62 See Table 5 below for our estimates of GDP for the Lower South and a comparison to foreign exports.

providing a specified diet for a number of different groups in the population: free settlers, soldiers, slaves, prisoners, and those needing charity. The evidence can be found in official colonial records, court cases, committee hearings, travelers' accounts, plantation records, and vestry minutes. The records of the Trustees of Georgia, for example, contain well-documented evidence on the monthly costs of maintaining those persons sent over to the colony and the standard provisions for maintenance of settlers.[39] The specified diet included beef or pork, rice, peas, flour, beer, molasses, cheese, butter, spice, sugar, vinegar and salt. Moreover, the Trustees specified different quantities of each for adult males, adult females, children and servants.[40] The colonial records for Georgia and South Carolina also reported expenditures on provisions for troops, including in some instances provisions for those slaves and Natives who accompanied the troops.[41] That evidence from South Carolina for the period 1734 to 1756 indicates that the real value of provisions provided to soldiers declined over time.[42] Finally, vestry minutes detail

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[39] Allen D. Candler, ed., *The Colonial Records of the State of Georgia*, III 407-11. The amounts expended after the first year or two appear quite high and would suggest that the value of the diet declined between the 1730s and 1800. We believe that some of the provisions in later years must have been destined for settlers who had gone over in earlier years, and thus think the initial year's figure may be a better approximation of the average value of the diet.

[40] We have calculated the value of this diet to equal $31 per adult male in prices of 1840. The diet for women and children aged 12 and over was calculated to be 83 percent that of a male; that for children aged seven to twelve was specified be half that for those aged 12 and over; and that for those aged two to seven was one-third. Apparently no provisions were provided for those under two years of age. (*Colonial Records of Georgia*, III, 408-09).

[41] See for example the expenditures for Oglethorpe's siege of St. Augustine (Colonial Records of Georgia, II, 159-202. Robert Gallman argued that military rations were a reasonable proxy for food consumption by the colonists; see "The Statistical Approach: Fundamental Concepts Applied to History," in G.R. Taylor and L. F. Ellsworth, eds., Approaches to American Economic History (Charlottesville, 1971), 73-78

[42] This is true regardless of whether it is valued in South Carolina currency, Pounds Sterling, or Dollars (in prices of 1840). The figures in dollars and valued in 1840 prices were $32 in 1734 declining to $22 in 1756. It may be that the soldiers were expected to obtain some of their provisions by hunting and fishing, and perhaps increasingly so over time as suggested by the decline in the allotment after 1736 (Colonial Records of South Carolina, [hereafter CRSC] *Journal of the Commons House of Assembly*, vols. 1, 2, 7 and 14).

evidence on weekly, monthly and annual maintenance for the poor.[43]

Based on this variety of evidence, a case could be made that the diet of free colonists did not change much, if at all, over the course of the eighteenth century. To be sure, diets no doubt fluctuated from one year to another depending on the success of a harvest, or the booms and busts of the economy. The estimates here allow the value of the diet to increase over time, taking the most optimistic view implied by the assorted data on the diet, and thus giving an upward bias to the economic growth that took place.[44] Specifically, they are based on the assumption that the value of an adult colonist's diet rose at an annual average rate of 0.25 percent from 1720 to 1800.[45]

Surviving evidence reveals, not surprisingly, that the value of food consumed by a slave differed from that of a free colonist, while that of an adult colonist differed from that of a child. Although information on the slave diet is scarce**,** making assessments about changes in the diet over time especially frustrating, it is unlikely there could have been much change in the slave diet.[46] After all, it was not highly varied in the nineteenth century and the quantities of food

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[43] Vestry minutes are the records of the church parishes. Parishes had the primary responsibility for the care of the poor and could levy taxes to finance their activities. See Brown (1928) and Watson (1977).

[44] Elsewhere we have shown that our estimated rates of growth are not very sensitive to plausible changes in this and other assumptions underlying the estimates; see Mancall, Rosenbloom, and Weiss. "Conjectural Estimates of Economic Growth in the Lower South, 1720 to 1800." If we were to allow the colonists' diet to increase even more rapidly over time, which would lead to a more rapid growth of GDP and GDP per capita, then the domestic sector would have been responsible for even more of the growth that had taken place. If we allowed exports to grow more slowly, the domestic sector would have been relatively less important, but economic growth would have been slower.

[45] This rate is based on a comparison of the value of the diet specified for an adult by the Rules for Georgia for 1735 ($31) with the figure of $37 we estimated for 1800. This is a very healthy advance in the value of the diet considering that it does not reflect any increase in the costs of distribution. Moreover, such an increase is likely too great for all the region's free inhabitants. The diet specified in the Rules for Georgia was for those going over as charity cases. Their diet is likely to have been inferior to the average to be found for colonists residing in the longer established and wealthier colonies of Carolina. See *Colonial Records of Georgia,* III, 407-11; and Mancall, Rosenbloom and Weiss, "The Value of the Diet in the Lower South in the Eighteenth Century," Paper presented at the NBER Summer Institute, 2002.

[46] Morgan argued there were differences in slave diets across regions, and slaves in the low country

planters provided had to be sufficient to provide the calories and protein necessary to carry out the arduous work of producing rice or indigo. In the nineteenth century, the value of a slave's diet equaled about 75 percent that of a free person.[47] For the eighteenth century, the data here assume that the value of the slave's diet increased from around 50 percent of a colonist's diet in 1700 to 75 percent in 1800, thereby adding another upward bias to the estimated rate of economic growth.[48] With the colonist's diet increasing over time, this results in a substantial growth in the slave's diet of 0.29 percent per year. The estimates here assume continuity in the diet of free children under the age of 10 at 50 percent of an adult's diet for the entire century.[49] The value of food consumed per capita for the region is a weighted average of the value consumed by each of these major population groups.[50]

Food produced for consumption within the region is the dominant component of the domestic sector, but not the only one. The domestic sector includes as well the value of

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produced more food on their own time than did those in the Chesapeake; he does not discuss the likelihood of changes in the slave diet over time. See *Slave Counterpoint*, 135-143.

[47] The information we have found for the colonial period would put the relative value anywhere between 20 percent and 75 percent CRSC II, Commons Journal, 1739-1741, 493 and CRSC IV, Commons Journal, 1742-1744, 377. The relative value of 20 percent seems much too low. The figures lying behind that ratio imply annual values of $46 for a free person and $9 for a slave (in prices of 1840). The value seems very low for slaves and high for free persons, thus yielding much too low a relative figure for slaves.

[48] We based this beginning year value on Charles Kahn's estimate for the "least-cost diet with minimum fat requirements" using the medium price of pork; see Kahn, "A Linear Programming Solution to the Slave Diet," in Robert Fogel and Stanley Engerman, eds. (New York, 1992), table 25.5, p. 532). That estimate equaled approximately 75 percent of the cost of the diet specified by Fogel and Engerman or Sutch, which in turn was equal to 75 percent of the cost of a free person's diet. Thus we assumed that the value of the slave diet in 1800 equaled 75 percent that of a free person, and the value in 1700 equaled 75 percent of that 1800 figure—i.e., 56 percent of a free person's diet—and that it changed at a constant rate between those two dates.

[49] If instead we had assumed that the child's diet had equaled 75 percent of an adult's, food consumption and production per capita would have been $3 to $4 higher in each year, but growth would have been about the same.

[50] The weights are their respective shares of the population. In order to obtain an estimate of food production we deduct the value of food imported and add the value of food products shipped to other colonies. The derivation of these food imports and exports is explained in Mancall, Rosenbloom and Weiss, "Conjectural Estimates of Economic Growth in the Lower South," 400.

firewood produced, the rental value of dwellings, and all nonagricultural industries. Estimates of output for these various components of the domestic sector are shown in Table 4. Table 5 reports estimates of GDP and GDP per capita for the region and compares them with the value of foreign exports.

V. Re-interpreting the Economic Performance of the Lower South

The economy of the Lower South expanded greatly between 1720 and 1770, but there was no long-term upward movement in real GDP per capita. Within the colonial period the region experienced particular success in the 1720s and 1750s, with GDP per capita rising on average around one half of a percent per year, but these upward surges were offset by declines in GDP per capita in other decades. As a result of these offsetting performances, GDP per capita in 1770 was almost identical to that in 1720, and there was very little change up or down over the major sub periods of 1720-40 and 1740-70.[51]

The performance, moreover, reveals little consistency between the success of the export sector and that of the economy as a whole. Agricultural exports to foreign markets rose rapidly in some decades, but not all, and GDP per capita and even exports per capita did not always move in the same direction or with the same force. In the 1720s, there appears to have been a rather strong relationship between export growth and the growth of GDP per capita. In the 1720s, exports grew at 7.4 percent per year, the highest average rate achieved for any decade in the colonial period, and GDP per capita rose at 0.5 percent per year. In the 1740s, the relationship seems clear as well, but with unfavorable consequences, as exports declined at 0.4 percent per year and GDP per capita declined at 0.3 percent per year. In the other decades of the

[51] Production for the domestic market helped to buoy up the growth of GDP after 1770, but even still, the GDP per capita figure 1800 was only slightly higher than that for 1720 and below that for 1730.

colonial period, that is the 1730s, 1750s and 1760s, the relationship is less clear. In the 1730s, exports increased at the strong rate of 5.1 percent per year, only slightly slower than in the previous decade, but GDP per capita declined at 0.6 percent per year. In the 1750s, exports grew, albeit slower than in any decade except the 1740s yet GDP per capita rose at 0.4 percent per year. In the following decade, exports grew faster than in the 1750s, but GDP per capita grew much more slowly at only 0.2 percent per year.

These figures reveal that the domestic sector influenced the outcomes. Between 1720 and 1740 when exports abroad surged upward by 6.3 percent per year in the aggregate and 0.8 percent per year on a per capita basis, GDP was held in check by a slower growth of output in the more dominant domestic sector. Output there rose at an annual rate of only 5.0 percent because food production grew slowly between 1720 and 1740. Two related phenomena explain this situation. On the one hand there was less need to produce food because the slave share of the population had increased, and on average slaves consumed less food. Second, the region imported more food most likely because landholders devoted more of their holdings to crops for export. The aggregate import of food rose at 12.5 percent per year, implying a $2 increase in the per capita value of food imports from other colonies between 1720 and 1740. Some of the growth of exports abroad was accomplished by shifting resources out of the production of food for the local market into the production of exports. After 1740 the food-producing sector was less of a drag on the region's production, with the per capita value of food production rising in each decade. Had the export sector been able to maintain the rapid pace of growth achieved in the 1720s and 1730s, or if it had slowed down less than it did, the region's economic history might have been much different. But this was not the case. Export growth slowed so much after 1740 that the per capita value of exports declined at a rate of 0.8 percent per year down through

1770.[52] In those circumstances, the region was fortunate to have had the larger food and firewood sector which plowed ahead steadily and kept GDP per capita from declining.

VI. The Terms of Trade and the Value of Exports

Colonists engaged in trade to obtain goods produced more cheaply abroad. If the terms of trade improved, the real quantity of imports that could have been obtained would have risen even if there were no increase in the quantity of the exports.[53] But the relative changes in export and import prices varied over time: the terms of trade improved at times, but worsened at others. And the changes differed across the colonies both in magnitude and timing.

What can be said about the Lower South? Did the terms of trade for that region improve for the colonists, and to such an extent that they offset the decline in the quantity of exports per capita? The price of rice rose substantially in the 1720s and 1730s, but those gains disappeared when prices dropped during the War of the Austrian Succession in the 1740s. Prices only returned to their pre-war high after 1760.[54] Indigo prices moved opposite to those for rice, soaring upward in the late 1740s when the crop was first cultivated on a commercial scale, but declining after 1760. But neither of these export prices can adequately reflect the general movement of all export prices; changes in the terms of trade must take into account the different behavior of the various exports.[55] By using the wholesale price indexes of South Carolina

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[52] And, exports per capita declined even faster thereafter. By 1800 the per capita value of exports was only 60 percent the value achieved in 1720.

[53] This was a point stressed by Douglass North in his staple export model, and was a key part of Marc Egnal's estimate that exports stimulated colonial economic growth to a rate of 0.5 percent per year. Douglass North, *Economic Growth of the U.S. 1790-1860*, (New York, 1962) and "Early National Income Estimates for the U.S.," *Economic Development and Cultural Change*, vol. 9, (1961) 387-96. Marc Egnal, " Economic Development," 199-214.

[54] Marc Egnal, "Economic Development," 209-10

[55] Coclanis, *Shadow of a Dream*, 107-108, shows a more continuous times series of both rice and indigo prices, and presents a comparison of the index of rice prices and an index of English wholesale

products prepared by Arthur Cole and George Rogers Taylor, which take into account the prices of all the major exports, it is possible to calculate an index to represent all exports.[56] For the import price index, wholesale commodity prices in New York and Philadelphia must suffice.[57] Although price data for imports into the Lower South would be preferable, they are not available for the entire period. The New York and Philadelphia price indexes should be a good proxy because they represent goods similar to those southern colonists imported. Moreover, while the prices in Charleston may have differed from those in New York or Philadelphia, changes in the prices moved similarly.[58]

The terms of trade varied often and widely, so it is difficult to generalize about the impact on the colonists (See figures 4A and 4B). Colonists benefited from an improvement in the terms of trade up through 1738 as the price of rice rose substantially, but those gains were lost over the next ten years. With the rise in the price of indigo in the late 1740s the terms of trade improved briefly, but fell for nearly a decade beginning in 1753. The terms of trade improved after the French and Indian War, but even with that recovery there had been little change over the colonial

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commodity prices, which shows that over the period 1722-75, the price of rice rose relative to the price of English goods, and likewise for indigo prices over the period 1747-75. He did not present the average increase over the periods, nor did he combine the two export prices to get a combined export price.

[56] The indexes are available in *Historical Statistics of the United States*, Series E92-95, with further details available in George Rogers Taylor, 1932, "Wholesale Commodity Prices at Charleston, South Carolina, 1732-1791," and "Wholesale Commodity Prices at Charleston, South Carolina, 1796-1861," *Journal of Economic and Business History*, vol. IV, pp. 356-77 and 848-76.

[57] The Wholesale Commodity Price indexes were from Arthur Cole, *Wholesale Commodity Prices in the United States, 1700-1861*, Vol. 1 (Cambridge, Mass., 1938), 124-25 and 148-49. According to Shepherd and Walton, some of the more important imports, were muscovado sugar, West Indian rum, molasses, and salt, but the imports into the Lower South that they could identify amounted to between 19 and 33 percent of all imports in the years from 1768 to 1772. Regrettably there is limited information on the price of imported manufactured goods, or other items that comprised some portion of imports into the region.

[58] For the short time period in which we can compare prices in the different locations, 1784-91, the Charleston and New York prices moved closely together, both rising from an index value of 78 in 1784 and 1785 to 100 in 1791, while Philadelphia's index changed very little. Cole, *Wholesale Commodity Prices*, 124-25, 148-49 and 153.

period.[59]

These terms of trade, however, ignore slave imports, a vital component of the region's trade. A substantial portion of the Lower South's export proceeds was spent on slave imports, not on goods and services, and such importation has implications for the terms of trade and the real incomes and standards of living of colonists. The value of slave imports as a percentage of the value of exports ran between 10 and 31 percent.[60] A second time series on the terms of trade that takes into account the importation of slaves by combining the import price index discussed above with an index of slave prices is shown in Figure 4B.[61] As shown there, this alternative version of the terms of trade showed no improvement over the colonial period 1722 to 1773, and our estimate is that it declined by about 10 percent.[62] The worsening in the terms of trade reflects the fact that the price of slaves rose over the century, especially after 1760.

Although we cannot say reliably what the trend in the terms of trade was over the colonial period using either of these two measures, it seems clear that there was no noticeable long term upward movement. In other words, changes in the terms of trade would not alter the picture shown by the sluggish growth in output per capita.

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[59] There is so much variation in the series that no regression estimates of the trend is significant. The 1770 value of the terms of trade was roughly 10 percent above the value for 1720, but 12 percent below that for 1730, and well below the peak of 1.79 found for 1736. The terms improved in the years leading up to the Revolution, but with the deterioration of trade during and after the Revolution, they fell back with the result that for the entire period 1720 to 1800, the terms of trade deteriorated by about 10 percent.

[60] In the 1740s, when the rice market was severely depressed and there was a prohibitive duty of slave imports up through 1744, the figure amounted to only 2 percent. See Mancall, Rosenbloom and Weiss, "Slave Prices," Tables 1 and 2. These shares are based on the values of slaves and exports expressed in 1840 prices.

[61] The weights given to each are based on the import data for 1768-72, which indicate that slave imports comprised 27.7 percent of all imports into the Lower South. *Historical Statistics of the United States*, (1975) Series Z: 287 and 290. An alternative way to treat the impact of slave imports would be calculate the effect of the terms of trade on only the fraction of export revenues that were spent on merchandise imports.

[62] There is so much variation in the series that no regression estimates of the trend is significant. The 1770 figure was below that for 1722, our earliest observation, by 5 percent and below the 1730 figure by 19 percent. The 3 year average around 1770 was above the 1722 figure by 9 percent, but below the 1730 figure by 9 percent.

VII. The Standard of Living of the Free Population

The preceding results indicate that the export trade had a small impact on the standard of living in the Lower South due largely to the growth of the slave population. The importation of slaves reduced any advantage that might otherwise have arisen from improvements in the terms of trade and simultaneously increased the denominator in the calculation of GDP per capita for the entire population. The picture looks somewhat different for the free colonists only.

The average value of exports per free person was substantially higher than that for the entire population; 80 percent higher in 1740 for example. Since the free population grew slightly slower than the total population during the period, 1720 to 1770, exports per free person rose slightly from just under $22 to $23.[63] Gross Domestic Product per free person increased only slightly faster during the colonial period than did that for the entire population.[64] For the period 1720 to 1770, GDP per free person rose at 0.14 percent per year versus the negligible 0.03 percent for the entire population.[65] (see Tables 5 and 6) Although the growth of income per free colonist in the Lower South was still sluggish, the colonists of the Lower South were well off. The average GDP per capita (valued in prices of 1840) amounted to $75 in 1720, rose noticeably to $85 in 1730 and then fell back to $80 by 1770.[66]

The free white colonists may also have benefited from bounties provided by England to

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[63] For the longer period 1720 to 1800, however, the free population grew faster than the total population with the consequence that exports per free person declined at an average annual rate of 0.7 percent per year.

[64] The amount of GDP flowing to the colonists was estimated by subtracting from total GDP an estimate of maintenance for the slave population.

[65] For the longer period 1720-1800, however, the figure fell at 0.05 percent per year instead of growing at 0.04 percent when the entire population is taken into consideration.

[66] The value declined further after the Revolutionary War, with the 1800 figure being below that for 1720. These values are somewhat below those presented by Perkins (1980, p. 154), which he derived by multiplying average wealth estimates by an assumed wealth/output ratio.

encourage the importation of items that the British thought they sorely needed. These bounties were paid to encourage the import of selected items from the colonies. To some extent they were intended to offset higher costs of transporting items from the colonies than from the continent. The colonists benefited from the increased demand for their product by English importers who received these subsidies, but they may also have benefited from some portion of the bounty being passed on to the colonial producers. Because such a government subsidy is not included in the 1840 price used to value colonial output, the income flowing to white colonists may not be fully captured in our measure.[67]

Two subsidized items were of some importance to colonists of the Lower South: naval stores and indigo. In the case of naval stores, the British needed an alternate source of supply when war in Scandinavia and actions by the Stockholm monopoly severely reduced imports of tar and pitch from the Baltic region. Beginning in 1705 a bounty of £4 per ton on tar and pitch was provided for imports from the colonies.[68] The Act providing for these bounties lapsed in 1725, and "the bounties were discontinued during the four years following 1725," but were restored with passage of a new Act in 1729.[69] The latter provided reduced bounties of £2 4s on tar and £1 on pitch.[70] The bounty for indigo was also established in response to the impact of war. King George's War (1739-1748) disrupted both the rice trade of the Lower South and the British importation of indigo from French colonies. During the War, the colonists experiment

[67] We do not know which portion of the bounty, if any, was passed on to the colonists, so our calculations are made to illustrate the consequences of these bounties in the event that all of it was passed on to the colonists.

[68] Lewis Gray, *Agriculture in the Southern United States to 1860*, pp 153-56 and Justin Williams, "English Mercantilism and Carolina Naval Stores, 1705-1776," *Journal of Southern History*, vol. 1, 1935, pp. 173-74. A ton was specified as being eight barrels. Bounties were also provided for turpentine and rosin at £3 per ton, and for mast, yards and bowsprits at £1, none of which were of much importance.

[69] Gray, *Southern Agriculture*, p. 156; Williams, "English Mercantilism," pp. 175, 184.

[70] For tar that met the specifications of the 1722 act, the bounty would be £ 4. But, there were complaints about the quality of tar from the colonies, and "London merchants petitioned the Board of Trade in 17679 to drop green tar from the bounty list, 'there being little or no tar of such quality imported or used in the Manufactures of this Kingdom.'" Williams, "English Mercantilism," pp. 184-85)

with indigo as an alternative export staple, and at the end of the War the British established a bounty to encourage the development of an alternative supply.[71]

Although the effectiveness of these bounties in calling forth additional production has not been fully determined, the colonists nevertheless may have received additional income that is not included in our estimate of the value of exports produced.[72] And, in the case of naval stores, this was not an inconsiderable amount. In 1706, the initial year of payments, the bounty amounted to only £554, but rose quickly to reach £10,135 in 1715, nearly tripled the following year, and peaked at £52,011s in 1718.[73] On a per capita basis for the colonies as a whole, these do not amount to much, running between 3 to 5 pence per white person in all colonies, with a peak of around 30 pence per person in 1718. The export of naval stores, however, came disproportionately from the Lower South. In 1768-72 when we have export data for all colonies, the Lower South accounted for 68 percent of all naval stores exports. Given that this was a region with a relatively small white population, the bounty per person would have been a more noticeable amount, reaching as high as £1 Sterling (or $4.44) in 1720 (see Table 5). If the bounties on naval stores and indigo were fully passed on to the colonists in all years, they would have given a bigger boost to the colonists' income early in the period, especially between 1716 and 1725, than near its end. Ironically, the consequence of this would have been to slow the growth of per capita income.

With or without the bounties, the free colonists in the Lower South were quite well off in

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[71] According to McCusker and Menard, *The Economy of British America*, p. 187, the initial bounty of six pence per lb. was reduced to 4 pence sometime in the 1750 or 1760s, but then restored to six pence in the early 1770s. Lewis Gray, *Agriculture in the Southern United States to 1860*, p. 293 says the bounty was reduced to 4 pence per lb. in the early 1770s.

[72] McCusker and Menard are of the opinion that the bounties stimulated the production of naval stores up through the 1720s, whereas for indigo "the bounty's impact has been exaggerated." In the latter's case, duties on foreign indigo likely had a more favorable effect. *Ibid*, pp. 179-80,187.

[73] Robert Greenhalgh Albion, *Forest and Sea Power*, Cambridge: Harvard University Press, 1829, Appendix B, p. 418. Over the course of the 70 years of payments, the cost totaled £1,471,719

the mid-eighteenth century. Indeed, they were as well off as the average American resident was in the opening decades of the nineteenth century, when GDP per capita for the nation ran around $66 to $77 up through 1830. Not until 1840, when the value of GDP per capita reached $91 did the average American surpass the level that had been achieved by these free colonists as early as 1730.[74] Of course those nineteenth-century figures pertain to the entire population, including slaves. When the comparison is made to the free population alone in 1840, the free colonists do not appear quite as well off. The most pertinent comparison is with the free population in the South Atlantic region. That region, which includes the District of Columbia and the states of Delaware, Maryland, Virginia, North Carolina, South Carolina Georgia and Florida, is not exactly comparable to the Lower South, but is more similar than the entire nation. Average income per capita for free persons in that region in 1840 was $96, higher than that for the colonists, but not by much.[75] That figure suggests that per capita income in the region may have increased by only around 12 to 20 percent over the preceding century.

VIII. Conclusions

These new estimates of exports, output in the domestic sector, and GDP provide little support for the view that export success led to intensive economic growth. Any picture of colonial success that rests on the performance of the export sector alone is likely to misrepresent the true course of change, at least for the Lower South. This should not be too surprising. Exports were a relatively small part of the economy. They have received a great deal of attention

[74] These figures are all expressed in prices of 1840. See Weiss, "Economic Growth Before 1860," Table

[75] Stanley Engerman and Robert Fogel, "The Economics of Slavery" in Stanley Engerman and Robert Fogel eds., *The Reinterpretation of American Economic History*, 335. Their figures were reported in prices of 1860, but they would be the same if expressed in 1840 prices because there was no change in the GDP price deflator between the two dates. See Robert Gallman, "Gross National Product," 34, Table A-3. The average per capita income for the entire free population in the United States in 1840 was $105, above that for the free colonists of the Lower South.

because they were a primary reason for the initial English colonization of North America, at the heart of political debates, and generated quantifiable statistics. Moreover, exports from the south grew quite rapidly in the aggregate, so that sector would appear to have been dynamic and capable of generating sustained growth. Population, however, was simply growing quicker.

The emphasis that previous research put on South Carolina, and in particular the low country's export and economic success, has fostered a misleading view of the performance of the entire region. The low country was only a portion of the region, and its population became less numerically significant over the course of the eighteenth century. The economic activity taking place in Georgia, North Carolina and in the rapidly growing back country of South Carolina played a large role in shaping the region's economic performance. The other primary demographic shift in the region—the growing proportion of the population under age ten—also has received inadequate attention. Each of these factors suggests that reliance on the adult population of the low country—the population most responsible for exports—provides an imperfect picture of the regional economy.

The fact that output per person did not grow much, if at all, over the course of the eighteenth century should not blind us to the success that was achieved. The colonies of the Lower South experienced rapid population growth. The number of free persons and slaves grew at 4.2 percent per year between 1720 and 1800, and the labor force grew slightly slower (3.9 percent per year) as the share of the population comprised of women and children rose. The combination of a stable or nearly stable per capita figure and rapid population growth means that gross domestic product in total grew quite rapidly. Real GDP for the non-Indian population increased at 4.44 percent per year during the colonial period from 1720 to 1770, and 4.27 percent per year from 1720 through the end of the century.

The great need for labor in the colonies encouraged both migration and the importation of slaves over the course of the eighteenth century. It is all too easy, perhaps, to overlook the fact that the colonial economy was able to absorb the additional labor without experiencing declines in productivity. This stands in contrast to the inability of so many economies to absorb labor in the period after World War II, and differs from the experience of much of Europe between 1500 and 1750 when economic advance could occur only when population growth was held in check.[76] The success of the Lower South's economy is in part a tribute to the abundance of land that enabled colonists to fend off diminishing returns, at least in agriculture, and perhaps in part to the transfer of land from Natives to newcomers at relatively low costs. Nevertheless, the existence of that abundant resource is one thing, its apparent efficient use in combination with labor should not be taken for granted. That the per capita figure did not decline in the face of the rapid increase in population and labor is a notable accomplishment.

The extensive growth of population and GDP are measures of success. Colonists had more children because they felt they could afford to and because they believed that their children would eventually become productive workers.[77] Likewise, some colonists imported slaves because they saw them as productive investments in a land abundant environment. Others migrated to the region because the economy looked attractive to them. These responses are signs of a productive economy. Indeed, the fact that the region's economy could forge ahead in the wake of such population increases attests to its capabilities. For the colonial period itself, there

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[76] See Robert Allen, "Progress and poverty in early modern Europe," *Economic History Review*, LVI (2003), 406-07.

[77] With a rise in income, households can choose to have more goods and more children. If the prices of goods were relatively high, as they likely were in colonial America, households might have chosen to substitute children for durable goods. And, some might have chosen to increase the number of children rather than try provide greater quality for a smaller number. See Richard Easterlin, *The Reluctant Economist*, chap. 8, "An Economic Framework for Fertility Analysis," Cambridge University Press, 2004, for a discussion of these issues.

was economic success, just not quite as much as previous writers suggested.

The results here do not alter the older view that the economy of the mainland Anglo-American colonies was a success. Instead, careful attention to the changing demographic composition and residential patterns of the region reveals that the traditional view was correct to a large extent, but too narrowly focused. Rather than concentrate on exports, which involved an increasingly small percentage of the colonial population, scholars need to measure economic success by considering the entire population, including the vast majority who were not directly involved in export-oriented occupations. The staples thesis can no longer stand alone as the primary way to explain this economy. If we are to take seriously the effort to understand and measure economic performance in the mainland, we need to replace explanations pivoting on exports with newer, more encompassing models that include a wide range of economic behavior. One way to launch this new conceptualization of the Anglo-American economy is to pay greater attention to the entire population, even those whose efforts were never recorded by merchants or port authorities. Seen from this new angle, slow growth of income *per capita* is no longer an anomaly. It is, instead, a reasonable measure of an economy that succeeded despite massive population growth, a demographic trend that has undermined all too many other societies.

Table 1
Quantity and Value of the Major Exports from the Lower South, 1768-72

	1768	1769	1770	1771	1772
Quantities of Major Exports					
Rice (bbls)	137,740	102,833	148,831	204,894	127,662
Indigo (lbs.)	517,301	416,436	573,017	454,207	758,677
Naval Stores (bbls)	85,388	91,604	76,375	86,852	71,882
Deerskins (lbs.)		392,739	328,832	438,344	359,482
Cotton (lbs.)	3,300	544	2,444	2,615	1,128
Value of Major Exports in Pounds Sterling					
Rice	322,878	284,216	260,584	282,985	377,001
Indigo	78,113	75,375	103,430	106,285	196,118
Naval Stores	31,381	32,856	28,860	33,035	32,412
Deerskins	-	39,838	31,731	42,241	34,563
Cotton	170	25	105	98	45
Sum of the Above	432,542	432,310	424,710	464,644	640,139
Value of All Exports from the Region	538,000	551,000	534,000	593,000	800,000
Major Export Share	80.4%	78.5%	79.5%	78.4%	80.0%

Sources and Notes:

Shepherd and Walton, 1972, Shipping, Maritime Trade…..Appendix IV, Tables 2-6, pp.211-227

The value of all exports is an independent estimate made by contemporaries, and accepted by Shepherd and Walton. (See Shepherd and Walton, pp. 93-95). Shepherd and Walton reported the 1769 figure for rice exports to southern Europe in hundredweight. We converted to barrels by dividing the reported value by the price per barrel (2.1814 Pounds Sterling) implicit in the Shepherd and Walton figures for rice exports to Great Britain and the West Indies in 1769. That conversion implies there were 5.25 hundredweight per barrel.

Table 2
Quantities of Major Exports from the Lower South, 1712-1800

	Rice	**Naval Stores**	**Deerskins**	**Indigo**	**Cotton**
	lbs	Barrels	lbs.	lbs	1000 lbs
Panel A: Three-year Average Benchmark Figures by Year of Production					
1712	3,168,625	9,506	179,350		
1720	8,060,551	33,505	120,721		
1730	19,131,450	30,564	229,244		
1740	34,917,672	33,148	219,575		
1750	34,123,207	66,594	285,387	28,933	
1760	47,080,950	46,407	242,874	389,767	
1770	78,227,450	81,500	375,553	595,300	2

1790	41,911,388	50,188	71,269	488,017	112
1800	45,275,731	37,772	146,227	4,790	18,681
Panel B: Average Annual Rates of Change					
By Decade					
1712-1720	12.38	17.05	-4.83		
1720-1730	9.03	-0.91	6.62		
1730-1740	6.20	0.82	-0.43		
1740-1750	-0.23	7.23	2.66		
1750-1760	3.27	-3.55	-1.60	29.70	
1760-1770	5.21	5.79	4.45	4.33	
1790-1800	0.78	-2.80	7.45	-37.02	66.76
By Sub-period					
1720-1740	7.61	-0.05	3.04		
1740-1770	2.73	3.04	1.81	7.49	
1770-1800	-1.81	-2.53	-3.10	-14.85	35.49
Over the Long Term					
1712-1770	5.68	3.77	1.28		
1720-1770	4.65	1.79	2.30		
1720-1800	2.18	0.15	0.24		

Notes and Sources: See the Appendix to this paper

The rate of growth for indigo shown for the period 1740-70 covers only the period from 1746, the first year of production.

Table 3
Foreign Exports from the Lower South, 1720-1800

	Population (1,000s)	Agricultural Exports ($1,000s)	$ Per capita
1720	39.7	540.90	13.64
1730	60.0	1,104.40	18.41
1740	112.9	1,823.60	16.15
1750	143.2	1,758.30	12.28
1760	209.8	2,652.70	12.65
1770	345.8	4,367.90	12.63
1780	516.2	(NA)	(NA)
1790	762.4	3,867.20	5.07
1800	1091.4	9,510.20	8.71
	Average Annual Rates of Change		
By decade			
1720-1730	4.22	7.40	3.04
1730-1740	6.53	5.14	-1.30
1740-1750	2.41	-0.36	-2.70
1750-1760	3.89	4.20	0.30
1760-1770	5.12	5.11	-0.02
1790-1800	3.65	9.42	5.56
By Sub-period			
1720-1740	5.36	6.27	0.85
1740-1770	3.80	2.95	-0.82
1770-1800	3.91	2.63	-1.23
Over the Long Term			
1720-1770	4.42	4.27	-0.15
1720-1800	4.23	3.65	-0.56

Notes: Exports to foreign destinations are three-year averages valued in 1840 prices. See Appendix to this paper for details regarding the estimation..

Table 4

Output of the Domestic Sector of the Lower South, 1720-1800

Year	Food Consumed	Food Imported	Food Produced	Firewood	Shelter	Non Agric. Output	Domestic Sector Output
1720	900,112	29,977	870,135	163,263	91,275	480,527	1,605,200
1730	1,358,163	101,417	1,256,746	247,544	134,749	701,709	2,340,748
1740	2,610,737	316,694	2,294,043	464,242	268,655	1,244,090	4,271,030
1750	3,412,969	330,577	3,082,391	803,642	349,983	1,563,137	5,799,154
1760	5,115,313	448,192	4,667,121	1,203,615	521,275	2,376,259	8,768,270
1770	8,588,774	359,567	8,229,207	1,986,491	888,289	3,941,888	15,045,875
1800	30,184,719	1,145,964	29,038,755	6,658,683	3,758,473	13,767,211	53,223,122
			Average Annual Rates of Change				
By Decade							
1720-1730	4.20	12.96	3.74	4.25	3.97	3.86	3.84
1730-1740	6.75	12.06	6.20	6.49	7.14	5.89	6.20
1740-1750	2.72	0.43	3.00	5.64	2.68	2.31	3.11
1750-1760	4.13	3.09	4.24	4.12	4.06	4.28	4.22
1760-1770	5.32	-2.18	5.84	5.14	5.47	5.19	5.55
By Sub-period							
1720-1740	5.47	12.51	4.97	5.36	5.55	4.87	5.01
1740-1770	4.05	0.42	4.35	4.97	4.07	3.92	4.29
1770-1800	4.28	3.94	4.29	4.11	4.93	4.26	4.30
Over the Long Term							
1720-1770	4.61	5.09	4.60	5.12	4.66	4.29	4.58
1720-1800	4.49	4.66	4.48	4.74	4.76	4.28	4.47

Notes and Sources:
Estimates are described in Mancall, Rosenbloom and Weiss, "Conjectural Estimates of Economic Growth in the Lower South, 1720 to 1800," in *History Matters: Economics Growth Technology, and Demographic Change,* and Timothy Guinnane, William Sundstrom, and Warren Whatley, eds. Stanford University Press 2004, pp. 389-424.

Table 5:
GDP, GDP per Capita, and Foreign Exports
of the Lower South, 1720-1800

	GDP (narrowly defined)	Agricultural Exports ($1,000s)	Exports Abroad as a Percentage of GDP	GDP Per Capita (narrowly defined)
1720	2,247,403	540.9	24.0	56.66
1730	3,571,884	1,104.4	30.9	59.53
1740	6,305,971	1,823.6	28.8	55.84
1750	7,723,909	1,758.3	22.6	53.94
1760	11,804,613	2,652.7	22.4	56.28
1770	19,901,062	4,367.9	21.9	57.55
1780		(NA)	(NA)	(NA)
1790		3,867.2	(NA)	(NA)
1800	64,370,772	9,510.2	14.8	58.98
	Average Annual Rates of Change			
By Decade				
1720-1730	4.74	7.40		0.50
1730-1740	5.85	5.14		-0.64
1740-1750	2.05	-0.36		-0.34
1750-1760	4.33	4.20		0.42
1760-1770	5.36	5.11		0.22
By Sub-period				
1720-1740	5.29	6.27		- 0.07
1740-1770	3.91	2.95		0.10
1770-1800	3.99	2.63		0.08
Over the Long Term				
1720-1770	4.46	4.27		0.03
1720-1800	4.28	3.65		0.05

Notes and Sources to Table 5:

GDP is the sum of output in the Domestic and Export sectors, where the latter includes shipments to other North American colonies. The estimates of exports abroad are from Table 3 above. The estimates of output in the domestic sector are from Table 4.

GDP as measured here is narrowly defined to exclude land clearing and the value of home manufactures. If it were more broadly defined to include those items, growth would be slower because both of those items were of greater importance early on in the period. All figures are real dollars expressed in terms of 1840 prices. These estimates are similar in concept to the earlier conjectures made for the early nineteenth century in that the scope of coverage is consistent as regards the extent to which marketed and non-marketed output is measured. See Paul David, "The Growth of Real Product in the United States Before 1840: New Evidence, Controlled Conjectures," *Journal of Economic History* 27 (1967), 151-197; Thomas Weiss, "U.S. Labor Force Estimates and Economic Growth, 1800-1860," in Robert Gallman and John Wallis, eds., *American Economic Growth and Standards of Living before the Civil War* (Chicago, 1992), 19-75; Weiss, "Economic Growth Before 1860: Revised Conjectures," in Weiss and Donald Schaefer, eds., *American Economic Development in Historical Perspective* (Stanford, 1994), 11-27

These GDP figures are not the usual measure of the market value of goods and services produced in any given year as compiled by the Department of Commerce today. Portions of the domestic sector's output in each year were estimated by extrapolating backward in time a base year value for 1800 that reflected a greater degree of market orientation than existed in 1720. In effect, they measure the value of the colonies' output as though the same

fraction were marketed in each year as prevailed in 1800. This makes sense when trying to gauge the output and standard of living of people whose economy may have been largely non-market oriented, but as a result the figures are conceptually different from the standard national income accounting measures wherein GDP is confined for the most part to market transactions. In that scheme, GDP can increase with an increase in the extent to which output passes through markets, even when there is no increase in production. The present estimates minimize growth from that source. It may be that some of the divergence between the present estimates of growth in output per capita and those of previous researchers reflects the differences in concept. That is, the higher rates of growth estimated by others may reflect the increased output that is going through market channels rather than an increase in production. This, however, is only speculation, as other researchers have not made clear how much, if any, of their estimates reflect increased output versus increased market orientation. Of course, as Farley Grubb ("The circulating medium of exchange in colonial Pennsylvania, 1729-1775," *Explorations in Economic History* 41 (2004), 353) has argued, the increase in the marketed versus non-marketed activity can mean an increase in welfare per capita.

Table 6
Exports, Bounties and Income per Colonist by Source

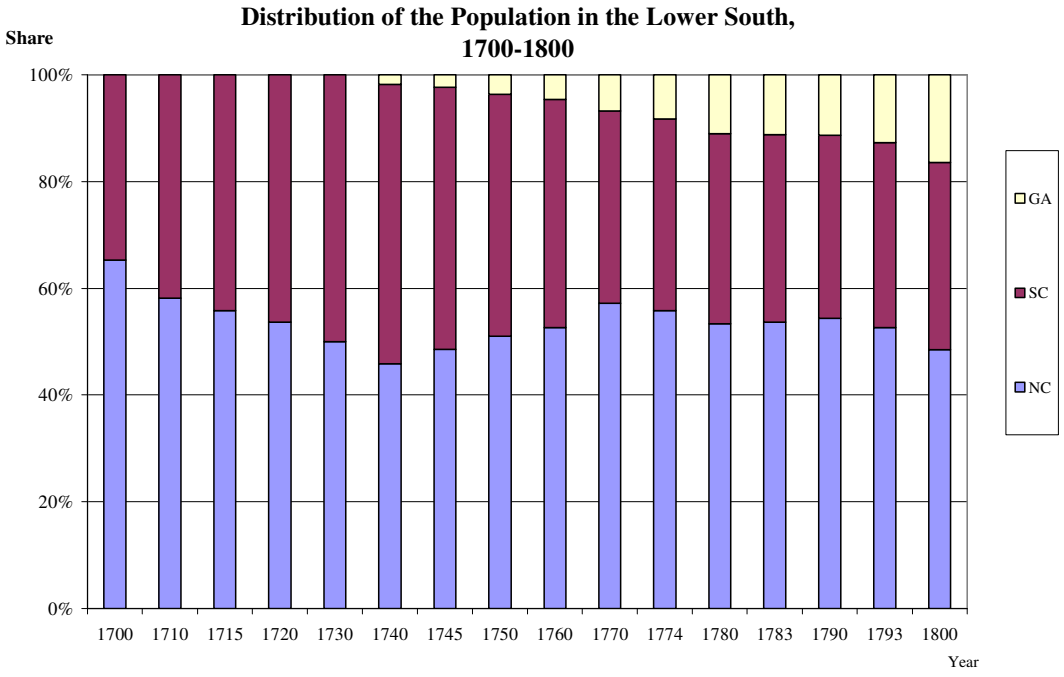
	White Population	Exports to Foreign Destinations	Residual GDP (excl. exports)	Residual GDP plus Exports	Bounty on Indigo	Bounty on Naval Stores	Residual GDP plus exports and bounties
Year							
1720	24,795	21.81	53.58	75.39		4.72	80.11
1730	34,000	32.48	52.77	85.26		0.88	86.14
1740	62,781	29.05	50.44	79.49		0.83	80.32
1750	82,384	21.34	52.03	73.37	0.03	0.82	74.22
1760	119,628	22.17	55.05	77.23	0.39	0.45	78.07
1770	190,216	22.96	57.85	80.81	0.18	0.52	81.51
1780	305,873						
1790	521,859						
1800	738,961	12.87	59.29	72.16			72.16
		Average Annual Rates of Change					
By Decade							
1720-1730	3.21	4.06	-0.15	1.24		-15.41	0.73
1730-1740	6.32	-1.11	-0.45	-0.70		-0.66	-0.70
1740-1750	2.75	-3.04	0.31	-0.80		-0.12	-0.79
1750-1760	3.80	0.38	0.57	0.51	27.86	-5.76	0.51
1760-1770	4.75	0.35	0.50	0.45	-7.19	1.31	0.43
By Sub-period							
1720-1740	4.75	1.44	-0.30	0.26		-8.33	0.01
1740-1770	3.76	-0.78	0.46	0.06		-1.57	0.05
1770-1800	4.63	-1.91	0.08	-0.38			-0.41
Over the Long Term							
1720-1770	4.16	0.10	0.15	0.14		-4.33	0.03
1720-1800	4.33	-0.66	0.13	-0.05			-0.13

Sources: See Tables 4 and 5, the text and the appendix. All figures, except population, are expressed in U.S. dollars at prices of 1840.

Residual GDP was calculated by subtracting a maintenance allowance for slaves from the estimated value of GDP and also deducting the value of exports to foreign destinations. The maintenance allowance was equal to the value of the slave diet underlying the estimates of GDP, which increased over time from a value of $25.42 in 1720 to $29.11 in 1770, plus an allowance for housing, firewood and all other items. The value of these three items varied slightly over time, and averaged $7.80 for the period 1720 to 1770.

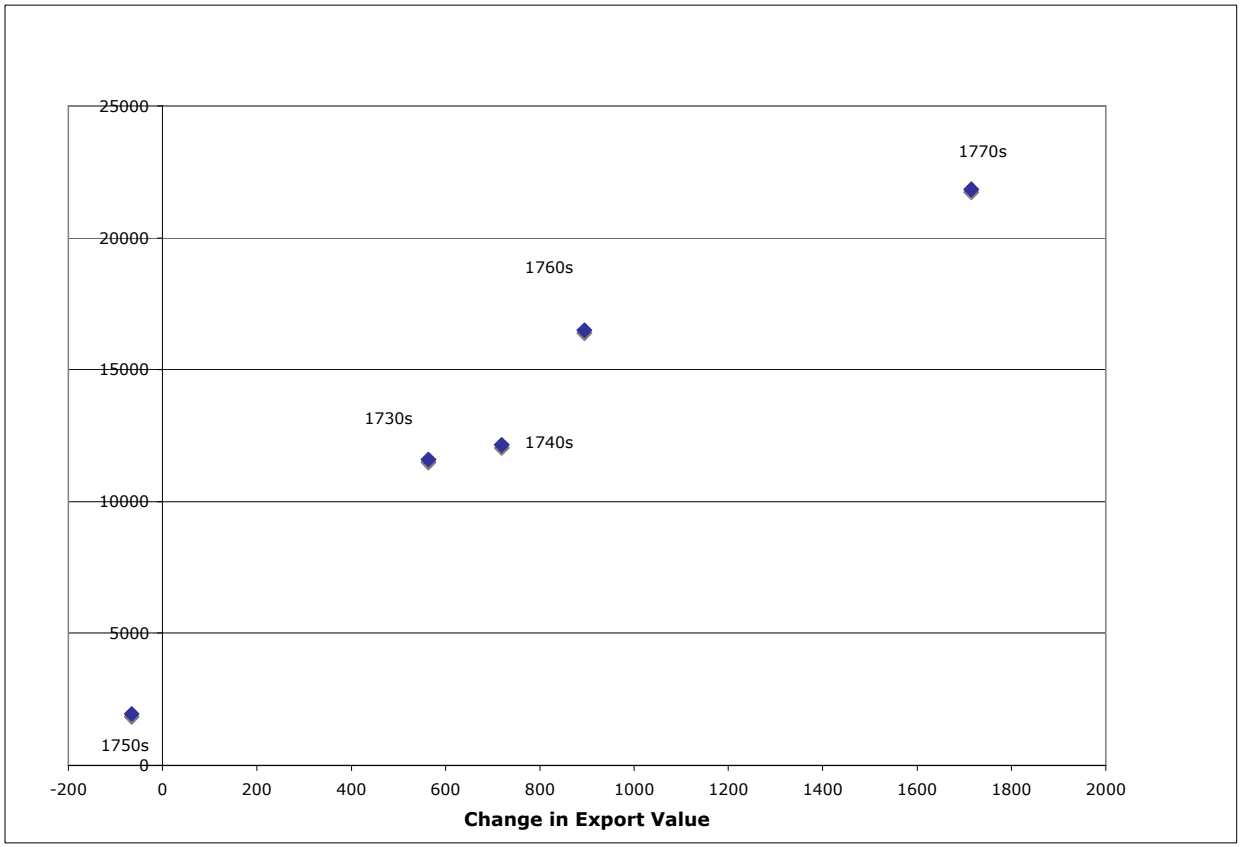
The bounties were estimated by multiplying the quantities exported of indigo, and of naval stores (tar, green tar, pitch and turpentine), by the specified bounty per unit. The indigo bounty rate is from McCusker and Menard, *The Economy of British America*, p. 187. The initial bounty of six pence per lb. was reduced to 4 pence sometime in the 1750 or 1760s, but then restored to six pence in the early 1770s. Lewis Gray, *Agriculture in the Southern United States to 1860*, p. 293 says the bounty was reduced to 4 pence per lb. in the early 1770s. The naval stores bounty rate is from Lewis Gray, *Agriculture in the Southern United States to 1860*, pp. 153-56. A ton was specified as being eight barrels. Bounties were also provided for turpentine and rosin at £3 per ton, and for mast, yards and bowsprits at £1, none of which were of much importance to the Lower South.

FIGURE 1



Source: Historical Statistics (Series Z:1-19).

Figure 2: Slave Imports as a Function of Change in Export Value by Decade, 1720-1770



Sources: Slave imports from Philip D. Morgan, "Black Society in the Lowcountry, 1760-1810," in Ira Berlin and Ronald Hoffman, eds, *Slavery and Freedom in the Age of the American Revolution* (Charlottesville: University of Virginia Press, 1983), p. 87; and Philip D. Morgan, *Slave Counterpoint: Black Culture in the Eighteenth-Century Chesapeake and Low Country* (Chapel Hill and London: University of North Carolina Press, 1998), p. 59. Export values are from the appendix.

Figure 3
Composition of the Population of the Lower South, 1720-1800

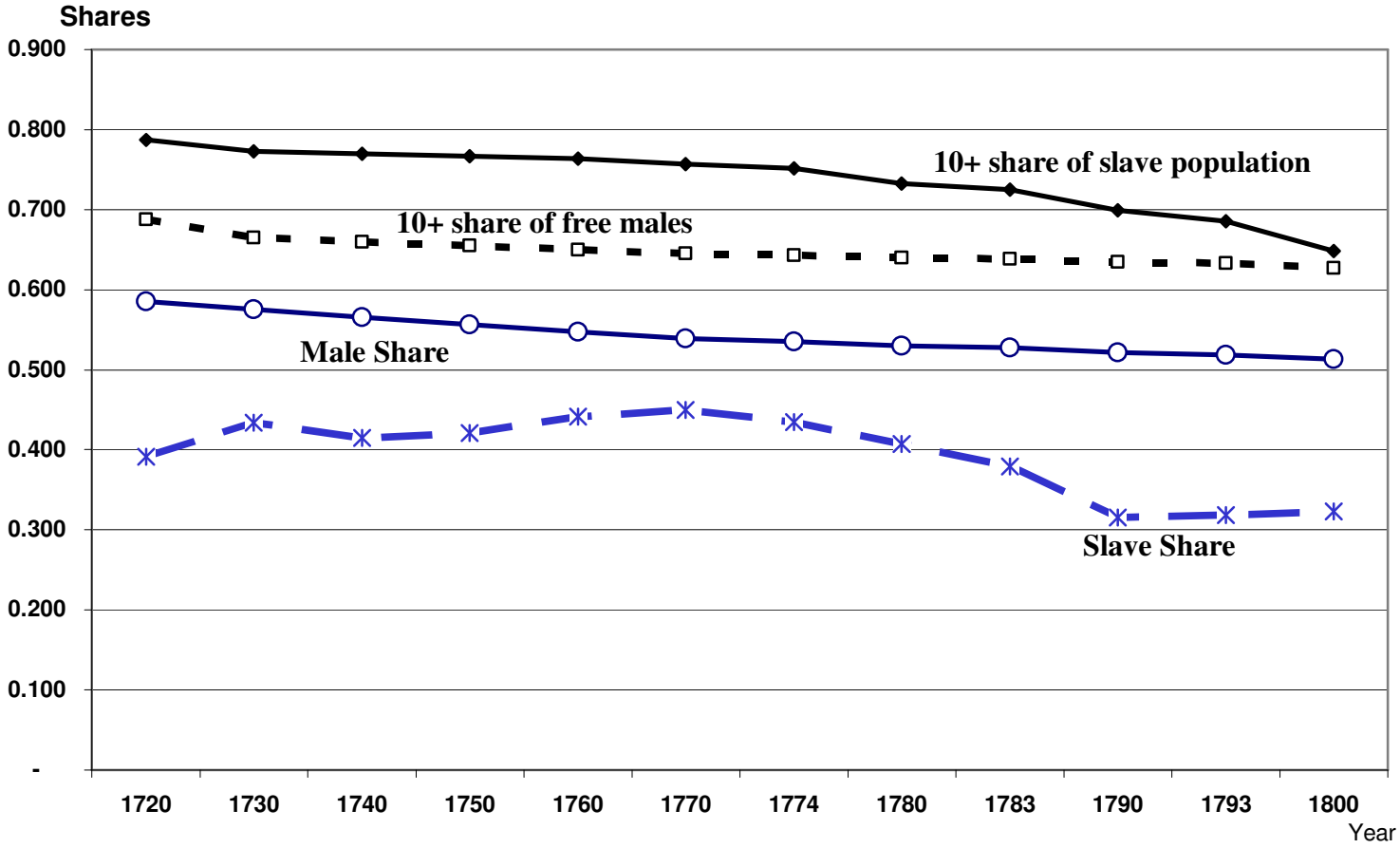
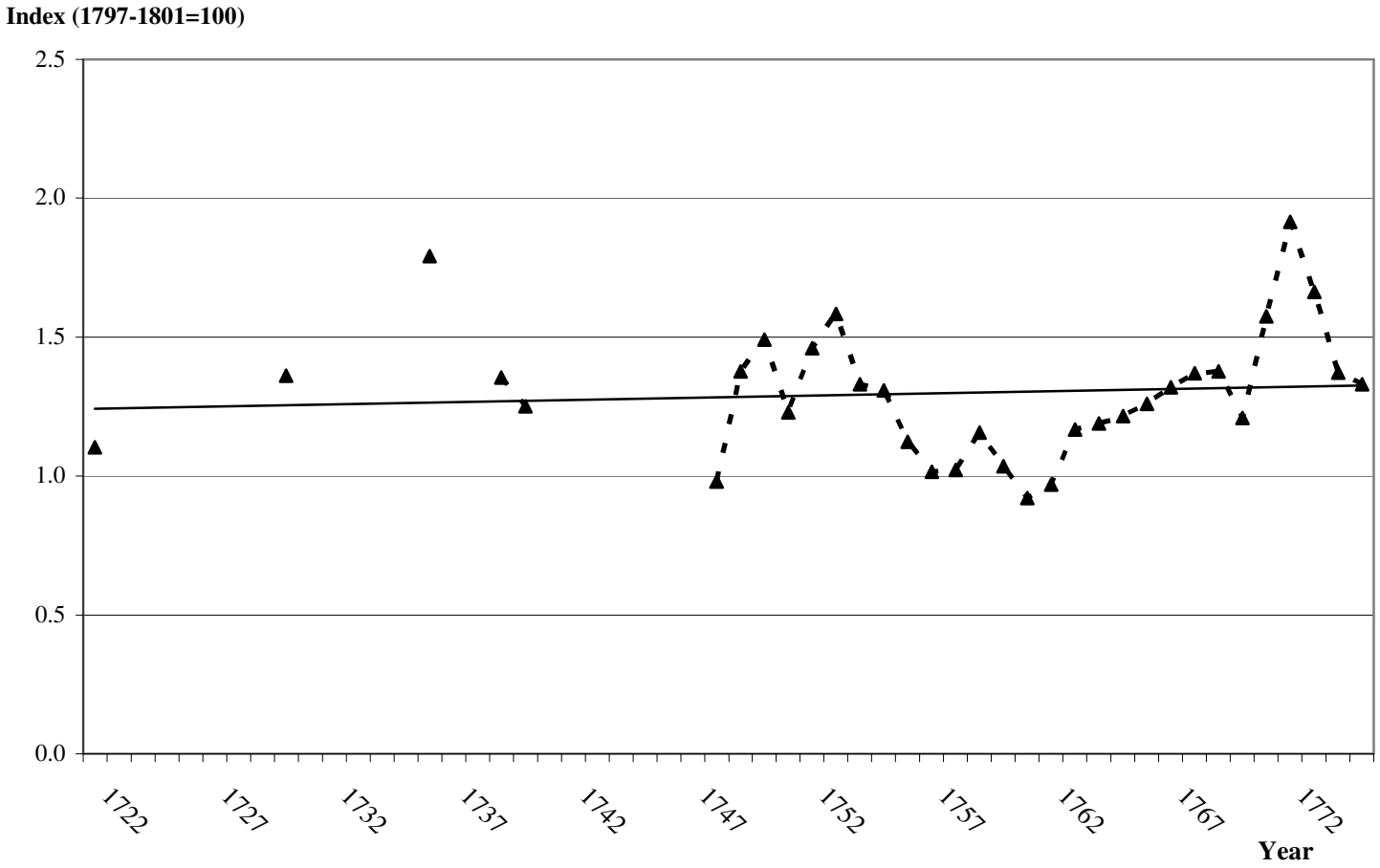
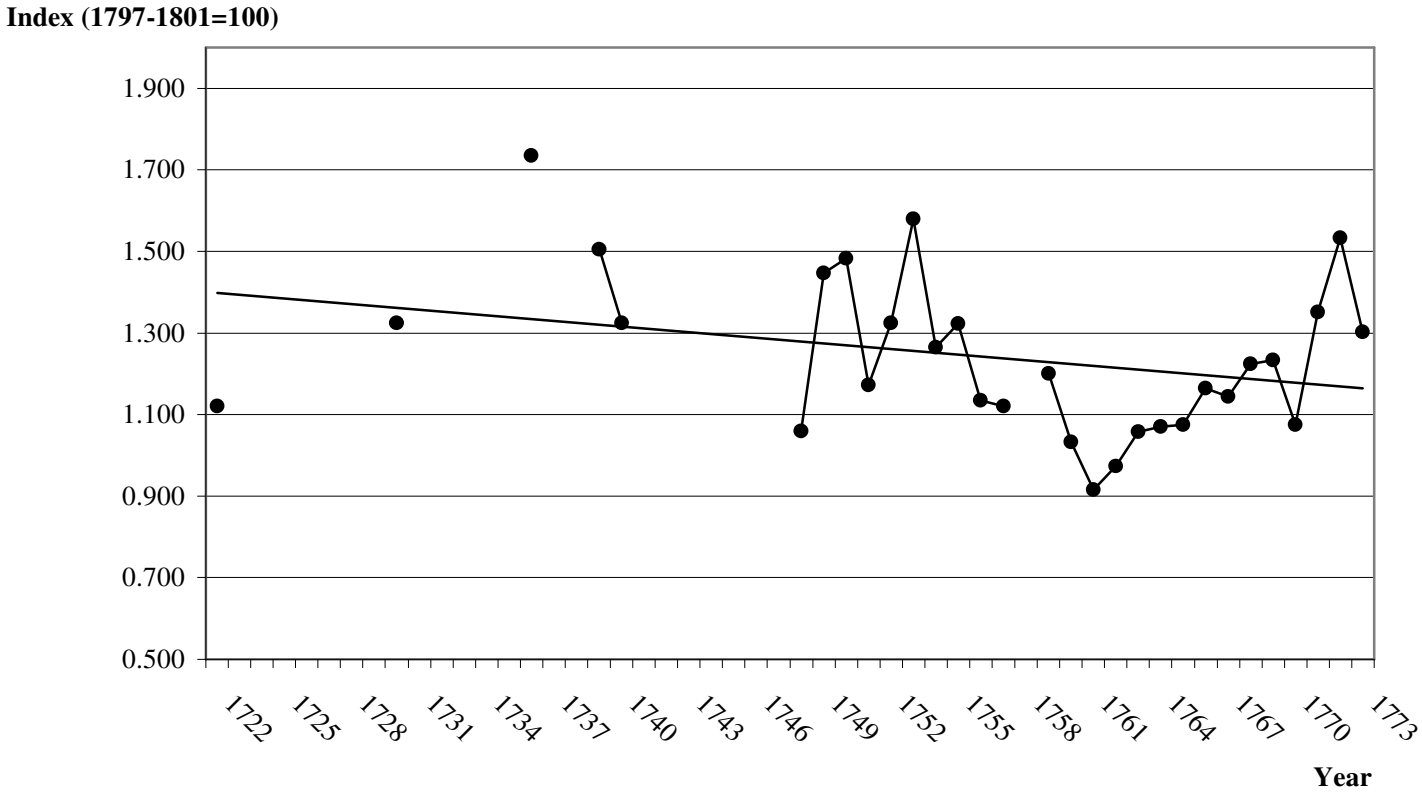


Figure 4A
Ratio of Export Prices to Import Prices for Charleston, 1720-1775



Source: See discussion in text. The trend line is for illustrative purposes only

Figure 4B
Ratio of Export Prices to Import Prices for Charleston, 1722-1773
(with slave prices included in the import price index)



Source: See discussion in text. The trend line is for illustrative purposes only.

Estimates of Exports from the Lower South, 1710-1803
Appendix to: Exports and Slow Economic Growth

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Although the historical record for the colonial period is more complete as regards exports than other things, it nevertheless is not fully complete, nor is it complete enough for our purposes. A complete record would cover all exports from each colony or colonial region, not only one or two major staple exports, and cover exports to all destinations, not just Great Britain or England, which is readily available. And, it would distinguish exports produced in the region from re-exports of goods produced elsewhere. In order to estimate GDP for the region, we had to construct the series on domestically-produced exports shipped to all destinations.

The series we produced is shown in Tables 1 and 2. In Table 1 we present benchmark estimates of the real value of all domestically-produced exports to all destinations, as well as the per capita values of those exports and the average rates of change. We have shown the real value of exports under two different dating schemes. We have shown the export figures by year of export, which is the more common or traditional dating scheme. We have also shown the value of exports by year of production, because we are ultimately interested in estimating the region's production. Thus we have shifted the estimated values of exports backwards one year in order to have a series that is more closely aligned with the time of production than with the time of export. Table 2 shows the annual values of these variables. The derivation of this series on the real value of all exports to all destinations is explained below and laid out in Tables 3 through 12.

Derivation of the Series on Domestically Produced Exports

We constructed the estimates in parts. First we established a benchmark figure for 1770 based on the estimates of Shepherd and Walton.[1] We then extended that figure backward to 1710 and forward to 1803. The former extension was done using an index of the volume of the four most important exports. The latter extension was done in two parts: we first linked the 1770 benchmark figure with data for 1790-92 using the method set out by Shepherd and Walton

[1] James Shepherd and Gary Walton, 1972. *Shipping, Maritime Trade and the Economic Development of Colonial North America*. Cambridge: Cambridge University Press. We use the 1770 date as a reference point, but in fact the evidence taken from Shepherd and Walton is for the five year period 1768-72.

(1976) and then extrapolated the 1790-92 data to 1803 using a volume index of the eight most important exports.[2]

Benchmark Figures for exports of 1768-72 (production years 1767-71)

The estimates for 1768-72 were calculated from the evidence assembled by James Shepherd and Gary Walton from the "American Inspector-General's Ledgers."[3] Shepherd describes this as "The only complete source for commodity trade for any years in the colonial period."[4] Shepherd and Walton presented the total value of exports in Pounds Sterling from each colony of the Lower South, as well as the quantities and the Sterling values of many selected commodities that were exported from each of those colonies in each year 1768-1772 (1972, Appendix IV, Tables 2-6).

We wanted a series valued in constant prices in order to gauge the growth of real output produced for export. And, we wanted the series valued in prices of 1840 so that it could be combined with other estimates of real output for the region and then linked to estimates of real GDP for the nineteenth century. We used 1840 prices to value the quantities of the eight most important exports reported by Shepherd and Walton in each of the five years, and inflated that figure to obtain the value of all exports in 1840 prices. The 8 items and their 1840 prices are shown in Table 3. These 8 items comprised an average of 85 percent of the current price value of all exports from the region for the period 1768-72, with the percentage having remained fairly constant over the period (see Table 4, col. 3). The value of the 8 items in1840 prices (Table 4, col.4) was divided by those current price shares to obtain the value of all exports from the region in 1840 prices (Table 4, col. 5).

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[2] James Shepherd and Gary Walton, 1976. "Economic Change after the American Revolution: Pre- and Post-War Comparisons of Maritime Shipping and Trade," *Explorations in Economic History*, 13 pp. 397-422. We have used a terminal date of 1803 so that we could link to an established figure for domestically produced exports (Timothy Pitkin, *A Statistical View of the Commerce of the United States*. New York: Augustus M. Kelley Publishers (Pitkin, 1816 [reprinted 1967]).

[3] These records are catalogued in the Public Record Office as Customs 16/1.

[4] James Shepherd, "Commodity Exports from the British North American Colonies to Overseas Areas, 1768-1772: Magnitudes and Patterns of Trade," Institute for Research in the Behavioral, Economic, and Management Sciences, Purdue University, 1969, Paper No. 258, p. 9.

We have also shown in Table 4 alternative estimates of the exports valued in 1840 prices in each of these five years. We derived these by converting the current price values from Sterling to dollars at the exchange rate of $4.44, and then deflating to obtain the values in 1840 prices.[5] In the first instance we deflated by a David-Solar-McCusker Price Index (the David-Solar-McCusker Price Index) which on a base of 1840 had a three-year average value of 92.6 in 1770. In the second case we used Cole's data to construct an export price index for the Lower South, which on a base of 1840 had a three-year average value of 161.7 in 1770. As can be seen in Table 4, these alternative values differ noticeably from the figures we calculated using 1840 prices, and differ noticeably from each other, and demonstrate the difficulties of attempting to put a precise value on real exports.

It is worth pointing out that the estimated growth in our export series before or after this period will not be affected by our choice of benchmark figures, even though the benchmark figures differ widely across these series. In our time series estimates, growth before and after 1768-72 is based on the behavior of volume indexes constructed independently of the benchmark figures.

Exports Before and After the Benchmark Period

We extended our benchmark estimates backward in time to produce an annual series running back to 1710. We extended the series forward in time as well, but the annual series is confined to the period 1790 to 1803. In both cases we estimated the value of domestically produced exports by using a volume index of change in the region's exports. A volume index is a real index of exports in which quantities of the individual exports are weighted by a constant set of prices and summed. The index measures the change in that weighted sum. Our index for 1790-1803 is based on the same eight major exports that were used to construct the benchmark figures for 1767-71; our index for the period before 1767 is based on four of those major exports.

[5] The Sterling values are from Shepherd and Walton, 1972. The $4.44 figure used to convert to dollars was the official exchange rate.

The issue is how to weight these available data in order to best approximate the behavior of total exports.

Exports in the Pre-1767 period

In the colonial period there were four major items exported internationally from the Lower South: rice, naval stores, deerskins and indigo. The quantity exported of each of the first three of these was available for most years back through 1712.[6] Indigo was not produced until 1746, but an annual series could be compiled from then on.

Export quantities for rice, naval stores, and indigo were taken from *Historical Statistics of the United States* (U.S. Census Bureau ,1975). The rice figures (series Z: 481) purport to show total exports from ports in South Carolina and Georgia so provide the coverage we were seeking.

For naval stores (series Z: 500 through 503) report exports from Charleston, and thus cover exports from South Carolina, one of the two major sources in the region. Those data for some years cover only a few months so we inflated each of those to full years assuming that the exports in each month were proportionate to the months for which data are available. Annual exports from the other major producing colony, North Carolina, are not available, but exports were reported at selected dates. Shepherd and Walton provide figures of exports to overseas destinations for 1768-1772, all of which went to Great Britain. Roy Merrens reports figures of exports to all destinations for those years, including other North American colonies.[7] A comparison of the two figures indicates that for the 5 years, exports overseas accounted for 66

[6] We did have to fill in a few gaps in the data in order to avoid spurious fluctuations. These are explained in the text.

[7] Roy Merrens, *Colonial North Carolina*, Table 3

percent of the total. Exports of naval stores were also available for 1720 and 1752.[8] Given that the chief interest of the Burkes was on the trade between the colonies and England, (see vol. 1, preface) it is likely that all 84,012 barrels reported were shipped overseas. But in order not to minimize the growth of naval stores exports we assumed that the total included exports to other colonies, and applied the same percentage (66 percent) as calculated for 1768-72. We made the same assumption for the 1720 figures.

We interpolated between 1720 and 1752, and also between 1752 and 1770, to obtain annual figures for other years. Because North Carolina made up such a large portion of total naval stores exports -- averaging 58 percent for 1768-72 -- we used changes in the value of bounties paid on American naval stores.[9] Because North Carolina's export of naval stores increased faster over time than did that of all colonies, we also used changes in the ratio of North Carolina's exports to the bounties paid. The ratio could be calculated for the benchmark years of 1720, 1752 and 1768-72 (5 year average), and then was assumed to increase at a constant rate between benchmark dates. The estimated exports of naval stores from North Carolina in the intervening years is thus the product of the interpolated ratio and the reported value of bounties paid to all colonies. This procedure yielded the result that North Carolina's share of all bounties fell from around 60 percent in 1768-72 to only 7 percent in the years 1720-22. We assumed that the share remained constant at 7 percent back to 1706 -- the first year in which bounties were paid -- and calculated the amount of bounty paid to North Carolina. Dividing that amount by

[8] *Colonial Records of North Carolina*, vol. II, p. 396, as reported in Lewis Gray, 1958. *History of Agriculture in the Southern United States to 1860*. Gloucester, MA: Peter Smith. (reprint edition). p. ; Edmund and William Burke, *An Account of the European Settlements in America*, 6th ed., printed for J. Dodsley, 1777, vol. 2, p. 261.

[9] R. G. Albion, 1926, *Forest and Sea Power*, Cambridge, MA., Appendix B

the bounty per barrel yielded the estimate of naval stores exported from the colony in each year.[10]

The data for indigo (series Z 433 and Z 434) cover both South Carolina and Georgia for 1753-1770 but only South Carolina for the remaining years. In order to complete the volume index we compiled a new series on deerskin exports, combining the evidence available from several sources for South Carolina and Georgia.[11]

Most of the reported export data appear to reflect exports between the fall of one calendar year, and the fall of the next year (e.g., November 1, 1734 to October 31, 1735). This "export year" reflects sales of the crop harvested in the fall of the calendar year on which it begins. *Historical Statistics* (U.S. Census Bureau 1975) generally attributes exports to the year from which most of the data come (in the example, exports would be listed as 1735; but correspond to the crop grown and harvested in 1734). Gray (1958) generally adopts a "crop year" dating scheme, so he would list the exports as being for 1734.[12] The choice is in some sense arbitrary, but it needs to be consistent. We have adopted a "crop year" dating scheme, which means that we have changed the dates of all the data from *Historical Statistics* to be one year earlier than in the source.

In Table 5 we have presented benchmark figures on the quantities of these major exports that underlie our volume indexes, along with the rates of growth of each of those. As can be seen, rice exports grew quite rapidly from 1712 onward, and quite rapidly in almost every decade. Only in the 1740s did rice exports decline and only in one other decade, the 1750s, was the average rate of growth below 5.0 percent. Exports received a substantial boost in the 1750s by the growth of indigo production, but the other major items that were exported over the entire

[10] This is the same thing as assuming that the ratio of NC's exports per bounty remained constant at the 1720 value

[11] Those estimates are described in a working paper "Estimates of Deerskins Exports from the Lower South, 1700-1800" mimeo, University of Kansas.

[12] Clowse did likewise in reporting exports for Charleston. (1981, pp. 57-58, Table B-21).

period did not fare so well. Over the longer term, naval stores rose on average at only 0.55 percent per year between 1712 and 1770, while deerskins increased at 1.3 percent per year over that same period. Although rice was the dominant export in value terms (see Table 6), naval stores and deerskin exports were not unimportant, especially so in the earlier decades of the century. Thus, the increase in the real value of exports over the period 1720-70 was held in check by these slower growing items, and the average rate of growth for total exports in constant prices must have been less than the 4.65 percent shown by rice alone.

We considered a number of alternative weights to use in order to construct a volume index for the years before 1767 based on these four exports. These weights, which are based on the composition of exports in selected years, are summarized in Table 6. We also show there the implicit shares of each export yielded by valuing the export quantities by the prices of 1840. The volume indexes that we have calculated based on various weighting schemes are summarized in Table 7

The first series shown in Table 7 is that derived by weighting the quantities of each export by its price in 1840 (prices are shown in Table 3) and is the series we have used to extrapolate the benchmark figures back to 1712.[13] As can be seen, this index yields the highest rates of growth for the region over the colonial period, as well as the highest in most decades and subperiods.[14] This index shows a decline in real exports during the 1740s, a result which captures the impact of the decline in rice exports before the favorable effect of increased indigo exports takes hold. That decline or slowing down is captured as well in most of the other indexes. The rate of growth shown by our volume index between 1720 and 1770 is consistent with the fact that real exports in total must have grown more slowly than the quantity of rice exported. The latter rose at 4.6 percent per year between 1720 and 1770, our volume index implies that total exports grew at 4.25 percent per year over that same period. Indeed, the rates of growth implied by this index seem consistent with the rate of growth of rice exported in each subperiod. In all subperiods the total grew somewhat slower than rice exports with three exceptions: in the 1740s when total exports declined somewhat more rapidly than rice, in the

[13] The series on naval stores exports terminates in 1712 so we have used that date as the terminal date for the extrapolated volume index series. We have extended the index to 1710 based on the export of only rice and deerskins. By excluding naval stores, or any substitute export, we think the growth in the volume index between 1710 and 1712 is overstated.

1750s, and between 1740 and 1770. In these last two cases the growth of total exports was pushed up by the increased production of indigo.

The other series shown in Table 7 are also based on the exports of the same three or four major items used in our volume index, but with different weights given to each export in the various series. The first two alternative indexes are based on valuing the major exports in terms of hundredweights (cwts.) of rice. To construct such an index, the exports of the other products—deerskins, indigo and naval stores—were converted to their equivalent in rice using a fixed set of relative prices. Nash (1992, p. 699) calculated such an index for South Carolina based on three exports rice, naval stores, and indigo. The series labeled Extended Nash Index was constructed by us to broaden Nash's index to cover exports from the other colonies in the region and to include deerskin exports. Nash (1992, p. 699) calculated the relative prices of rice, naval stores, and indigo for the pre-1773 period. For rice he used the average price for 1733-74, for indigo prices the average price for 1747-74, and for naval stores he used a weighted index of prices of pitch, tar and turpentine averaged for 1733-74. Unfortunately price data for deerskins are very limited, and we used the average price of deerskin exports for the 1767-71 period.[15] Although we did not find many prices of deerskins, those we did find, with the exception of a price quoted in the correspondence of Henry Laurens, were higher than the price for 1769-72 and thus would have given a greater weight to deerskins in the index. A greater weight may have been appropriate, but because deerskins were among the slower growing exports we did not want to assign too high a weight to them and thereby bias downward the growth of the volume index. Thus we chose the relatively lower average price for 1769-72 to give a lower weight to deerskins in the index. The prices are:

Rice = 6s. 10d. per cwt = 1 volume unit

Indigo = 3s 7d. per lb = 0.52 volume unit

Naval Stores = 6s. 10.75d. per barrel = 1.01 volume unit

Deerskins = 1s. 11.5d per lb = 0.29 volume units

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[14] The series based on Nash's index grew faster at times and over the full period 1720 to 1770, but his index pertains to only South Carolina, not the entire region.

[15] This price was the average value of a lb. of deerskin exports for 1769-72 calculated from the data reported by Shepherd and Walton (1972, Appendix IV).

The Extended Nash Index is based on the quantities of four exports back to 1746, but only three exports from 1746 back to 1712. The index value for 1746 based on the four exports was extrapolated back to 1712 based on the change in the index for three items.

The other alternative indexes are based on the relative importance of each of the four major exports in 1767-71 and 1747-48. The relative importance varied depending on whether the items were valued in current prices or in constant prices of 1840. Moreover, in each of the series based on the 1767-71 share weights we produced two variations, one without reweighting before 1746, the other with reweighting in order to adjust for the fact that indigo was not produced before 1746.

Another check on our series is to gauge the growth of real exports in the colonial period by deflating the value of exports in current prices. This, however, can only be done for a few sub-periods because the current price data are available for only a few years. Moreover, the price data available are not ideally suited to the task of deflating exports. One of those, the price of rice covers only one export; the other the David-Solar-McCusker Price Index is a more general consumer price index, not an index of producers prices. Nevertheless, these deflated values can give an approximation of the likely rate of increase in the real value of exports. As can be seen in Table 8, exports deflated by the David-Solar-McCusker index increased between 1712 and 1747 at an annual average rate of 5.7 percent, between 1747 and 1770 at an annual rate of 4.3, and for the longer period 1712 to 1770 the average rate of growth was 5.1 percent per year.[16] Use of the other indices gives different results. For the period 1747-70, when deflated by the price of rice, the real value of exports rose at only 3.2 percent per year, whereas deflated by the Cole index, the rate of growth was 3.7 percent per year. Although these estimates are imperfect and limited in scope, they do provide some perspective for assessing the growth measured by using export quantities. The rate of growth in our volume index corresponding to the years for which we have been able to calculate deflated values are shown in the last column of the table. As can be seen our estimates show faster growth than all three of the deflated series in the period 1747-70. For the longer time period, 1701-70, our index shows somewhat slower growth than the series deflated by the David-Solar-McCusker Price Index, but the difference is not great.

Exports in the Post-1770 Period

We extrapolated the 1767-71 benchmark data forward in two stages. We first linked the benchmark data to 1790-92, and then extrapolated that figure forward to 1803 based on a volume index of change in the most important exports.

There is not enough data available to construct an annual export series running from 1772 to 1791. Instead we have made an estimate for 1790, 1791 and 1792 following the method laid out by Shepherd and Walton (1976, 397-422). They estimated the increase in real exports between 1768-72 and 1791-92 by valuing the quantities of the most important exports in constant prices. For the 13 colonies and states they calculated such an increase in two ways; using on the one hand the prices of 1768-72 in pounds Sterling, and on the other hand the average price for 1791-92 in dollars. The choice of price weights did not matter. The increase in real exports for the selected commodities was 37 percent.[17] Those selected commodities comprised 88 percent of the current price value of all exports in 1768-72, and 86 percent in 1791-92.

Their estimates by region were not presented in comparable detail. They were calculated by deflating the reported current price values by the Paasche price index implicit in the calculations for the 13 colonies and states. For the Lower South they showed a growth of real exports between 1768-72 to 1791-92 of only 5.6 percent. Rather than accept this estimate, we made more detailed calculations of the sort they had made for the colonies as a whole. These calculations are shown in Table 9, with the dating shifted backward one year. We obtained somewhat different results from those of Shepherd and Walton, but not greatly so and the result depends on the choice of price weights. If we use the Sterling prices of 1767-71 we find that real exports rose by 9 percent between 1767-71 and 1790. If we use the prices of 1791 as the weights, the real value of exports declined by 1.0 percent between those dates. [18]

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[16] The 1701 figure covers only exports to England, not to all destinations, so probably understates the total volume of exports. As a result, rates of growth between 1701 and other years are probably upper bounds.

[17] The increase was 37.1 percent using the Sterling prices of 1768-72 and 37 percent using the prices of 1791-92. (Shepherd and Walton, 1976, p. 412 fn. 24).

[18] If we use the average export value for 1790-92 the increase from the average value for 1768-72 was 20 percent. Using the average values the increase was 11 percent.

We have chosen to use the estimates based on the prices of 1767-71 to link the colonial export series with the post-1790 period, and thus impute some growth in the real value of exports. Although foreign trade was subject to much disruption after the Revolutionary War, Gordon Bjork concluded from his examination of the period that "there was a modest increase in exports between the pre- and post- revolutionary period."[19] He was commenting on the colonies as a whole, not the Lower South, but the calculations made by Shepherd and Walton indicated that some small increase in exports had taken place for the region. The index shown in Table 9 for the 8 items was used to extrapolate to 1790, 1791 and 1792 the 1767-71 value of all exports (expressed in 1840 prices). Those values are shown in the last column in Table 9.

Estimates for 1790 to 1803

Although export statistics are available for the years after 1790, the reported values are in current prices and include re-exports. We do not know exactly how large re-exports were for any region, but for the nation they were quite large from 1793-1806, and varied in importance from year to year. And, over time, inflation contributed noticeably to the increase in the value of exports. Because our goal is to estimate real output in the Lower South, we wanted a series on only domestically-produced agricultural exports in constant prices, so we needed to eliminate the influences of inflation and re-exports. An indication of the extent to which these two phenomena influenced the value of exports from the Lower South, and the increase in the value over time, can be seen from a glance at the trade statistics shown in Table 10A. There we show the extent to which the increase in the nominal value of all exports from the region between 1790 and 1801 can be accounted for by the growth of the 8 major exports known to have been produced in the region. The portion unaccounted for – labeled “share not identified’ – is an approximation of the value of re-exports of items not produced within the region. As can be seen, that share varied widely over the decade, and amounted to as much as 53 percent of the total value of the region’s exports in 1796.

Between 1790 and 1800, the *nominal* value of exports from the Lower South soared from $3.6 million to $13.6 million. There was of course a cotton boom, but this can account for only a fraction of the increase. Cotton exports valued in current prices rose from virtually nil ($47

[19] Bjork, 1964, p. 560. He did point out that the increase in exports was far below the rapid increase in population, and he was commenting on the colonies as a whole, not the Lower South specifically

thousand in 1790) to $4.4 million in 1800. Rice, which had been the region's chief export, did not fare so well; the nominal value of rice exported increased by only $408 thousand between 1790 and 1800. In other words, the two major agricultural exports of the region can account for only around 40 percent of the increase in the region's total exports expressed in nominal prices.

The remaining major exports cannot explain the increase. Indeed, as a group the value of these other exports declined slightly; pulled down for the most part by the fall in indigo exports. In other words, a very large increase in total exports, more than $6 million or about 60 percent of the increase, remains unexplained by the growth of the 8 most important regional products.

It is possible that other regional products not among these eight, such as wheat and flour, might account for some of the increase, but more likely most of the increase was due to an upsurge in the re-export of items, such as coffee and sugar, that were not produced in the region. The national figures suggest this was the case. For the nation, the nominal value of exports rose from $20.2 million in 1790 to $70.8 million in 1800, about the same percentage increase as took place in the Lower South. Re-exports, which were recorded for the nation, rose by $38.8 million accounting for about three-fourths of the total increase. Domestically produced exports rose by only $11.8 million.[20]

Because our interest is in the value of real exports produced in the region, it was necessary that we take account of the two phenomena of inflation and re-exports. We first attempted to do this by using the available published statistics. We deducted an estimate of the value of re-exports from the reported value of all exports for the region in order to obtain a figure representing the value of agricultural exports produced in the region. We then adjusted those current values of domestically-produced exports for price changes in order to obtain the real values. The results are shown in Table11.

The current value of exports shown there is net of our estimate of re-exports from the region. We derived re-exports from the region as the sum of estimates for each of three states (GA, NC, and SC), adjusting each state's series for the value of re-exports likely to have been included in the reported totals. For 1791 through 1802, the reported export figures combined the

[20] There is some question as to the whether the value of re-exports was $39 or $49 million in 1800, and thus whether the value of domestically produced exports, which was obtained by subtraction of the re-exports from the total value of exports, was $31.7 or $21.7. North (1961, p. 221) reported re-exports as the larger figure, whereas the figure is reported as $39 million in *Historical Statistics*, (Series U-192).

value of domestically-produced exports and re-exports. Beginning in 1803, the values of the two types of exports were reported separately by state. We used the relative shares for 1803-1810 for each state to distribute the totals reported for each state in the earlier years. For Georgia and North Carolina, domestically-produced exports comprised 99 or 100 percent of total exports in every year after 1803, so we assumed all exports in each of these states for the years 1791-1802 were produced domestically. The domestically-produced share of exports in South Carolina was less than 100 percent in each year and varied over the period 1803-10. The share dropped between 1803 and 1805-07 and then rose. We extrapolated the domestic share for South Carolina back to 1791 based on the change in the domestically produced share for the United States and an assumed ratio of South Carolina's share to that for the United States. In order to bias upward the 1800 figure for the Lower South - and thus bias upward the rate of growth that had taken place before 1800 - we used the higher average ratio found for the subperiod 1805-07 rather than the average for the longer term 1803-10. For 1790 we had to resort to an alternative method of estimation because even the total export figures by state were unavailable; only national figures were reported but they did provide the breakdown between domestically produced exports and re-exports. We estimated the value of domestically produced exports for the region as 18 percent of the figure reported for the United States; this percentage being the average for the years 1791-96. [21]

These net values were then deflated by several available, but imperfect, price indexes to obtain estimates of the real value of exports produced in the region. The results using three different price series as deflators are shown in Table 11. All the deflated series show substantial increases over the decade of the 1790s, with the average annual rates of growth ranging from 6.97 to 12.18 percent per year.

The Taylor-Cole Export Price Index is conceptually the more appropriate deflator as it measures changes in prices of the chief exports from the region. For the period after 1796 the price index includes all South Carolina's export staples except deerskins, while before 1791 it covers the four chief export staples: rice, deerskins, naval stores and indigo. The real value series based on that deflator may be the best of the three, but there are several shortcomings. The

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Doug Irwin (2002, p.36) argues that the lower value of re-exports is the correct one as the Treasury Report of 1837 shows the $39 million figure.

[21] In all these estimates we have assumed that all the domestically-produced exports from the Lower South were agricultural products.

most important flaw is that the index constructed for the period 1796 to 1812 gives cotton a weight of 65 percent. This large a weight may be suitable for much of the period, but not for the 1790s when cotton was only beginning its rise to prominence. As was seen in Table 7, and again in Table 10, at the beginning of the 1790s cotton accounted for at most 2 percent of the region's exports. Its share rose substantially thereafter, but even at the end of the decade its share was not above 50 percent, well below the 65 percent weight in the Taylor-Cole Index. Another shortcoming is that there is no coverage between 1791 and 1796, and the index for the post-1796 rests on a different base year than that for the period before 1791.[22] We have linked the two series based on the change in the price of rice between 1791 and 1796 in order to put them on the same base year in both periods. Given that the Taylor-Cole Index gives such a large weight to cotton, interpolating by changes in the price of rice may not be ideal, but it seemed the only practical alternative.[23] Although imperfect, the series deflated by the Cole index gives some measure of the likely increases in the real value of domestically produced exports. Given the extremely high weight given to cotton, this series most likely gives an upwardly biased measure of growth in the region's exports during the 1790s.

We also estimated the real value of domestically produced exports in the 1790s by applying the same method that was used to link 1767-71 with 1790-92. That is, we first derived an index of change in the volume of the 8 most important exports and then extrapolated the benchmark figure for 1791 (expressed in prices of 1840) on the change in that index.

This too does not lend itself to unequivocal results because of the wide variation in the behavior of the chief exports and the large changes in their relative importance over time. As was seen in Table 10B, the pattern of increase or decrease was not uniform among the chief exports. The quantity of cotton surged while the quantity of rice declined substantially between 1790 and 1800. The quantity of naval stores, which had fallen off substantially between 1770 and1790, remained fairly constant during the 1790s. The quantity of deerskins, which had declined precipitously between 1770 and 1790, rose substantially during the 1790s although at the end of the century the quantity exported was still well below the 1768-72 average. The quantity of wood products, both boards as well as staves and headings, remained roughly constant during the 1790s, while tobacco which had increased noticeably between 1770 and 1790

[22] A minor problem is that the index for the period before 1791 includes corn.

declined during the 1790s. Indigo exports fell throughout. Based on these conflicting patterns, one cannot say with much confidence that real exports in total increased or decreased over the closing decade of the century.

It should also be pointed out that the quantity figures for the region's export of naval stores, boards, staves and headings, and tobacco in the years after 1792 were estimated by assuming that the region's share of the U.S. exports of those products equaled the share for 1791 and 1792. The consequence of this is that the behavior of these exports is heavily influenced by what was happening in the other regions that exported these products. The behavior of exports from those other regions may not represent well the growth in the exports from the Lower South. This is perhaps most obvious in the case of tobacco for which the Lower South was a minor exporter, but it may be true for naval stores and wood products as well.[24]

Despite these shortcomings, we weighted the quantities of these 8 exports by prices to obtain an index of the change in the volume of the 8 exports combined that took place between 1791 and 1800. In fact, we constructed two indexes: one in which the quantities were weighted by prices at the beginning of the period (1791 prices) and a second using prices from the end of the period. The two estimates are shown in Table 12.

The two index series behave very similarly, especially up to 1798. They diverge somewhat after that point, with the index weighted by 1791 prices rising more rapidly. Nevertheless, for the entire decade the two indexes give fairly similar results. Real exports increased substantially between 1791 and 1800, by 106 percent when weighted by 1791 prices and by 83 percent when weighted by prices of 1800. The average annual rates of change between 1790 and 1800 were 9.1 and 7.7 percent. These rates are also very similar to those obtained by deflating the estimated current price value of domestically produced exports by either the David-Solar-McCusker Price Index or North's Export Price Index (see Table 11), but are below the rate of change implied when the current price figures were deflated by Cole's Export Price Index. Based on these comparisons, the Cole-deflated series appears to be an outlier, and we think this is for the reason we stated earlier that it simply gives too great a weight to cotton during this decade.

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[23] For the period 1796 to 1803, changes in the price of the two commodities were substantially different; the price of rice rose by about 26 percent while the price of cotton fell by 52 percent.

[24] The Lower South accounted for only 13 percent of the nation's export of tobacco in 1791 and 92, whereas it accounted for 31 percent of the wood products and 39 percent of the naval stores.

We have used the index based on the 1791 prices to extrapolate the real value of all exports expressed in prices of 1840. Those estimates are also shown in Table 12. We also show there the per capita value of exports expressed in prices of 1840. The per capita figures held quite steady until 1798, then increased sharply.

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Table 1

Benchmark Estimates of the Real Value of Domestically-Produced Exports from the Lower South, in 1840 Prices

	Attributed to the Year of Production				Population of the Lower South (colonists and slaves)	Attributed to the Year in which Exported			
	Annual Value of Exports	Per Capita Value	Three-Year Average Values	Per Capita Value		Annual Value of Exports	Per Capita Value	Three-Year Average Values	Per Capita Value
Benchmark values									
	Annual Values		Three Year Average Values					Three Year Average Values	
1710	121,878	4.69	199,509	7.47	26,003	-	-		
1720	501,486	12.64	540,879	13.60	39,663	469,930	11.85	446,687	11.24
1730	1,201,512	20.03	1,104,445	18.31	60,000	1,057,817	17.63	1,040,001	17.14
1740	1,976,590	17.50	1,823,638	16.48	112,936	2,199,092	19.47	1,964,338	17.59
1750	1,691,743	11.82	1,758,314	12.21	143,184	1,459,722	10.19	1,491,341	10.37
1760	3,086,058	14.71	2,652,693	12.61	209,760	2,368,345	11.29	2,619,366	12.41
1770	4,369,062	12.63	4,367,879	12.71	345,819	4,375,343	12.65	4,260,925	12.38
1780				-					-
1790	4,557,450	5.98	3,867,239	5.03	762,417	1,818,252	2.38	3,187,851	4.08
1800	9,576,713	8.77	9,510,205	8.70	1,091,394	8,359,874	7.66	8,148,786	7.44
Average Annual Rates of Change									
1720-30	9.13	4.71	7.40	3.02	4.23	8.45	4.05	8.82	4.31
1730-40	5.10	-1.34	5.14	-1.05	6.53	7.59	1.00	6.57	0.26
1740-50	-1.54	-3.85	-0.36	-2.95	2.40	-4.02	-6.27	-2.72	-5.15
1750-60	6.20	2.22	4.20	0.32	3.89	4.96	1.03	5.79	1.81
1760-70	3.54	-1.51	5.11	0.08	5.13	6.33	1.14	4.99	-0.02
1790-1800	7.71	3.91	9.42	5.6	3.65	16.481	12.38	9.84	6.2
By Sub-Period									
1720-40	7.10	1.64	6.27	0.96	5.37	8.02	2.52	7.69	2.26
1740-70	2.68	-1.08	2.95	-0.86	3.80	2.32	-1.43	2.61	-1.16
1770-1800	2.65		2.63	-1.26	3.90	2.18		2.18	-1.68
Over the Long Term									
1720-1770	4.42	0.00	4.27	-0.14	4.43	4.56	0.13	4.61	0.19
1720-1800	3.76	-0.46	3.65	-0.56	4.23	3.66	-0.54	3.70	-0.51

Table 2

Annual Estimates of the Real Value of Domestically-Produced Exports from the Lower South
(in 1840 prices)
Attributed to the Year of Production

	Annual Value of Exports	Per Capita Value	Three-Year Average Values	Per Capita Value	Population of the Lower South (colonists and slaves)	Annual Value by Year of Export
1710	121,878	4.69	199,509	7.47	26,003	
1711	277,140	10.25	234,467	8.59	27,037	121,878
1712	304,382	10.82	282,838	10.06	28,130	277,140
1713	266,991	9.12	277,453	9.50	29,286	304,382
1714	260,987	8.55	278,651	9.12	30,512	266,991
1715	307,976	9.68	294,492	9.24	31,812	260,987
1716	314,515	9.48	320,339	9.64	33,193	307,976
1717	338,527	9.77	340,562	9.81	34,661	314,515
1718	368,645	10.18	392,367	10.78	36,223	338,527
1719	469,930	12.40	446,687	11.74	37,887	368,645
1720	501,486	12.64	540,879	13.60	39,663	469,930
1721	651,222	15.77	603,020	14.56	41,304	501,486
1722	656,350	15.26	655,318	15.24	43,021	651,222
1723	658,381	14.69	663,528	14.81	44,818	656,350
1724	675,854	14.47	698,596	14.94	46,698	658,381
1725	761,553	15.65	739,363	15.17	48,667	675,854
1726	780,681	15.39	763,447	15.06	50,728	761,553
1727	748,107	14.15	796,487	15.05	52,887	780,681
1728	860,672	15.61	888,866	16.05	55,148	748,107
1729	1,057,817	18.39	1,040,001	18.01	57,517	860,672
1730	1,201,512	20.03	1,104,445	18.31	60,000	1,057,817
1731	1,054,007	16.52	1,203,870	18.85	63,788	1,201,512
1732	1,356,092	20.00	1,129,588	16.67	67,818	1,054,007
1733	978,667	13.49	1,211,846	16.75	72,562	1,356,092
1734	1,300,780	16.76	1,219,627	15.65	77,632	978,667
1735	1,379,433	16.69	1,301,571	15.76	82,632	1,300,780
1736	1,224,502	13.84	1,209,814	13.82	88,453	1,379,433
1737	1,025,509	10.92	1,322,448	13.97	93,949	1,224,502
1738	1,717,334	17.16	1,647,311	16.26	100,099	1,025,509
1739	2,199,092	20.70	1,964,338	18.45	106,233	1,717,334
1740	1,976,590	17.50	1,823,638	16.48	112,936	2,199,092
1741	1,295,233	11.22	1,751,501	15.18	115,389	1,976,590
1742	1,982,678	16.81	1,806,419	15.27	117,935	1,295,233
1743	2,141,345	17.76	1,945,933	16.16	120,576	1,982,678
1744	1,713,774	13.90	1,821,803	14.81	123,319	2,141,345
1745	1,610,289	12.76	1,643,747	13.04	126,167	1,713,774
1746	1,607,178	12.45	1,593,119	12.34	129,126	1,610,289
1747	1,561,891	11.81	1,497,210	11.34	132,201	1,607,178
1748	1,322,560	9.77	1,448,058	10.70	135,399	1,561,891
1749	1,459,722	10.52	1,491,341	10.70	138,724	1,322,560
1750	1,691,743	11.82	1,758,314	12.21	143,184	1,459,722
1751	2,123,479	14.28	1,695,478	11.44	148,665	1,691,743

1752	1,271,213	8.23	1,970,857	12.74	154,374	2,123,479
1753	2,517,878	15.71	2,312,847	14.28	160,322	1,271,213
1754	3,149,450	18.91	2,720,787	16.35	166,521	2,517,878
1755	2,495,034	14.42	2,792,777	16.18	172,984	3,149,450
1756	2,733,848	15.21	2,613,940	14.54	179,724	2,495,034
1757	2,612,939	13.99	2,583,495	13.86	186,756	2,733,848
1758	2,403,697	12.38	2,461,660	12.70	194,095	2,612,939
1759	2,368,345	11.74	2,619,366	12.95	201,757	2,403,697
1760	3,086,058	14.71	2,652,693	12.61	209,760	2,368,345
1761	2,503,678	11.37	3,025,835	13.73	220,140	3,086,058
1762	3,487,769	15.09	3,122,109	13.46	231,102	2,503,678
1763	3,374,881	13.91	3,475,360	14.33	242,684	3,487,769
1764	3,563,429	13.98	3,353,554	13.18	254,925	3,374,881
1765	3,122,350	11.66	3,399,161	12.70	267,868	3,563,429
1766	3,511,703	12.47	3,514,193	12.44	281,558	3,122,350
1767	3,908,526	13.20	3,819,533	12.88	296,044	3,511,703
1768	4,038,370	12.97	4,107,413	13.18	311,378	3,908,526
1769	4,375,343	13.36	4,260,925	12.99	327,616	4,038,370
1770	4,369,062	12.63	4,367,879	12.71	345,819	4,375,343
1771	4,359,232	12.14	4,358,872	12.14	359,064	4,369,062
1772	4,348,323	11.66	4,269,997	11.46	372,970	4,359,232
1773	4,102,437	10.58	4,225,380	11.12	387,589	4,348,323
1774		-			402,979	4,102,437
1775		-			419,211	
1776		-			436,360	
1789	1,818,252					
1790	4,557,450	5.98	3,867,239	5.03	762,417	1,818,252
1791	5,226,014	6.63	4,972,039	6.30	788,101	4,557,450
1792	5,132,654	6.30	5,121,654	6.29	815,087	5,226,014
1793	5,006,295	5.94	5,278,685	6.25	843,471	5,132,654
1794	5,697,105	6.52	5,568,938	6.36	873,357	5,006,295
1795	6,003,413	6.63	5,538,231	6.13	904,859	5,697,105
1796	4,914,175	5.24	5,772,750	6.15	938,100	6,003,413
1797	6,400,662	6.58	5,941,536	6.09	973,218	4,914,175
1798	6,509,771	6.44	7,090,102	6.99	1,010,360	6,400,662
1799	8,359,874	7.96	8,148,786	7.73	1,049,693	6,509,771
1800	9,576,713	8.77	9,510,205	8.70	1,091,394	8,359,874
1801	10,594,028	9.35	11,478,963	10.09	1,132,867	9,576,713
1802	14,266,148	12.13	12,430,088	10.74	1,175,916	10,594,028

Notes to Tables 1 and 2:

The derivation of the export series is explained in the accompanying text and tables.

The population of the Lower South includes that in Georgia, North Carolina, South Carolina and Tennessee. The benchmark figures for the free and slave population for 1700 to 1780 are from Historical Statistics (Series Z:1-19). The Black population includes both slaves and free negroes. John McCusker and Russell Menard made slight revisions to the figures for 1710, 1720 and 1740 (Table 8.1, p. 173), but did not report the white and black populations separately for each colony. Their figures, as well as those shown in *Historical Statistics*, differ slightly from the figures reported by Wood for some of these years.

The 1790 figures are from the U.S. Census of 1800, as shown in Rossiter 1909. The figures were taken from an electronic file provided by Michael Haines. The 1800 white and slave population figures are those underlying Weiss's (1992) labor force estimates, and came originally from the U.S. Census of 1800.

Table 3
Prices of the Major Export Items of the Lower South at Selected Dates

Export	Units	1767-71 Avg. Price *Pounds Sterling*	1767-71 Avg. Price US dollars	1791 Implicit Export Prices	1791	1800	1840	Average Price for 1839-41
					Prices from A.H. Cole			
Rice	per lb.	*0.004*	$ 0.02	$ 0.027	$ 0.03	$ 0.036	$ 0.033	$ 0.037
Indigo	per lb.	*0.211*	$ 0.94	$ 1.15	$ 1.05	$ 0.580	$ 1.530	$ 1.443
Naval Stores	per bbl	*0.453*	$ 2.01	$ 2.00	$ 1.92	$ 2.79	$ 2.12	$ 2.12
Deerskins	per lb	*0.098*	$ 0.44	$ 0.50	$ 0.50	$ 0.41	$ 0.47	$ 0.46
Cotton	per lb.	*0.043*	$ 0.19	$ 0.25	$ 0.44	$ 0.27	$ 0.08	$ 0.10
Boards	per M feet	*2.928*	$ 13.00	$ 6.00	$13.32	$11.14	$29.17	$ 29.42
Staves	per M	*3.240*	$ 14.39	$12.72	$14.24	$22.76	$21.09	$ 21.03
Tobacco	per cwt	*0.913*	$ 4.06	$ 3.67	$ 3.47	$ 4.729	$ 9.50	$ 9.58

Notes and source to Table 3:

1767-71: Shepherd and Walton, (1972) Appendix IV, Tables 2 to 7. The Shepherd-Walton figures pertain to 1768-72. We have shifted the dating back a year to better represent the year in which the exports were produced.

1791 Implicit Export Price: *New American State Papers*, vol. 2, 200-02. and U.S. Congress, (1884) "Domestic Exports," Table 2.

1791 and 1800: Arthur H. Cole, 1938, *Statistical Supplement*. The prices for rice, indigo and cotton are 3 year averages.

1840: All prices except those for indigo and deerskins are from Arthur H. Cole, 1938, *Statistical Supplement*. The prices of rice, naval stores, boards, staves and headings, and tobacco are the average of the monthly prices reported for the year 1840. The cotton price is the average for 1839-41, which was higher than the price for 1840. For indigo we used the average value per pound for indigo exports in 1840 (U.S. Congress, 1884, p. 37) rather than the price reported by Cole which referred to the price of Venezuelan indigo in New Orleans. The price of deerskins for 1840 was derived from data in Anne Bezanson, Robert Gray, and Miriam Hussey, (1937) *Wholesale Prices in Philadelphia, 1784-1861.* Philadelphia: U. of Pennsylvania Press. We extrapolated the 1791 implicit export price to other years based on the change in their index of prices in Philadelphia.

Table 4

Alternative Estimates of Exports in Constant Prices by Year of Production, 1767-1771

	Current Price Value of Exports in Pounds Sterling			Estimates Based on Prices of 1840			Estimates Obtained by Deflation			
	Value of 8 Major Exports	Total value of Exports	8 Exports' Share of Total Exports	Value of 8 Major Exports	Total value of Exports	Current Price Value of Exports in Dollars	Deflated by David-Solar-McCusker Price Index (3 year average values)		Deflated by Cole's Price Index (3 year average values)	
							Index	Value	Index	Value
	col. 1	*col. 2*	*col. 3*	*col. 4*	*col. 5*	*col. 6*	*col. 7*	*col. 8*	*col. 9*	*col. 10*
1767	457,563	538,000	85.0%	$ 3,324,158	$ 3,908,526	$ 2,388,720	89.10	$ 2,680,866	159.1	$ 1,501,494
1768	465,250	551,000	84.4%	$ 3,409,894	$ 4,038,370	$ 2,446,440	90.71	$ 2,697,135	158.6	$ 1,542,918
1769	450,920	534,000	84.4%	$ 3,694,625	$ 4,375,343	$ 2,370,960	92.63	$ 2,559,652	161.7	$ 1,465,898
1770	511,770	593,000	86.3%	$ 3,770,582	$ 4,369,062	$ 2,632,920	97.76	$ 2,693,348	179.2	$ 1,468,928
1771	688,812	800,000	86.1%	$ 3,753,364	$ 4,359,232	$ 3,552,000	98.08	$ 3,621,647	191.4	$ 1,855,433
Average: 1767-71	514,863	603,200	85.4%	$ 3,590,525	$ 4,210,107	$ 2,678,208	93.7	2,850,530	170.0	1,566,934
Percentage Increase 1767-71	51%	49%	1%	13%	12%	49%	10%	35%	20%	24%

Notes and source to Table 4:

Cols. 1 and 2: Shepherd and Walton, 1972, Appendix IV, Tables 2-6; *Historical Statistics*, Series E92 and 95.

Col. 3 equals col. 1 divided by col. 2

Col. 4: equals the quantities of the eight most important regional exports: rice, indigo, naval stores, deerskins, cotton, boards, staves and headings, and tobacco valued in prices of 1840. The quantities are from Shepherd and Walton (1972, Appendix IV, Tables 2-6); the prices are shown in Table 3 above.

Col. 5: The total value of exports in 1840 prices equals those in col. 4 divided by the shares shown in col. 3.

Col. 6: The current price value of all exports in dollars equals the Pound Sterling values in col. 2 converted at the official exchange rate of $4.44 established by the revenue act of July 31, 1789 (Davis and Hughes, 1960, p. 54)

Col. 7: This is a composite index constructed by McCusker, (1999) "How Much is That in Real Money," Table A-1. McCusker extended the Brady-David-Solar Consumer Price Index (backward to 1720 based on Bezanson's index of Philadelphia commodity prices. Whereas the original index used 1860 as the base year, we have shifted the index to a base year of 1840. We have used three year average valuea of the index for deflation.

Col. 9: This is an index of Charleston's export prices, prepared by George Rogers Taylor (*Historical Statistics*, Series E: 92-95). We have used three year average values of the index for deflation.

The figures in cols. 8 and 10 were obtained by deflating the figures in col. 6 by the price indices in cols. 7 and 9 respectively..

Table 5

Quantities of Major Exports from the Lower South, 1712-1770

	Rice	Naval Stores	Deerskins	Indigo
	lbs	*Barrels*	*lbs.*	*lbs*
Three Year Average Benchmark values				
1712	3,168,625	9,506	179,350	-
1720	8,060,551	33,505	120,721	-
1730	19,131,450	30,564	229,244	-
1740	34,917,672	33,148	219,575	-
1747	25,797,547		352,526	112,933
1750	34,123,207	66,594	285,387	28,933
1760	47,080,950	46,407	242,874	389,767
1770	78,227,450	81,500	375,553	595,300
Average Rates of Change				
1712-47	6.17	4.34	1.95	
1747-70	4.94	2.92	0.28	7.49
1712-1770	5.68	3.77	1.28	
1720-40	7.61	-0.05	3.04	
1740-70	2.73	3.04	1.81	
1720-1770	4.65	1.79	2.30	
1720-30	9.03	-0.91	6.62	
1730-40	6.20	0.82	-0.43	
1740-50	-0.23	7.23	2.66	
1750-60	3.27	-3.55	-1.60	29.70
1760-70	5.21	5.79	4.45	4.33

Notes and Sources to Table 5

Naval Stores: The total is the sum of estimates of exports from South Carolina and from North Carolina. The South Carolina exports for 1712-1724 are from Clowse, 1981, p.65. We estimated the values for 1713-16 by interpolating between the reported values for 1712 and 1717. For 1724-1777 Census Bureau (1975, series Z 500, 501, 503). The reported data for some years covered only a few months. We have inflated each of these to full years assuming that the exports in each month were proportionate to the months for which data are available.

The exports of naval stores from North Carolina were reported for only a few selected dates. Shepherd and Walton provide figures of exports to overseas destinations for 1768-1772, all of which went to Great Britain. Exports of naval stores were also available for 1720 (*Colonial Records of North Carolina*, vol. II, p. 396 as reported in Lewis Gray, 1958. *History of Agriculture in the Southern United States to 1860*. Gloucester, MA: Peter Smith. (reprint edition). p. and for 1752 (Edmund and William Burke, *An Account of the European Settlements in America*, 6th ed., printed for J. Dodsley, 1777, vol. 2, p. 261. As described in the accompanying text, we interpolated between 1720 and 1752, and also between 1752 and 1770, to obtain annual figures for other years. We then shifted these export estimates backward a year to attribute them to the year of production, and combined them with the exports from Charleston (displaced to the year of production) to arrive at the total for the Lower South.

Rice: 1710-1773, U.S. Census Bureau (1975, series Z 481), which shows total exports from ports in South Carolina and Georgia; after 1782, export data are for Charleston only, and we inflated these using the ratio of South Carolina and Georgia to Charleston exports that prevailed from 1768 to 1773 (1.23) to inflate Charleston exports to their regional level. Data for 1782-1788 are from U.S. Census Bureau

(1975, series Z 483). The reported data for 1713 to 1774 and 1783-89 were shifted back a year to represent the crop year (i.e. the year of production), a method espoused by Clowse, 1981, pp. 57-58, Table B-21.

Indigo: 1746-1787, U.S. Census Bureau (1975, series Z 433 and Z 434). For 1753-1770 data for Georgia are available. For the remaining years the data are for South Carolina alone. For 1789-1800 data are from Gray (1958, p. 1024). The reported data for all years were shifted back a year to reflect the crop year. Gray reports quantities in chests or casks, both of which were assumed to weigh 350 pounds.

Deerskin: Exports were compiled by us. See Mancall, Rosenbloom, and Weiss, 2002 "Estimates of Deerskin Exports from the Lower South, 1700-1800," mimeo University of Kansas.

Table 6
Export Shares at Various Dates and Valued in Different Prices

	Rice	Naval Stores	Deerskins	Indigo	Cotton
Shares in 1747-48					
valued in SC Currency	61.1%	2.4%	24.9%	11.6%	0.0%
Average Shares 1767-71					
valued in 1767-71 prices	63.3%	22.5%	6.6%	7.6%	0.02%
in 1791 prices	65.3%	21.1%	6.2%	7.4%	0.02%
in 1840 prices	74.7%	5.5%	2.9%	16.9%	0.01%
Average Share 1791-92					
valued in 1767-71 prices	59.3%	33.7%	4.4%	1.6%	1.1%
in 1791 prices	61.3%	31.9%	4.1%	1.5%	1.2%
in 1840 prices	69.9%	3.6%	0.6%	25.5%	0.4%
Average Share in 1800 valued in 1840 prices					
3-year avg.: 1799-1801	47.5%	3.0%	1.6%	0.2%	47.7%
5-year avg.: 1798-1802	45.4%	2.7%	1.5%	0.3%	50.0%
Average Share, 1790-1800					
in 1840 prices	64.6%	3.5%	1.1%	14.0%	16.8%
Shares Implicit in the Series based on 1840 prices					
1712	50.2%	9.6%	40.3%		
1720	67.6%	18.5%	13.9%		
1730	78.6%	8.2%	13.2%		
1740	86.1%	5.9%	8.0%		
1747	69.8%	7.4%	13.4%	9.5%	
1750	78.6%	9.6%	9.4%	2.3%	
1760	71.6%	4.6%	5.4%	18.5%	
1770	73.2%	4.9%	4.9%	17.0%	
Shares with cotton included					
1770	73.3%	4.9%	4.9%	16.9%	0.01%
1790	68.4%	5.3%	1.6%	24.1%	0.59%
1800	41.2%	2.2%	1.9%	0.1%	54.60%
Average Share, 1712-73	69.7%	11.8%	12.1%	14.9%	

Notes and Sources for Table 6:

The 1747-48 figures are from Coclanis, 1989, p. 81. Those for 1767-71 are from Shepherd and Walton, 1972, Appendix IV, Tables 2-6. The 1791-92 current price figures for the region equal the quantities (*New American State Papers, Commerce and Navigation*, vol. 1, pp. 163ff) times prices (Table 3 above). The values in 1840 prices were calculated by weighting the quantities of each export by prices shown in Table 3. See Tables 4 and 8 for the sources of the quantity data.

Table 7

Alternative Estimates of Volume Indexes of Exports from the Lower South, 1712-1770

	Based on 1840 Prices	Nash's Index for SC	Extended Nash Index	Based on 1767-71 shares in current price		Based on 1767-71 shares in 1840 prices		Based on 1747-48 shares
					With reweighting		With reweighting	
Benchmark values: Three Year Averages								
1712	0.065		0.089	0.067	0.071	0.045	0.052	0.138
1720	0.124	100.1	0.145	0.163	0.173	0.102	0.119	0.150
1730	0.253	177.6	0.282	0.258	0.273	0.208	0.244	0.306
1740	0.417	322.8	0.441	0.385	0.408	0.354	0.413	0.429
1747	0.343		0.391	0.375	0.375	0.326	0.326	0.433
1750	0.402	351.6	0.395	0.476	0.476	0.381	0.381	0.442
1760	0.607	659.0	0.660	0.581	0.581	0.619	0.619	0.602
1770	0.993	960.0	1.052	0.963	0.963	1.010	1.010	0.971
Average Rates of Change Between Benchmark Values								
1712-1747	4.88	6.48	4.32	5.04	4.87	5.85	5.38	3.31
1747-70	4.73		4.40	4.18	4.18	5.04	5.04	3.58
1712-1770	4.82		4.35	4.70	4.60	5.53	5.25	3.42
1720-40	6.27	6.03	5.73	4.39	4.39	6.43	6.43	5.40
1740-70	2.93	3.70	2.94	3.10	2.90	3.56	3.02	2.76
1720-1770	4.25	4.62	4.05	3.62	3.50	4.70	4.37	3.81
1720-30	7.40	5.90	6.88	4.69	4.69	7.43	7.43	7.40
1730-40	5.14	6.16	4.59	4.09	4.09	5.43	5.43	3.44
1740-50	-0.36	0.86	-1.11	2.14	1.55	0.76	-0.80	0.29
1750-60	4.20	6.48	5.28	2.01	2.01	4.97	4.97	3.13
1760-70	5.04	3.83	4.77	5.19	5.19	5.02	5.02	4.91

Notes and Sources to Table 7:

[A] the rate of change shown for the Nash Index for 1712-47 is for the period 1710-50.

See the text for a discussion of how the various indices were calculated. We have used 1712 as the terminal date for the extrapolated volume index series because the series on naval stores exports terminates in 1712. We could extend the index to 1710 based on the export of only rice and deerskins, but with the exclusion of naval stores or any substitute export, the growth in the volume index between 1710 and 1712 would be greatly overstated.

				Table 8					
	Real Value of Exports Estimated by Deflating Current Price Values, Selected Dates								
			Price Deflators			Real Value of Exports			
	Value of Exports in Current Prices	Value of Exports in Current Prices	Price of Rice (cents per lb.)	David-Solar-McCusker Index (1840=100)	Cole's Export Price Index	Deflated by Price of Rice	Deflated by David-Solar-McCusker Index	Deflated by Cole's Index	Based on our Volume Index (3 yr. avg.)
	£ Sterling	US$s		3 Yr. Avg..		(Prices of 1790)			1840 prices
Three Year Average Benchmark values									
1712	24,905	110,578		74.0			157,499		282,838
1747	161,365	716,461	1.04	69.9	107.1	1,693,918	1,080,328	762,619	1,497,210
1770	559,333	2,483,440	1.73	92.6	161.7	3,512,900	2,826,723	1,750,848	4,367,879
Average Rates of Change									
1712-47	5.48	5.48		-0.16			5.66		4.88
1747-70	5.55	5.55	2.26	1.23	1.81	3.22	4.27	3.68	4.77
1712-1770	5.51	5.51		0.39			5.10		4.83

Notes and Source to Table 8:

The value of exports in dollars equals the Sterling values converted at $4.44 per **£**.

The value of exports in Sterling for 1701 is the three year average for 1700-02 taken from the 'official series' (*Historical Statistics*, Series Z: 223 That series was valued in prices of 1700-02, so the values for these particular years should thus be close to current price values.

The value of exports in Sterling for 1747 is from Coclanis, 1989, p. 107.

The prices of rice are from Cole (1938a, p. 154) converted at the exchange rate of $4.44 per **£**

The composite index was constructed by McCusker, (1999) "How Much is That in Real Money," Table A-1. McCusker extended the Brady-David-Solar Consumer Price Index (backward to 1720 based on Bezanson's index of Philadelphia commodity prices. Whereas the original index used 1860 as the base year, we have shifted the index to a base year of 1840. We have used three-year average values of the index for deflation.

Cole's Export Price Index is that for Charleston's export prices, prepared by George Rogers Taylor (*Historical Statistics*, Series E: 92-95). We have used three-year average values of the index for deflation

Table 9

Estimate of the Value of the Major Exports from the Lower South

in Constant Prices in 1767-71 and 1790-92.

---------- Major Export Items ----------

	Rice	Indigo	Naval Stores	Deerskins	Cotton	Boards	Staves and Headings	**Tobacco**	Sum of Eight Items	Index of Real Exports 1768-72 = 100	Value of Real Exports in Prices of 1840
Real Exports valued in prices of 1768-72 in Pounds Sterling											
1767-71 Avg.	308,228	109,330	31,878	37,077	87	17,140	8,733	10,621	523,114	100	4,210,107
1790	239,593	116,008	16,787	4,563	8,202	39,104	10,722	130,625	566,273	108	4,557,450
1791	269,454	157,936	21,344	13,696	5,899	37,592	11,892	130,680	649,343	124	5,226,014
1792	280,972	175,524	16,854	11,355	20,541	46,981	11,542	73,301	637,743	122	5,132,654
1790-92 Avg.	263,339	149,823	18,328	9,871	11,547	41,226	11,385	111,535	617,786	118	4,972,039
Real Exports valued in prices of 1791											
1767-71 Avg.	1,676,608	543,384	164,607	190,312	502	77,975	38,373	35,519	2,721,069	100	4,210,107
1790	1,303,270	576,573	86,682	23,419	47,250	177,895	47,112	436,856	2,699,057	99	4,176,049
1791	1,465,695	784,964	110,211	70,297	33,983	171,017	52,255	437,039	3,125,459	115	4,835,790
1792	1,528,348	872,377	87,030	58,285	118,340	213,730	50,716	245,144	3,173,969	117	4,910,845
1790-92 Avg.	1,432,438	744,638	94,641	50,667	66,524	187,547	50,028	373,013	2,999,495	110	4,640,895
Percentage Increase between 1767-71 and 1790											
1767-71 prices	-22%	6%	-47%	-88%	9311%	128%	23%	1130%	8%	8%	8%
1791 prices	-22%	6%	-47%	-88%	9311%	128%	23%	1130%	-1%	-1%	-1%
Percentage Increase between 1767-71 and 1790-92 avg.											
1768-72 prices	-15%	37%	-43%	-73%	13151%	141%	30%	950%	18%	18%	18%
1791 prices	-15%	37%	-43%	-73%	13151%	141%	30%	950%	10%	10%	10%

Notes and Sources to Table 9:

The values of the individual exports are the products of the quantities (Tables 8 below and Shepherd and Walton, (1972) Appendix IV, Tables 2 to 7) times the prices of 1768-72 or 1791 (Table 3 above).

The Index of Real Exports is the index of the sum of the 8 items with 1767-71 set as the bas year.

The value of exports in 1840 prices for 1767-71 comes from Table 4. The value in other years equals that base year value times the index for each year. The sum of the eight items in Pounds Sterling for 1767-71 shown in this table differs slightly from the figure shown in Table 4 because the latter is the average of the five annual totals.

Table 10 A

Estimate of the Value of the Major Exports from the Lower South in Current Prices, 1767-71 and 1789-1803

---------- Major Export Items ----------

	Rice	Indigo	Naval Stores	Deerskins	Cotton	Boards	Staves and Headings	Tobacco	Sum of Eight Items	Total Exports from the Lower South, incl. Re-exports	Value of Exports Not Identified	Share Not Identified
1767-71 Avg.	1,368,532	485,424	141,540	164,624	387	76,102	38,775	47,156	2,322,628	2,678,208	355,580	13%
1789	143,341	97,104	80,542	14,068	3,000	150,486	77,928	643,844	1,210,314	NA		
1790	1,478,710	581,911	153,360	24,574	47,250	163,071	44,321	497,653	2,990,851	3,582,928	592,077	17%
1791	1,465,695	784,964	110,211	70,297	33,983	171,017	52,255	437,039	3,125,459	3,709,066	583,607	16%
1792	1,650,322	1,008,080	78,619	58,285	156,178	148,912	54,484	222,697	3,377,576	3,415,256	37,680	1%
1793	1,630,144	537,078	62,808	60,840	496,946	104,426	45,414	367,595	3,305,251	4,078,236	772,985	19%
1794	1,222,108	510,466	113,200	60,953	1,840,815	143,782	63,155	333,841	4,288,320	4,453,327	165,007	4%
1795	1,989,413	378,244	120,844	48,169	3,196,775	220,266	87,389	455,356	6,496,456	7,186,639	690,183	10%
1796	2,274,874	97,086	118,143	50,390	1,096,171	119,406	98,597	477,632	4,332,299	9,241,694	4,909,395	53%
1797	1,192,194	59,393	115,972	99,936	2,102,677	148,797	86,877	647,835	4,453,680	7,690,326	3,236,646	42%
1798	840,803	15,414	133,557	129,306	2,499,672	252,592	91,951	1,134,909	5,098,204	8,493,837	3,395,633	40%
1799	888,320	3,953	75,575	49,361	4,755,000	240,179	51,530	791,125	6,855,042	10,611,695	3,756,653	35%
1800	1,887,395	2,013	118,597	55,462	4,425,813	194,419	101,379	657,320	7,442,398	13,607,577	6,165,179	45%
1801	2,033,579	3,230	94,803	62,614	5,811,731	219,520	79,937	521,437	8,826,851	16,964,298	8,137,447	48%
1802	1,645,115	0	284,348	106,996	5,822,089	213,718	83,834	560,261	8,716,361	13,153,706	4,437,345	34%
1803	2,150,894	240	222,094	151,382	5,006,418	195,203	77,335	656,039	8,459,604	11,134,597	2,674,993	24%
Changes between 1790 and 1800												
Values	408,685	(579,899)	(34,763)	30,888	4,378,563	31,348	57,058	159,667	4,451,547	10,024,649	5,573,102	
Percentage	28%	-100%	-23%	126%	9267%	19%	129%	32%	149%	280%	941%	

Notes and Sources to Table 10A

The values of the individual exports equal the product of the quantities and prices shown in Table 10B. Total exports from the Lower South including re-exports are from Pitkin, (1816, reprinted 1967) Table I, pp. 51-54. The value of exports not identified equals the total minus the sum of the 8 items.

Table 10 B

Quantities and Prices of the Major Exports from the Lower South, 1767-71 and 1789 to 1803

	Rice	Indigo	Naval Stores	Deerskins	Cotton	Boards	Staves and Headings	Tobacco
Quantities of Exports								
1767-71 Average.	72,545,556	543,928	85,554	379,849	2,008	5,854	2,695	11,628
1789	5,923,180	101,150	48,229	26,758	12,000	11,392	4,361	158,582
1790	56,391,495	577,150	45,053	46,742	189,000	13,356	3,309	143,010
1791	63,419,490	785,750	57,282	140,307	135,930	12,839	3,670	143,070
1792	66,130,427	873,250	45,234	116,332	473,360	16,046	3,562	80,251
1793	60,826,279	636,650	30,700	121,433	1,529,910	8,567	3,234	102,847
1794	45,096,248	753,900	52,274	124,840	5,899,440	9,927	3,595	81,728
1795	55,415,402	425,950	54,434	106,763	5,648,975	13,128	4,144	92,394
1796	54,684,465	171,500	45,485	97,978	3,447,080	10,532	4,441	77,868
1797	52,289,190	96,121	34,481	168,869	8,377,200	12,770	3,363	91,791
1798	48,045,872	19,838	46,277	305,626	8,388,160	13,804	4,074	128,609
1799	45,554,863	6,892	38,358	152,033	15,388,350	16,772	2,321	105,329
1800	49,023,258	3,400	42,483	136,099	17,774,350	17,455	4,455	138,901
1801	41,249,072	4,079	32,475	150,549	22,880,832	19,709	3,571	104,045
1802	42,290,867	0	59,344	253,606	33,460,284	19,306	4,228	115,518
1803	40,506,484	221	57,799	358,813	30,341,928	18,520	4,147	111,571
Current Prices of Exports								
1767-71: £ Sterling	0.0042	0.2010	0.3726	0.0976	0.0434	2.9279	3.2402	0.9134
1767-71: US Dollars.	$ 0.019	$ 0.892	$ 1.654	$ 0.433	$ 0.193	$ 13.00	$ 14.39	$ 4.06
1789	$ 0.024	$ 0.960	$ 1.670	$ 0.53	$ 0.250	$ 13.210	$ 17.870	$ 4.060
1790	$ 0.026	$ 1.01	$ 3.40	$ 0.53	$ 0.250	$ 12.21	$ 13.39	$ 3.48
1791	$ 0.023	$ 1.00	$ 1.92	$ 0.50	$ 0.250	$ 13.32	$ 14.24	$ 3.05
1792	$ 0.025	$ 1.15	*$ 1.74*	$ 0.50	$ 0.330	$ 9.28	*$ 15.30*	$ 2.78
1793	$ 0.027	$ 0.84	*$ 2.05*	$ 0.50	$ 0.325	$ 12.19	*$ 14.04*	$ 3.57
1794	$ 0.027	$ 0.68	$ 2.17	$ 0.49	$ 0.312	*$ 14.48*	*$ 17.57*	$ 4.08
1795	$ 0.036	$ 0.89	$ 2.22	$ 0.45	$ 0.566	$ 16.78	$ 21.09	$ 4.93
1796	$ 0.042	$ 0.57	$ 2.60	$ 0.51	$ 0.318	$ 11.34	$ 22.20	$ 6.13
1797	$ 0.023	$ 0.62	$ 3.36	$ 0.59	$ 0.251	$ 11.65	$ 25.83	$ 7.06
1798	$ 0.018	$ 0.78	$ 2.89	$ 0.42	$ 0.298	$ 18.30	$ 22.57	$ 8.82
1799	$ 0.020	$ 0.57	$ 1.97	$ 0.32	$ 0.309	$ 14.32	$ 22.20	$ 7.51
1800	$ 0.039	$ 0.59	$ 2.79	$ 0.41	$ 0.249	$ 11.14	$ 22.76	$ 4.73
1801	$ 0.049	$ 0.79	$ 2.92	$ 0.42	$ 0.254	$ 11.14	$ 22.39	$ 5.01
1802	$ 0.039	$ 0.82	$ 4.79	$ 0.42	$ 0.174	$ 11.07	$ 19.83	$ 4.85
1803	$ 0.053	$ 1.09	$ 3.84	$ 0.42	$ 0.165	$ 10.54	$ 18.65	$ 5.88

Notes and Sources to Table 10 B:

The data for 1767-71, both price and quantity, are the values reported by Shepherd and Walton for 1768-72. (1972, Appendix IV, Tables 2 to 7). The reported data were shifted back a year to reflect the crop year. The Sterling values were converted at $4.44 per pound Sterling.

Rice: For 1789-1800 we used quantity data from Gray (1958, vol. 2, pp. 1020-23, Table 37). For 1801 to 1803 we extrapolated the 1800 figure forward on the basis of the change in rice exports for the U.S. taken from Holmes, 1912, pp. 5-7. The Lower South's share of U.S. exports implicit in this calculation is 86 percent, about equal to the 87.5 percent share for 1791-92 based on tierces exported (New American State Papers, Commerce and Navigation, vol. 1 pp. 163ff.

Indigo:. 1789-1800, from Gray (1958, p. 1024). Gray reports quantities in chests or casks, both of which were assumed to amount to 350 pounds.

Deerskin: Exports were compiled by us. See Mancall, Rosenbloom, and Weiss, 2002 "Estimates of Deerskin Exports from the Lower South, 1700-1800," mimeo University of Kansas.

Cotton: Bruchey (1967, Table 3-A). Lower South exports were estimated based on total US exports and the share of the Lower South in total US production. According to Bruchey, in 1791 the Lower South accounted for 100 percent of cotton production. By 1801 this figure had fallen to 85 percent. We interpolated linearly between these figures to get the shares for other years.

Naval Stores, **Boards, Staves and Headings and Tobacco:** The quantity figures shown as being produced in 1790 and 1791 are the export figures for 1791 and 1792 (New American State Papers, Commerce and Navigation, vol. 1, pp. 163ff). The figures for other years were estimated based on changes in U.S. exports of each item. The U.S. figures are from U.S Congress, 1884, Table NO. 2, pp. 16-23.

The quantities reported in the sources were shifted back one year to better represent the crop or production year. This is a method espoused by Clowse, 1981, pp. 57-58, Table B-21.

The price data are from Cole, 1938, except for deerskin prices. In any year for which Cole did not report a price for Charleston, we estimated a price by extrapolating the nearest Charleston price by the change in the Philadelphia price for that same export item. The deerskin price for 1791 is the price implicit in the exports of deerskins for that year (*New American State Papers*, vol. 2, p.). The deerskin price in other years was estimated by extrapolating the 1791 figure on the change in the Bezanson price index for deerskins in Philadelphia. (Bezanson, et al, 1937).

Table 11

Real Value of Exports from the Lower South, 1790-1800

Estimated by Deflating the Current Price Values

		------ Price Deflator----------			Real Value of Exports Deflated by		
	Dollar Value of Exports in Current Prices	David-Solar-McCusker Price Index (1840=100)	Cole's Export Price Index	North's Export Price Index (1790=100)	David-Solar-McCusker Price Index (prices of 1840)	Cole's Export Price Index	North's Export Price Index (1790 prices)
Three Year Average Benchmark values							
1790	3,582,928	105.8	189.3	100.0	3,386,510	1,892,725	3,582,928
1800	10,255,397	145.2	171.6	145.9	7,062,946	5,976,339	7,029,059
Average Rates of Change							
1790-1800	11.09	3.22	-0.98	3.85	7.63	12.18	6.97

Notes and Sources for Table 11:

See text for a discussion of how the current dollar value of exports produced in the region were obtained.

The David-Solar-McCusker Price Index was constructed by McCusker, (1999) "How Much is That in Real Money," Table A-1. McCusker extended the Brady-David-Solar Consumer Price Index backward to 1720 based on Bezanson's index of Philadelphia commodity prices. Whereas the original index used 1860 as the base year, we have shifted the index to a base year of 1840.

Cole's Export Price Index is that for Charleston's export prices, prepared by George Rogers Taylor (*Historical Statistics*, Series E: 92-95).

North's Export Price Index taken from North (1961, Table C-III, p. 221).

Table 12

Estimate of the Value of the Major Exports from the Lower South in Constant Prices, 1789-1801

	Rice	Indigo	Naval Stores	Deerskins	Cotton	Boards	Staves and Headings	Tobacco	Sum of Eight Items	Index of Real Exports: 1791=100	Total Exports, Excl. Re-exports, in 1840 Prices	Per Capita Value of Exports in 1840 prices
Estimates Using Prices of 1791												
1789	136,891	101,049	92,792	13,406	3,000	151,740	62,088	484,425	1,045,391	33	1,747,975	$ 2.39
1790	1,303,270	576,573	86,682	23,419	47,250	177,895	47,112	436,856	2,699,057	86	4,557,450	$ 5.98
1791	1,465,695	784,964	110,211	70,297	33,983	171,017	52,255	437,039	3,125,459	100	5,226,014	$ 6.63
1792	1,528,348	872,377	87,030	58,285	118,340	213,730	50,716	245,144	3,173,969	102	5,132,654	$ 6.30
1793	1,405,763	636,013	59,067	60,840	382,478	114,110	46,052	314,168	3,018,491	97	5,047,154	$ 5.98
1794	1,042,224	753,146	100,576	62,547	1,474,860	132,225	51,191	249,655	3,866,424	124	6,464,965	$ 7.40
1795	1,280,712	425,524	104,731	53,491	1,412,244	174,860	58,995	282,239	3,792,796	121	6,341,853	$ 7.01
1796	1,263,819	171,329	87,513	49,089	861,770	140,291	63,234	237,865	2,874,910	92	4,807,075	$ 5.12
1797	1,208,461	96,025	66,342	84,607	2,094,300	170,098	47,882	280,395	4,048,110	130	6,768,758	$ 6.95
1798	1,110,393	19,818	89,038	153,125	2,097,040	183,871	58,004	392,864	4,104,154	131	6,862,467	$ 6.79
1799	1,052,824	6,885	73,801	76,172	3,847,088	223,399	33,048	321,750	5,634,966	180	9,422,106	$ 8.98
1800	1,132,982	3,397	81,737	68,189	4,443,588	232,504	63,432	424,303	6,450,130	206	10,785,125	$ 9.88
1801	953,312	4,075	62,481	75,428	5,720,208	262,522	50,843	317,828	7,446,697	238	12,451,463	$ 10.97
1802	977,389	0	114,178	127,062	8,365,071	257,157	60,191	352,874	10,253,923	328	17,145,365	$ 14.54
1803	936,150	221	111,205	179,772	7,585,482	246,689	59,038	340,819	9,459,376	303	15,816,820	$ 12.90

Table 12 continued

	Rice	Indigo	Naval Stores	Deerskins	Cotton	Boards	Staves and Headings	Tobacco	Sum of Eight Items	Index of Real Exports: 1791=100	Total Exports incl. Re-exports, in 1840 Prices	Per Capita Value of Exports in 1840 prices
Estimates Using Prices of 1800												
1789	228,042	59,881	134,638	10,904	2,988	126,884	99,231	750,459	1,413,027	35	1,818,252	$ 2.49
1790	2,171,073	341,673	125,772	19,048	47,061	148,755	75,296	676,766	3,605,444	89	4,557,450	$ 5.98
1791	2,441,650	465,164	159,911	57,176	33,847	143,003	83,515	677,050	4,061,318	100	5,226,014	$ 6.63
1792	2,546,021	516,964	126,277	47,406	117,867	178,720	81,057	379,772	3,994,083	98	5,132,654	$ 6.30
1793	2,341,812	376,897	85,704	49,485	380,948	95,418	73,601	486,702	3,890,567	96	5,006,295	$ 5.93
1794	1,736,206	446,309	145,931	50,873	1,468,961	110,566	81,814	386,759	4,427,420	109	5,697,105	$ 6.52
1795	2,133,493	252,162	151,961	43,507	1,406,595	146,217	94,288	437,238	4,665,462	115	6,003,413	$ 6.63
1796	2,105,352	101,528	126,979	39,927	858,323	117,311	101,062	368,495	3,818,977	94	4,914,175	$ 5.24
1797	2,013,134	56,904	96,260	68,816	2,085,923	142,235	76,526	434,381	4,974,178	122	6,400,662	$ 6.58
1798	1,849,766	11,744	129,191	124,546	2,088,652	153,752	92,705	608,616	5,058,970	125	6,509,771	$ 6.44
1799	1,753,862	4,080	107,082	61,955	3,831,699	186,806	52,818	498,448	6,496,750	160	8,359,874	$ 7.96
1800	1,887,395	2,013	118,597	55,462	4,425,813	194,419	101,379	657,320	7,442,398	183	9,576,713	$ 8.77
1801	1,588,089	2,415	90,658	61,350	5,697,327	219,520	81,258	492,372	8,232,989	203	10,594,028	$ 9.34
1802	1,628,198	0	165,668	103,347	8,331,611	215,033	96,199	546,664	11,086,722	273	14,266,148	$ 12.09
1803	1,559,500	131	161,354	146,220	7,555,140	206,280	94,357	527,988	10,250,970	252	13,190,720	$ 10.76
Average Annual Rate of Change, 1790-1800												
Using Prices of 1791	-1.39	-40.16	-0.59	11.28	57.52	2.71	3.02	-0.29	9.10	9.10	9.00	5.16
Using Prices of 1800	-1.39	-40.16	-0.59	11.28	57.52	2.71	3.02	-0.29	7.52	7.52	7.71	3.91

Notes and Sources for Table 12:

The values of the individual exports equal the quantities times the prices (see Table 10B for data). Total exports valued in 1840 prices for 1790-92 are from Table 9 above. Total exports valued in 1840 prices for subsequent years equal the 1791 value times the index of real exports.