Conjectural Estimates of Economic Growth in the Lower South, 1720 to 1800

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The question of economic growth in colonial North America is an unresolved matter. Despite numerous efforts to produce estimates of per capita output and its rate of growth, the range of values remains rather wide.\(^1\) The level may have been higher or lower than that in Britain, and its rate of growth may have been faster or slower. To a large extent past efforts to measure colonial economic performance have been relied heavily on the behavior of exports. Recently, however, Mancall and Weiss (1999) employed the conjectural method, an approach brought to the fore by Paul David (1967), to shift the focus of attention from exports to the far more dominant activities related to agricultural production for the domestic market.\(^2\) As David demonstrated, the conjectural approach requires a minimum of information, and is thus well suited to dealing with historical periods that may appropriately be described as a statistical dark age.

Based on the limited information available Mancall and Weiss (1999) concluded that there was little likelihood of economic growth in colonial America over the course of the eighteenth century. The rate of growth of GDP per capita was certainly less than 0.5 percent per year, and more likely was very sluggish indeed, perhaps zero. Mancall and Weiss sought to present a picture of the most likely course of economic progress prior to 1800, but their primary purpose was to shift the focus of attention to the domestic economy and lay out a way of approaching its measurement, not to present the final word on the subject. They recognized that there were any number of ways in which those estimates might be improved upon. In particular, it seemed that the methods proposed

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\(^1\) McCusker and Menard (1985, pp. 52-57) argue that output per capita increased between 0.3 and 0.6 percent per year. Their lower rate was that achieved by England, which they argue set the lower bound for the colonies; the higher rate reflected their view that because the colonies had started out far behind they likely grew faster than the mother country.

\(^2\) David’s conjectural technique was based on the work of Kuznets (1952), and has been extended by Weiss (1992). The impetus for this shift was the 1995 conference on The Economy of Early British America: The Domestic Sector, organized by John McCusker.
would be better suited to examining subsets of the colonies, perhaps even individual colonies, and producing the aggregate picture by summing up its parts. Even if it turns out that the conjecture of no growth for the colonies as a whole is correct, the experience of each region could have differed widely. This would seem almost certain to be the case given the wide differences in the composition of the population and the disparate nature of each colony's economy, most especially the substantial differences in the magnitude and composition of foreign trade.

Here we present the results of our examination of one of those regions, the Lower South. For the colonial period this region is conventionally defined as including what would become the states of Georgia, North Carolina and South Carolina. Because one of our goals is to incorporate into our conjectures the economic activity of American Indians, we also include what came to be Tennessee.\(^3\) Since this region was more heavily dependent on the export trade than any other region in the mainland colonies, historians have used exports as the key indicator of the success of the economy of South Carolina and its neighbors.\(^4\) But we need to set these assessments in a larger context by viewing the performance from the domestic side as well.

In order to measure the performance of the entire economy, we have made estimates of gross domestic product per capita at four benchmark dates 1720, 1740, 1770 and 1800.\(^5\) Our findings demonstrate the impact of a large relatively unprogressive domestic farm sector on the overall pace of economic growth. We find that during the colonial period, specifically from 1720 to 1770, the rate of growth of GDP per capita was positive but modest, in the neighborhood of 0.13

\(^3\) Inclusion of Tennessee has very little impact on any of our economic measurements for the colonists and their slaves because that state or territory was of little importance before 1800 except for its being the locus of economic activity by those Indians displaced from the colonies of the Lower South.


\(^5\) These estimates are conceptually similar to the earlier conjectures made by David (1967), Weiss (1992 and 1994), and Mancall and Weiss (1999) in that the scope of coverage is consistent as regards the extent to which marketed and non-marketed output is measured.
percent per year. During the heyday of the region's export sector, 1720 to 1740, the economy performed noticeably better. Exports abroad rose by 1.5 per cent per year on a per capita basis and propelled GDP per capita upward by nearly 0.4 percent per year. This specific episode confirms the traditional view of the region's success and supports the general thesis about the favorable role exports could play in the colonial economy. The performance in the rest of the century, however, makes clear that exports were not always as powerful an engine of growth as they have been made out to be.

Although we think these estimates set the upper bound on the likely growth of the Lower South, they rest on a number of assumptions which leave open the possibility that growth may have proceeded at a different rate. In what follows we present our method for producing that best estimate and then examine the consequences of altering the most important assumptions on which it rests. We show that our estimate of a slow rate of growth in the long term is quite robust to these changes. We also show how the picture of economic growth in the region is changed if the economic activity of Native American Indians is taken into account.

An Overview of the Lower South's Economic Development

A generation of scholars has concluded that the Lower South and the Chesapeake were the most economically successful regions of British mainland North America. Both regions made extensive use of slave labor, had apparently successful staple-export sectors, and by 1774 had the highest levels of private wealth per capita in the colonies. Until recently, however, our knowledge about the Lower South did not go much beyond this. Writing in 1985, McCusker and Menard (1985, ch. 8) decried the lack of knowledge about this region. Since then we have learned much...
from the work of Coclanis (1989), Chaplin (1993) and Egnal (1998), but they have all continued to focus on the export sector. When they do point out that not everyone lived in the low country, not everyone was a planter, and not everyone was engaged in foreign trade, they do not pursue the implications. Their descriptions, however, make clear that there were wide variation within the region.

The conventional economic history of the Lower South focuses heavily on South Carolina, and especially the low country, for most of the eighteenth century. Colonists there were more heavily involved in international trade and the low country was home to some of the wealthiest British colonists in the Western hemisphere. North Carolina was more populous than South Carolina, but had fewer slaves, far fewer for most of the eighteenth century. Georgia, which was not established until 1732 and prohibited slavery until 1749, was a relative latecomer, and contained only a small fraction of the region’s population.

The economic history of South Carolina, and indeed of the region, is really two distinct stories: one for the low country and a second for the backcountry. Historians, however, have focused predominantly on the development of staple agricultural production, which was confined primarily to the low country until the introduction of short-staple cotton in the mid-1790s. Rice was the region’s dominant crop, but after 1740 indigo exports became significant, and at the end of the

\[\text{Much of their wealth was in the form of slaves. If measured by nonhuman wealth these regions were about equal to the rest of the colonies (Jones, 1980, p. 54).}\]

\[\text{McCusker and Menard devote almost the entire discussion on the Lower South to South Carolina, while North Carolina and Georgia are mentioned only in passing (1985, chap. 8).}\]

\[\text{North Carolina’s share of total regional population fell from around 65 percent in 1700, to about 50 percent at the end of the century, while South Carolina’s share of regional population rose from 35 percent in 1700 to a peak of 50 percent in 1730, before falling back to around 35 percent at the end of the century. Slaves, however, made up a much larger share of South Carolina’s population—constituting a majority for most of the eighteenth century. As a result, South Carolina contained 85 percent of the region’s slave population in 1700, and although the numbers of slaves in Georgia and North Carolina grew more rapidly than those in}\]
century cotton rose in prominence. In 1700, rice exports totaled only 450 thousand pounds, but by 1720 they amounted to 6.5 million pounds in 1720 and continued to climb, reaching a peak of 43 million pounds in 1740. The initial period of expansion came to a sudden end in 1740. In 1739, the Stono slave rebellion contributed to the colonists’ fears about the growing Black majority in the colony, and resulted in the passage of a prohibitive duty on slave imports which lasted until 1744 (Richardson 1991, p. 131, Crouse 1977, p. 56). At nearly the same time international conflicts substantially raised shipping and insurance costs and restricted the market for rice. Slave imports also fell precipitously, dropping to only a fraction of their level in the previous decade. The depressed conditions persisted for most of the decade. During this period, planters experimented with other crops, including indigo, which emerged as an important complement to rice. By 1748, indigo already accounted for 10.4% of South Carolina’s exports, putting it third in importance behind deerskins (22%) and rice (55%).

With the return of peace in the late 1740s, rice prices recovered along with exports, and the importation of slaves resumed. In the early 1760s, rice prices began to increase again, and exports shot upward in the decade and a half before the Revolution (Nash 1992, p. 692; Dethloff 1982, p. 235). To accomplish this increase, planters spread cultivation out into Georgia and the Cape Fear region of North Carolina, but South Carolina remained by far the largest producer. The upward trajectory of rice exports came to an end with the American Revolution. Material losses during the

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).

9 Cattle raising, production of naval stores, and the deerskin trade were also important activities. Menard (1996, p. 275); Dethloff (1982, p. 233); Clifton (1981, p. 274); Nash (1992, pp. 679-81).

10 British bounties made the crop commercially attractive, and because it was less bulky than rice, it was less affected by the wartime rise in shipping costs. 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).
war were substantial due to the sustained conflict in the region.\footnote{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 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 (Morgan 1983, p. 111; Gray 1958, p. 596).}

The devastation caused by the war is apparent in the very low levels of exports in the immediate post-war period. Although exports rose rapidly in the second half of the 1780s, even at their peak in 1793, Charleston’s exports were well below the level they had attained in the early 1770s (Gray 1958, pp. 1020-23).

The robust, export-based growth of the low country economy in the decades prior to the Revolution, coincided with the rapid expansion of settlement into the interior of the region. For the most part, the settlement of the back country consisted of small independent farmers possessing few if any slaves, and producing only small quantities of marketable crops (Hughes 1985; Johnson 1997, pp. 40-60; Klein 1990, pp. 10-27). 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 and they were virtually unconnected to the export trade dominated by the low country.\footnote{In 1768-72 average annual exports per capita in Carolina’s low country averaged 3.7 pounds Sterling for the entire population, and a whopping 17.11 pounds for the white population. The backcountry figure was a mere half pound (Coclanis 1989, p. 75).} Over the next 20 years, the backcountry’s share of both free and slave population increased, the latter having increased by nearly 400 percent, growing to slightly more than 29,000 by 1790 and accounting for 27 percent of the state’s slave population.\footnote{The rapid expansion of cotton cultivation beginning in the early 1790s perpetuated this shift, so that close to 44 percent of the state’s slaves were living in the back country in 1810.} Although this shift of the population set the stage for the ascendance of cotton, at the end of the century rice remained the dominant employer of slaves and that important export industry was confined to the low country portion of the region. The backcountry population was still only marginally involved in production for export.
In contrast to South Carolina, the economic histories of Georgia and North Carolina remain relatively unexplored. Georgia got a late start, and a disappointing one to its founders, but after the prohibition on slavery was lifted its economy grew more quickly. Its success paralleled that of South Carolina's, and by the end of the colonial period it too could boast of being home to some of the wealthiest colonists (Egnal, 1998, p. 99). Unlike its southern neighbors, North Carolina had only a small export sector. Although the colony exported some naval stores, tobacco and wheat, for the most part its economy resembled that of the backcountry of South Carolina (Egnal, 1998, 114-117).

Although the disparities between colonies and regions have been pointed out by other scholars (see, e.g., Coclanis 1989, pp. 75-76; Egnal 1998, p. 117), their implications for the course of economic growth have not been pursued in previous discussions of the region’s economic history. Despite the success of the region’s exports, their impact was confined to a minority of the region’s population. It is well known that the slaves did not reap any of the fruits of this success, but more to the point, is that export-based success escaped the majority of the free people living there. Because of this preponderance of non-staple agricultural production, we believe our approach to gauging the performance of the region's economy is a superior one.

The Method

For the colonial period it is difficult to speak strictly of domestic or national product because geographic boundaries were ambiguous and fluid, and the British and Indian populations resident in the Lower South were citizens of other nations. There would be ambiguity and measurement difficulties whether we chose to measure gross domestic or gross national product. We have chosen
to measure domestic product rather than national product.\textsuperscript{14} Gross domestic product (GDP), as commonly defined, measures the value of output produced within the domestic economy regardless of the ethnic background or nationality of the people involved in producing it.\textsuperscript{15} Because we are interested in gauging the importance of the economic activity of Native Americans, and because their “residences” were located more widely and changed more often than those of the colonists and their slaves, we have defined the region broadly to include Tennessee where many Cherokee resided.

We produced our estimates by employing the conjectural method. Like conjectures about the early nineteenth century by David (1967) and Weiss (1992, 1994), those we report on here should not be given the same status as estimates prepared today by national income accountants or the extensions backward into the nineteenth century by Kuznets (1946) and Gallman (1966). Our work is best viewed as a quantitative experiment about the likely course of economic progress, rather than a precise estimate of the course of real aggregate product. In order to generate estimates of aggregate output we have had to resort to using some average figures and stylized facts. The values selected may not have occurred in the specific year to which we refer, perhaps not in any year, but should represent what likely occurred, on average, around the time of each benchmark date. Those likely values and trends enable us to establish a baseline performance for the region that can then be used to conduct experiments using other values for selected variables.

\hspace{1cm}

\textsuperscript{14} The difference between the two empirically amounts to the net balance of factor payments to and from foreign nationals, and for most of American history has not been very large. For the colonial era the differences are likely to have been larger and their size would depend on which population was thought of as the national one. The value of either measure would depend to a large extent on how one treated Indians and their output, and, because Indians made up a much larger portion of the population in 1700 than in 1800, the divergence between GDP and GNP would have been larger at the earlier date.

\textsuperscript{15} The “economy” is commonly defined by the geographic boundaries of the country, but it is subject to other interpretations and has been applied differently in some instances. See for example Metzer (1995) and Butlin (1986).
We have generated separate estimates of output produced by the Native Americans and that produced by the colonists and their slaves. The latter figure is more akin to the measure that has been used in previous discussions of the period, and is the chief focus of our empirical work. The estimate of production by Native Americans is more experimental, but provides illuminating results, especially when combined with the estimate for the non-Indian population. As Mancall and Weiss did in an earlier work, we refer to this more comprehensive figure as a “multicultural” estimate. Because of the difficulty of disentangling some economic activity of Native Americans from that of the colonists, we believe this multicultural estimate is a more reliable gauge of aggregate production than is either of the separate estimates.

We report here on the estimates of GDP per capita that exclude the value of home manufacturing and farm improvements. GDP is the sum of the conjectured values of the output produced in three sectors: agriculture, housing, and nonagricultural industries. We obtained those values by following the procedures laid out by David. Because the estimation proceeds backward in time—that is, we take the values available for each of the components in the base year of 1800 and then extrapolate them backwards to earlier years—the base year figures take on prominence. It is these known pieces of information that set bounds on the growth that could have occurred over

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16 Butlin (1986) coined this the term to describe the estimates he prepared for Australia.
17 The exclusion of these unconventional items is not as serious a matter as it might appear. We have not excluded these items because they were unimportant, but rather because they were likely more important in 1720 than in 1800. Their inclusion would raise the level of GDP in all years, but more so in 1720, and would thus bias downward the estimated rate of economic growth.
18 Nonagricultural output, other than the value of shelter, encompasses a wide variety of items: the value of manufactured goods (including those exported), investment, as well as services, including the value of government services.
19 These 1800 figures are in effect known values. They are not known with the precision or completeness of official statistics, but they were taken from existing work and were not generated by our conjectures.
the preceding century.\textsuperscript{20} These base year values are summarized in Table 1, which also includes data for the nation as a whole in 1800 from Mancall and Weiss (1999) to permit comparisons with the region.

In order to extrapolate the 1800 value of GDP per capita to earlier years we followed the method espoused by Paul David. Output per person (GDP/P) in any year equals the participation rate (LF/P) times the weighted average output per worker; which equals output per worker in agriculture (a) and nonagriculture (n) weighted by each sector’s share of the labor force. This equation yields an index of output per capita in each benchmark year, which is used to extrapolate the base year's (1800) dollar value of GDP per capita to each of the earlier years.

\begin{equation}
\text{GDP/P} = (\text{LF/P}) \left[ S_a (O/LF)_a + S_n (O/LF)_n \right]
\end{equation}

In the absence of time series evidence on output per worker in the nonagricultural industries, David assumed that productivity there grew at the same rate as it did in agriculture. As a result, \(O/LF_n = k(O/LF)_a\). With that modification, and the fact that \(S_n = (1 - S_a)\) the equation becomes.

\begin{equation}
\text{GDP/P} = (\text{LF/P}) \left[ S_a (O/LF)_a + (1 - S_a) k (O/LF)_a \right]
\end{equation}

As can be seen, very little information is needed and changes in GDP per capita arise from only three things: changes in the participation rate, changes in agricultural output per worker, and shifts in the distribution of the labor force out of agriculture. We have modified this equation in one respect. Whereas David included the value of shelter in the measure of nonagricultural output, we have treated it as an independent sector. We have done so because such output arose in both agriculture and nonagriculture, but in neither case was it produced directly by labor. Thus we wanted to remove its

\textsuperscript{20} The GDP per capita figures in 1800 for the region were based on the national estimates by Weiss (1992, Table 1.4). David’s (1967) estimates for 1800 are lower than Weiss’s and would thus dictate less growth for
influence from the calculation of output per worker. Consequently our estimating equation is:

\[
\text{GDP/P} = (\text{LF/P}) \left[ S_a (O/LF)_a + (1 - S_a) k (O/LF)_a \right] + (O_s)
\]

The results of solving this equation for each of our benchmark years are shown in Table 2. Before discussing those results, however, we need to elaborate on some of the information lying behind this basic estimating equation. The key items are the time series values of agricultural output, including exports, the labor force, and its distribution between agriculture and nonagriculture.\footnote{David had available to him estimates for each of these, although he did make some improvements and modifications to them. We have had to construct each of these series.}

**Labor Force Estimates**

The labor force series was derived by using the procedures set out by Lebergott (1966) and Weiss (1992) to produce estimates for the nineteenth century. The total labor force is the sum of the estimates of the number of free male workers, free female workers, male and female slave workers, and male and female Native American Indian workers, all aged 10 and over.\footnote{The figures for 1800 included separate estimates for free males and females aged 10-15 and those aged 16 and over (Weiss, 1992).} These estimates are the product of the estimated population in those age categories and assumed labor force participation rates.\footnote{The evidence we have found for the colonies of the Lower South indicates that the share of the free population that was aged 10 and over, and thus more likely in the labor force, declined over time from around 69 percent in 1720 to 63 percent in 1800. The shares of those aged 10 and over among slaves also appears to have declined over time, but in our baseline conjectures we have not taken this into account.} The rates being those for 1800.\footnote{Those rates were estimated for each state in 1800 by Weiss (1992) and so we have rates specific to the Lower South region. Although we assume that these rates are constant over time for each population component, because the rates differ across the components, the average for the entire population changes over time.} The agricultural labor force was estimated as the product of the preceding century. In both cases, the figures were conjectured in ways that leave the 1800 figures unbiased by business cycle influences that may have occurred.
the rural population aged 10 and over and a specified rural agricultural participation rate plus a similar estimate for the urban population. The rural agricultural participation rates were based on the evidence for the nineteenth century. We assumed that they declined for all workers over the course of the eighteenth century at the same rate they changed for free adult males in the first half of the nineteenth century. We believe this imparts a noticeable bias to the changes in the agricultural labor force, in effect slowing down the growth of the farm labor force which in turn biases upward our measured growth in output per worker.

*Agricultural Output*

We estimated the value of agricultural output as the sum of food that was produced for consumption within the colonies (f), firewood (w), and those agricultural products that were exported (x). The food produced for consumption within the region (f) equals the food consumed (c) less the value of any imports of food (m). Agricultural exports can be divided into those shipped abroad (xf) and those shipped to other colonies (xc). We treat all this agricultural output as though it were marketed in order to place a value on it and to make our estimates comparable in scope to those for the early part of the nineteenth century.

The dominant component of any measure of agricultural output in the colonies was food production, and regrettably there is no time series data on this item for the eighteenth century. Its production can be approximated, however, by the value of consumption if allowance is made for the import and export of food items. Although there is no time series evidence on consumption, we believe there is enough information about the diets of colonists and slaves to permit a reasonable approximation of the likely values of food consumed.

Evidence on the diet, or its components, or the value of providing a specified diet is
available for a number of different groups in the population: free settlers, the military, slaves, prisoners, charity cases, and so on. The evidence comes from a variety of sources, such as official colonial records, court cases, committee hearings, traveler's 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 reported as well the standard provisions for maintenance of settlers. The specified diet included beef or pork, rice, peas, flour, beer, molasses, cheese, butter, spice, sugar, vinegar and salt. Moreover, the different quantities of each were specified for adult males, adult females, children and servants. The colonial records for Georgia and South Carolina also reported expenditures on provisions for troops, including in some instances slaves and Indians. The evidence from South Carolina for the period 1734-1756 indicates that the value declined over time regardless of whether it is valued in South Carolina currency, Pounds Sterling, or Dollars (in prices of 1840).

Vestry minutes are another rich source of evidence on weekly, monthly and annual maintenance. Those for St. Helena's Parish in South Carolina and St. Paul's Parish in Chowan

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25 Candler (1904-1916, vol III). 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 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.

26 We have valued this diet at $28 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. (Candler 1904-1916, vol. III, 408-09).

27 See for example the expenditures for Oglethorpe’s siege of St. Augustine (Candler 1904-1916, vol. II, 159-202. Gallman (1971 pp. 71-78) argued that military rations seem like a reasonable proxy for food consumption by the colonists.

28 The figures, converted to 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 (CRSC, vols. 1, 2, 7 and 14).

29 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).
County, North Carolina, for example, cover a long span of time and the expenses reported for maintaining wards of the church reflect the deliberations of those on the scene familiar with the standard of living in the vicinity and the costs of providing for it (Salley ????) and Fouts ????). Moreover, in many instances the wards appear to have been regular members of the church—friends and neighbors of the vestrymen—not outsiders to the parish. Indeed in some cases the wards were relatives of those who were providing the funds. The evidence from St. Helena's parish is sparse, but the minutes from St. Paul's Parish are replete with information with well over 200 entries about the provision of maintenance. Over the entire period covered, there appears to have been very little change in the average allowance.30 This seems most evident in the allowances made for terms of six months or longer. The evidence also indicates that the allowance for children ran between one-half and two-thirds that of an adult.

Finally, we have data on the quantity of corn included in probate inventories for 1732-38 and 1772-75.31 There are difficulties in interpreting this information, as the stocks of corn varied from quarter to quarter, and year to year. The average for the first quarter of each year suggests that corn inventories per person declined slightly between the 1730s and the early 1770s, but the evidence for the second and fourth quarters indicates the stocks fell over time. If these inventories represent the changes in food production that had been taking place, then it does not appear that there was any sustained increase in production per person over time.

Information on the slave diet is scarcer, especially as regards changes over time.32 It may very well be that there was little change in the slave diet. After all, it was not highly varied in the

30 The evidence from St. Helena’s parish suggests little change in the weekly rate whereas the annual figure for longer term arrangements rose from around $12 in 1738 to $45 in 1773.
31 These data come from an examination of all inventories containing corn in the specified periods.
19th century and the quantities of food provided had to be sufficient to provide for the calories and protein necessary to carry out the arduous work. In the nineteenth century, the value of the slave's diet equaled about 75 percent that of a free person. The information we have found for the colonial period would put the relative value anywhere between 20-25 percent and 75 percent. In other word the value of the slave diet may have risen substantially or remained constant.

Our assessment of all this assorted evidence is that the diet of free colonists is not likely to have changed much, if at all, over the course of the eighteenth century. It no doubt had its ups and downs with the state of the harvest and with the booms and busts of the economy, but the underlying trend value must have been rather steady. Therefore, we have assumed in our baseline conjecture that the value of an adult colonist's diet did not change over the period 1720 to 1800. The evidence is even more clear that the diet of a slave differed from that of a colonist, and that of an adult colonist differed from that for a child. We have assumed that the value of a child's diet remained a constant fraction of an adult's, the fraction being 50 percent. The slave's diet we allow to change in our baseline conjecture, rising from a value equal to approximately 50 percent of a colonist's in 1700 to 75 percent in 1800. With these assumptions we have calculated the value of

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32 Morgan (1998, pp. 135-43) argues there were differences in slave diets across regions, and slaves in the low country produced more food on their own time than did those in the Chesapeake. His evidence, however, does not suggest much about changes over time.

33 CRSC II, Commons Journal, 1739-1741, p. 493 and CRSC IV, Commons Journal, 1742-1744, p. 377. The relative value of 20 percent seems 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 quite low for slaves and quite high for free persons, thus yielding much too low a relative figure for slaves.

34 The value of food consumed per capita (c) is thus a weighted average of the value consumed by the colonists (c_a) and that consumed by the slaves (c_k), and the average for the colonists is a weighted average of that consumed by an adult (c_a) and that consumed by a child (c_k), where the weights are their respective shares of the population.

35 We based this beginning year value on Kahn’s estimate for the “least-cost diet with minimum fat requirements” which amounted to $23.43 (in 1860 prices) using the medium price of pork. (Kahn, 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
food consumed at each benchmark date.

Although international trade data are more abundant, as would be expected given the nature of the relationship between the colonies and Great Britain, the coverage is not as comprehensive the earlier years of the colonial era or in the period from 1772 through 1801 as it is in-between. Moreover, we wanted a series on only domestically-produced agricultural exports, and not one that included re-exports. We constructed the desired series in constant prices by first establishing a benchmark of agricultural exports from the Lower South to all countries in 1800 and 1770 and extrapolating that latter figure back to 1700 on the changes shown in the available export series.

The estimates of food consumption and agricultural exports is combined with the per capita value of food imports, agricultural exports to other colonies, and firewood produced to obtain the value of agricultural output for the region. These figures are shown in Table 3.

Shelter

Per capita values of shelter in 1800 of $4.80 for free persons and $0.60 for slaves were derived from the value of dwellings reported in the tax inventories of 1798 (Soltow 1989, table 10) and an assumed annual flow of shelter services from that stock (Gallman, 1966). Because those figures were calculated as the product of the stock of dwellings and an annual flow of housing service emanating from that stock, we used an index of change in the stock of dwellings to extrapolate the 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.

36 The evidence on firewood consumption came from a government report. Although one may be skeptical of the exact figures on fuel wood consumed, the trend in the series should be reasonable. The estimates were made on a regional basis and the underlying per capita consumption rates tried to “take into consideration the climate, the timber, the characteristics of the population, housing conditions, the shift from fireplaces to stoves, and the displacement of wood by mineral fuels” (United States Department of Agriculture 1942, table 2).
1800 figure backward to 1700. We based the index on Jones's estimate of the rate of growth of wealth per capita between 1700-25, 1725-50, and 1750-74, and Gallman's estimate of the rate of growth of the real value of structures between 1774 and 1799 (Jones 1980, p. 78; Gallman 1992, p. 95). In effect we have assumed that the dwelling share of wealth and of structures remained constant over the period.

**Empirical Results**

The results of our conjectures are shown in Table 2. We have focused on the period beginning in 1720 because that date seems to best divide the region's history into an early period of experimentation and adjustment and the subsequent period based on rice exports. The post-1720 period is also that for which we have more reliable and complete statistics on some of the key variables that make up our conjectures. We have presented statistics for only four benchmarks dates so as to focus on the likely trend values and avoid the impression that we have constructed a complete series on colonial GDP. Even with only these four points the results are very illuminating.

The most noteworthy result is that the conjectured trend in real GDP per capita (narrowly defined) reveals growth of only 0.13 percent per year over the colonial period (1720-70) and then a slight acceleration after 1770. Over the entire period 1720 to 1800, GDP per capita rose at nearly 0.2 percent per year or by $8.38

37 These figures differ markedly from those used in Mancall and Weiss (1999), but these seem preferred as they are grounded in the evidence for 1798.

38 These results look only at production within the region and not at the level of consumption that this would provide (except of course for the all-important consumption of food). Because some amount of the output was exported, the consumption that could be acquired with those exports would have varied with changes in the terms of trade. There are of course problems with measuring the terms of trade, perhaps especially for a region for which one of the most important imports was slaves. Nevertheless, we have constructed a terms of trade index which shows very little change over the entire period 1720 to 1800, but a twenty-five percent increase in the colonial years 1720-70, with all of this having taken place before 1740. If we adjust the value
Within the colonial period the region experienced particular success between 1720 and 1740 when agricultural exports abroad rose by 1.5 per cent per year. Shipments to other colonies held this sector back a bit, but still exports propelled GDP per capita ahead by 0.38 per cent per year. The much slower growth of GDP per capita indicates the extent to which the much slower-growing food and firewood producing part of the agricultural sector held back the overall weighted rate of growth. Nevertheless, the rate was still positive and quite respectable. Had the export sector been able to maintain its own pace of growth in the ensuing decades, or have slowed down less than it did, the region's economic history would have been much different; it would have been a phenomenal success story. Such was not the case; as export growth slowed so much after 1740 that growth of the per capita value of exports became negative. In those circumstances, the region was fortunate to have had the larger, slower-growing food producing sector which plowed ahead steadily. To a large extent the growth of that sector offset the downward pressure from the declines in per capita exports after 1740 with the result that GDP per capita declined down through 1770, albeit imperceptibly so—at a rate of -0.04 percent per year.

Clearly any picture of colonial success that rests on the performance of the export sector alone is likely to misrepresent the true course of change. This should not be too surprising. Exports were a relatively small part of the economy. They have received a great deal of attention because they were the raison d'etre for British colonization, they were at the heart of political debate, and statistics have been readily available. Moreover, exports from the region grew quite rapidly in the aggregate—rising between 3.5 and 4.0 percent per year—so the sector would appear to have been extremely dynamic and capable of generating sustained growth. Population, however, was simply

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of exports by the terms of trade we obtain a trade-adjusted GDP series that rises at about 0.2 percent per year from 1720 to 1770, 1770 to 1800, and the full term 1720 to 1800. Between 1720 and 1740 trade-adjusted GDP per capita rose at 0.55 percent per year, but then declined at 0.05 percent per year from 1740 to 1770.
growing that much quicker, in excess of 4.0 percent per year for the entire period.

Lying behind the growth that had occurred were noticeable rates of increase in output per worker, especially after 1770 when output per worker went up by nearly 1.0 percent per year. Over the longer term our estimates of agricultural output and the labor force engaged therein yield growth of output per worker of nearly 0.50 percent for the entire period 1720 to 1800, and 0.2 percent for the colonial period.\(^{39}\) By assumption, these rates of growth took place in nonagricultural industries as well. The reason why such rapid productivity growth did not translate into more rapid growth of output per person reflects the fact that the labor force was declining relative to the population. This reflects two things: the declining importance of the slave population and its labor force whose workers were more heavily in agriculture than were free workers, and the increase in the share of the free population made up of women and children whose participation rates were lower than that of adult males.

### Sensitivity of the Results

In order to construct our conjectures we made a number of assumptions, several of which have a noticeable impact on the results. The most important is that the value of the colonist's diet remained constant over the entire period. A second is that the rate of growth of nonagricultural output per worker equaled that in agriculture. A third is that the share of the rural population, both free and slave, engaged in agriculture declined over time at the same rate as did the share of free adult males in the first half of the nineteenth century.

\(^{39}\) These high rates of productivity growth stem in part from our assumption that the rural labor force (slaves as well as free) shifted out of agriculture at a relatively rapid rate. We have assumed that the fraction of the rural population engaged in agriculture declined at the same rate it did in the period 1800 to 1860, namely at 0.16 percent per year.
We believe that the latter two assumptions have biased upward our estimates of economic growth. It is unlikely that the rural labor force shifted out of agriculture at the same speed as it did in the nineteenth century, and especially unlikely that the slave labor force did so. The decline in the shares over the eighteenth century must have been slower than that which occurred in the nineteenth century for two reasons. First, the rate of productivity growth in agriculture was likely slower in the eighteenth century than in the nineteenth and would have brought about a more gradual shift of the labor force out of agriculture for any given demand. Second, because incomes were higher and growing more rapidly in the nineteenth century, the higher income elasticity of demand for nonfarm products would have induced a more rapid shift in the composition of output away from farming. Our assumptions about the speed of movement out of the agricultural labor force has two notable implications. The first is that it influences the rate at which the nonagricultural labor force increased. If the assumed rate of growth of the nonagricultural labor force is biased upward this gives an upward bias to the estimates of GDP growth because it increases the weight of the sector with the relatively higher average productivity. At this time, nonagricultural productivity was not much higher than agricultural so this shift effect was not very large. The other implication is that a too rapid rate of shift out of agricultural biases upward agricultural productivity and may simultaneously bias upward the growth of nonagricultural productivity.\footnote{Modern day intuition may suggest that nonagricultural productivity grows faster than agricultural and thus the assumption we have made that the two grew at the same rate would imply we are underestimating growth in nonagriculture. Modern day intuition, however, is not always a good guide as to past performance. The evidence for the nineteenth century does not indicate clearly that nonagricultural productivity always increased faster than agricultural. See Gallman, (1971), Engerman and Gallman (1981) and Weiss (1994).}

Estimates of the value of food consumed and produced are the crux of the matter, and so our assumptions about those items are critical. We have assumed that the value of the colonists' diet did
not change over the century, in part because we think that was likely the case, but more so in order to gauge the impact of a large, but slow-growing, food producing sector on the region's economy. We think this characterizes the economy of the Lower South in the colonial period. Food production was the dominant activity of the colonists and was at least as important an influence on the economy's performance as the more dynamic export sector. When the weight of this slow-growing sector is taken into account, the economy's performance is not as buoyant as we have been led to believe by focusing on exports alone, or when focusing on only the low country rather than the entire region.

If the diet had improved over time and the food producing part of the agricultural sector had grown more rapidly to provide it, the economy would have grown faster overall. Consider for example the consequences of an adult's and a child's diet in 1730 having been equal to that implied by the Rules for Georgia for 1735 ($28 for an adult and $14 for a child) and having increased at a constant rate from those values to the base year figures for 1800 and grown at that same rate in the decade before 1730. The value of each of their diets would have risen at 0.55 percent per year; the weighted average for the colonists would have increased between 1720 and 1800 at 0.51 percent per year; and when combined with the figures for slaves the diet for the entire population would have risen at 0.45 percent per year.\footnote{These are healthy advances in the value of the diet considering that they are not reflective of any increase in the costs of distribution. The upshot for the economy as a whole is very favorable. GDP per capita (narrowly defined) would have risen between 1720 and 1770 at 0.39 percent per year, three times as fast as the 0.13 percent in the baseline conjecture, and by 0.43 percent per year for the longer period 1720 to 1800, about twice as fast as growth shown in 
\text{__________________________}}
the baseline case. These are more positive results, so much so that the rates of growth of GDP per capita would be shifted into the 0.3 to 0.5 range of rates put forth by McCusker and Menard for all the colonies.

This alternative scenario about food consumption and production yields important implications about productivity as well, and those implications suggest these rates of growth are too high to be plausible. If consumption had risen at these higher rates, then the rate of growth of agricultural output per worker would have been 0.45 percent per year between 1720 and 1770 and a very robust rate of 0.73 per cent per year from 1720 to 1800. These rates of advance would be two to three times as fast as that which prevailed in American agriculture in the first half of the nineteenth century.42 They also appear to be substantially at odds with other independent evidence about the pace of productivity change in agriculture in the Lower South.43 Consequently if the alternative trend in the colonist’s diet had occurred it had to have rested on very implausible rates of growth of agricultural productivity.

The Indian Experiment

We have also produced estimates of GDP and its components for the Native American Indian population as well as estimates for the combined population. These are reported in Table 4. This effort is more of a hypothetical experiment than the conjectural estimates for the colonists and female. Had we done so, the weighted average would have grown slightly slower still because the female diet was slightly less valuable and the female share of the population had increased over time.

42 This is the rate when GDP excludes home manufacturing and farm improvements. Weiss (1993 table 1). This alternative trend in the colonist’s diet also implies that its value in 1720 would had to have been about equal to that of a slave in that year, and less than we estimate the value of the slave’s diet to be in 1800.

43 While there is evidence from contemporary observations of increases in yields per acre and per slave in rice cultivation (see Coclanis 1989, p. 89), there is no suggestion of comparable advances in other agricultural activities. Moreover, slave prices deflated by the price of slaves’ chief output (rice)—which
their slaves because there are so few statistics about the economic activity of Native Americans. To carry out the exercise we have had to resort to making a number of assumptions about how much Native Americans consumed, how productive they were, and how their labor was divided between agricultural and nonagricultural work. Nevertheless, the quantitative importance of the Native American population, especially at the beginning of the period when they accounted for somewhere between 30 and 54 percent of the combined population, and the fact that many Indians regularly engaged in commercial relations with colonists justifies the experiment.44

We have made the following assumptions about the Native Americans. First, their consumption of food was equal to 75 percent that of a free colonist at each benchmark date.45 Second, their consumption of shelter was equal to that of slaves in 1800 and remained constant over time.46 Third, deerskins were the only agricultural export Indians produced and that 40 percent of the value of those exports accrued to them.47 Fourth, the labor force participation rate and the agricultural share of the labor force were the same for males and females, were equal to the 1800 rates for slaves, and remained constant over time.48 Fifth, the ratio of nonagricultural to agricultural

should be a reflection of agricultural labor productivity—rose only modestly from 1720 to 1800; though they did increase by about 20 percent over the shorter 1740-1770 period (Mancall, Rosenbloom and Weiss 2000).44

Recent work by Baron, Hood, and Izard (1996) indicates more frequent and greater integration than previously believed. The interaction of course varied over time and across regions. For more discussion of these issues, see Mancall, Rosenbloom and Weiss (1999b).45

Evidence from Oglethorpe’s expedition against St. Augustine indicates that the value of an Indian diet may have been as low as 30 percent that of a male colonist (CRSC, vol. II, pp.175-201). We have put the relative value at 75 percent in all years in order not to exaggerate the impact of the decline of the Indian population on the multiethnic estimate of GDP per capita.46

On Indian housing see Williams (1989).47

See Brown (1975, p. 123) and Murphy (1998, 153-55). The proportion of the final price of deerskin exports that the Indians may have received appears to have been around 40 percent in the early 1700s. It may have risen to a peak near the middle of the century, and then fell back. For our initial conjectures we have assumed the 40 percent figure was the long term trend value.47

The average labor force participation rate for all male and female Native Americans and the industrial composition of that employment is unlikely to ever be known with great accuracy because there was variation across tribes in the extent to which men and women engaged in the different tasks and because there are no statistical compilations of their economic activities. There is little question that agriculture
productivity in the base year of 1800 was the same as that for the colonists and slaves.\textsuperscript{49} Sixth, nonagricultural productivity changed at the same rate as that for agriculture.\textsuperscript{50}

The combination of these assumptions yields an output per capita for Native Americans that did not change much over time, since the only source of temporal change is fluctuations in deerskin exports. Indian GDP per capita was around $35 in each year. This was equal to nearly 70 percent that of the non-Indian population in 1720 but fell to around 58 percent at the end of the century. The more noteworthy effect of including Native Americans shows up in our multicultural estimate of the value of output per capita for the combined populations. That figure increased noticeably over the course of the period from $46 in 1720 to $59 in 1800 using the smaller Indian population figure, and from $43 to $58 using the more comprehensive measure of the Indian population. These results are, of course, a manifestation of the role of food consumption in the estimation. Native Americans were a much larger portion of the population in 1720 than in 1800, and their consumption standard was a fraction of the non-Indian population. Their inclusion pulls down the weighted average consumption per capita in 1720 but has little effect on the 1800 figure, making for an increase in food consumption for the entire population of $2.50. This increase in food production in turn contributed to the positive rate of productivity advance in agriculture.

\textsuperscript{49} That ratio was 1.15. The level of agricultural productivity for Indians was calculated by dividing the estimate of agricultural output by the estimated labor force. This resulted in output per worker for Native Americans that was equal to about 35 percent that of the colonists and slaves.

\textsuperscript{50} This is the same assumption made in our baseline case for the colonists and slaves.
Conclusions

Our conjectures about economic growth in the Lower South indicate that the region advanced somewhat over the course of the eighteenth century. This is a more favorable result than Mancall and Weiss (1999) found for the colonies as a whole and confirms the traditional and widely held view that export success led to economic growth more generally. This was especially the case in the Lower South in the period 1720 to 1740 when exports experienced their greatest growth. Although our current conjecture is that long term growth of output per capita likely ran between 0.13 and 0.20 percent per year, this is not as robust a performance as McCusker and Menard (1985) have postulated for the colonies as a whole. And if the Lower South were the most export-oriented and successful region, or one of two, then the likelihood of growth for the entire British mainland colonies being above 0.3 percent per year seems remote. The results for the Lower South suggest that growth of output per capita for all the colonies was below 0.13 percent per year, and thus would seem to confirm the earlier conjectures of Mancall and Weiss.

The performance for the Lower South demonstrates the impact of the domestically-oriented part of agriculture on the entire economy. When exports were booming, as in the period 1720-40, the food producing sector held the entire economy back; when exports were performing poorly, the food sector propped the economy up. The results make clear how important it is to take into account all the parts of the economy. The emphasis in previous research 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 a dwindling one at that. The economic activity taking place in the more populous North Carolina and in the rapidly growing back country of South Carolina was the more important force.

Likewise the region's economy was not only about the colonists and slaves. They were to be
sure the more rapidly growing part of the economy, but at the beginning of the colonial period they were but a minority. Their economy was interrelated with that of the Native American Indians in ways that we have not fully uncovered. Nevertheless, the interactions had to have had some bearing on the economic performance of the colonists and slaves. If the impact of the Native Americans is taken into account, the performance of the colony looks a bit better. This of course reflects the assumptions underlying our conjectures about the Indians' economic performance, and the actual picture could have been much different. Still, however different the economic performance of the Indians might have been, their numbers were so large to begin with and the demographic shift was so pronounced that the colony's economy had to have been affected. Our conjectures highlight just how substantial that effect might have been.
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Table 1
Estimates of GDP and Components in the Base Year of 1800:
U.S. and Lower South
(U.S. dollars, prices of 1840)

<table>
<thead>
<tr>
<th></th>
<th>United States Non-Indian Population</th>
<th>Lower South Non-Indian Population</th>
<th>Ratio Lower South to US</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Totals ($000s)</td>
<td>Per Capita ($s)</td>
<td>Totals ($000s)</td>
</tr>
<tr>
<td><strong>Agricultural Output</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food (consumption)</td>
<td>158,653</td>
<td>29.90</td>
<td>33,615</td>
</tr>
<tr>
<td>less intra-colonial food imports</td>
<td>----</td>
<td>----</td>
<td>1,146</td>
</tr>
<tr>
<td>Food Production</td>
<td>158,653</td>
<td>29.90</td>
<td>32,469</td>
</tr>
<tr>
<td>Firewood</td>
<td>35,258</td>
<td>6.64</td>
<td>6,662</td>
</tr>
<tr>
<td>Agr. Exports Abroad</td>
<td>17,806</td>
<td>3.36</td>
<td>5,435</td>
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<tr>
<td>Agr. Exports to Other Colonies</td>
<td>----</td>
<td>0.00</td>
<td>1,637</td>
</tr>
<tr>
<td><strong>Non-Agricultural Output</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Shelter</td>
<td>50,415</td>
<td>9.50</td>
<td>3,758</td>
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<td>NonAgr. Exports</td>
<td>-</td>
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<td>-</td>
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<td>Residual NonAgr. Output</td>
<td>89,390</td>
<td>16.84</td>
<td>14,400</td>
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<tr>
<td><strong>GDP (Narrowly Defined)</strong></td>
<td>351,522</td>
<td>66.24</td>
<td>64,362</td>
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<tr>
<td>Labor Force (000s)</td>
<td>1713</td>
<td>418</td>
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<tr>
<td>Agricultural</td>
<td>1262</td>
<td>329</td>
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<tr>
<td>NonAgricultural</td>
<td>451</td>
<td>89</td>
<td>89</td>
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<tr>
<td><strong>Output per worker</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural</td>
<td>168</td>
<td>141</td>
<td>141</td>
</tr>
<tr>
<td>NonAgricultural</td>
<td>198</td>
<td>162</td>
<td>162</td>
</tr>
<tr>
<td>Ratio NonAgr. To Agr.</td>
<td>1.18</td>
<td>1.15</td>
<td>1.15</td>
</tr>
</tbody>
</table>

Notes: The 1800 population figures for the U.S. and the Lower South are for the White and Negro population estimated to be in residence on July 1. (U.S. Bureau of the Census, 1975, series A-7). The population of the Lower south includes that in Georgia, North Carolina, South Carolina and Tennessee. The figures for GDP and its components for the U.S. in 1800 were taken from Mancall and Weiss (1999). The GDP figure for the Lower South was set at 91 percent of the national figure for 1800. Easterlin (1960) estimated that per capita income for the Lower South in 1840 was equal to between 83 and 91 percent of the per capita figure for the nation. We used the higher of these ratios in order to maximize the possibility of economic growth in the century leading up to 1800.

The per capita food figures for each of the population groups in the Lower South in 1800 was assumed to equal the national average estimates derived in Mancall and Weiss (1999). The value of food produced for domestic consumption in 1840 was derived by subtracting from the value of agricultural
products those items that were not food (e.g. firewood, cotton, tobacco, etc.) and the value of crude and manufactured food exports. (See Gallman 1960, table, A-2; and U.S. Census Bureau 1975, series U-215 and 216). Because we wanted a figure to represent farm production, we valued the food at farm prices and thereby excluded the value of distribution included in the prices that the consumers would have ultimately paid. Because the per capita value of GDP in 1800 is the same regardless of which value of food consumption we use, any difference in the latter figures is shifted into the residual item “nonagricultural output.”

The base year value of firewood per person for the nation ($6.64) and that for the Lower South was calculated from the USDA estimates of firewood. (U.S. Department of Agriculture 1942, Table 2). We used the information reported for the South Atlantic (NC, SC and VA) to calculate a per capita figure for the Lower South. The calculation was based on the reported figures on the firewood consumed for the periods 1790-99 and 1800-1809. We further assumed that slaves consumed one-half the quantity consumed by free persons.

The estimate of food imports from other states in 1800 was assumed to equal the 1770 value of food imports from other colonies. The figure was calculated from evidence compiled by Shepherd and Walton (1972, table 2) for 1768-1772.

We produced estimates of domestically produced exports for two base years 1800 and 1770. It was necessary to produce the two figures because of the enormous disruption of trade that occurred during the Revolutionary War years. The 1800 value of domestically produced exports was derived from the statistics for 1803 to 1810 presented by Pitkin (1967). We derived the regional figure as the sum of estimates for each of three states, adjusting each series for the value of re-exports included in the reported totals. These figures were converted to a constant price series by deflating them by the export price index constructed by North (1961, pp. 221 and 239). We further assumed that all the domestically-produced exports from the Lower South were agricultural products.

The estimate for 1770, which is the figure that we extrapolate to earlier years, was calculated from the evidence assembled by Shepherd and Walton (1972). They presented exports of commodities from the Lower South to all destinations in each year 1768-1772 (1972, p. 94-95). Those exports were valued in Pounds Sterling at current prices. We converted them to dollars at the exchange rate of $4.44 and then deflated them by the David-Solar-McCusker index (McCusker 1992) in order to obtain values in prices of 1840. The figures may include some small amount of re-exports, but we have assumed that they were all produced domestically, and we further assumed that they were all agricultural products. When converted and divided by the population we obtained an average per capita figure for 1770 $7.13.

For agricultural exports to other states we used the evidence on interregional shipments in the period 1840 to 1860 compiled by Fishlow (1964) to put the 1800 figure at $1.50. Shepherd and Walton (1972) provide a figure of $1.45 for 1770. The latter will be used for extrapolation to earlier years.

The value of shelter services is based on the value of the stock of dwellings in 1798 and the ratio of the annual flow of shelter to that stock taken from the work of Gallman. The 1798 figures on the stock of dwellings came from the statistics collected by the Secretary of the Treasury as part of the Direct Tax assessed in that year. We used the figures as reported by Timothy Pitkin (1967) and adjusted them for omitted values according to the procedures developed by Lee Soltow (1989) and Soltow and Land (1980). The annual flow of shelter from that stock was revalued in the prices of 1840 by using the price deflator for the gross rental value of farm dwellings estimated by Towne and Rasmussen (1960). We assumed that these figures pertained to the free population. We set the value of slave dwellings equal to the value of those dwellings for free persons located in rural areas and valued at less than $100. The value of all such dwellings amounted to only $2.77 per free person, and using the same service flow per year of 22 percent we obtain the annual value of shelter of $0.60.

The residual nonagricultural output is the difference between the estimated total GDP and the estimates of all the other components. This residual encompasses all nonagricultural output, except shelter. In other words it includes the output of manufacturing, mining, construction, and final services flowing to consumers other than shelter. Thus it includes the value of government services as well as investment.

The labor force figures are from Weiss (1992).
## Table 2
Conjectural Estimation of GDP per capita, 1720-1800

<table>
<thead>
<tr>
<th>Year</th>
<th>Labor Force Participation Rate</th>
<th>Output per Worker</th>
<th>Intersectoral Shift Effect</th>
<th>Extrapolated Value</th>
<th>GDP per Capita</th>
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<tr>
<td></td>
<td>Estimated Values</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1720</td>
<td>0.492</td>
<td>97</td>
<td>1.02</td>
<td>48.50</td>
<td>50.80</td>
</tr>
<tr>
<td>1740</td>
<td>0.480</td>
<td>107</td>
<td>1.02</td>
<td>52.40</td>
<td>54.80</td>
</tr>
<tr>
<td>1770</td>
<td>0.477</td>
<td>106</td>
<td>1.02</td>
<td>51.50</td>
<td>54.15</td>
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<tr>
<td>1800</td>
<td>0.383</td>
<td>141</td>
<td>1.03</td>
<td>55.50</td>
<td>58.97</td>
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<tr>
<td></td>
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<tr>
<td>1720</td>
<td>1.28</td>
<td>0.69</td>
<td>0.99</td>
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<tr>
<td>1740</td>
<td>1.25</td>
<td>0.76</td>
<td>0.99</td>
<td>0.94</td>
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<td>1770</td>
<td>1.25</td>
<td>0.75</td>
<td>0.99</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Average Annual Rates of Change</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1720-1770</td>
<td>- 0.06</td>
<td>0.18</td>
<td>0.01</td>
<td>0.12</td>
<td>0.13</td>
</tr>
<tr>
<td>1720-1800</td>
<td>- 0.31</td>
<td>0.47</td>
<td>0.01</td>
<td>0.17</td>
<td>0.19</td>
</tr>
<tr>
<td>1720-1740</td>
<td>- 0.12</td>
<td>0.51</td>
<td>0.00</td>
<td>0.39</td>
<td>0.38</td>
</tr>
<tr>
<td>1740-1770</td>
<td>- 0.02</td>
<td>- 0.04</td>
<td>0.01</td>
<td>- 0.05</td>
<td>- 0.04</td>
</tr>
<tr>
<td>1770-1800</td>
<td>- 0.73</td>
<td>0.96</td>
<td>0.02</td>
<td>0.25</td>
<td>0.28</td>
</tr>
</tbody>
</table>

**Notes:** The labor force participation rate was estimated as the product of the population aged 10 and over times the labor force participation rates, with separate estimates being made for slaves and free persons. The participation rates are those for 1800 (Weiss, 1992). The agricultural labor force used to calculate agricultural output per worker and the shift effect is the sum of the rural agricultural labor force and the urban. There were very few such workers in cities, but this method allows for urbanization to influence the growth of the agricultural labor force. The rural labor force was estimated as the product of rural agricultural participation rates times the population age 10 and over. The participation rates were assumed to change over time at the same rate as they did in the period 1800 to 1860 (See Weiss, 1992). Agricultural output used to calculate the output per worker figure is explained in the text.

The indexes are calculated from the values reported in Panel A. These are multiplied to produce the index of GDP per capita which is used to extrapolate the value of GDP other than the value of shelter. The value of GDP is the value extrapolated plus the independent estimate of the value of shelter.

Per capita values of shelter in 1800 of $4.80 for free persons and $0.60 for slaves were derived from the value of dwellings reported in the tax inventories of 1798 (Soltow, 1989, table 10) and an assumed annual flow of shelter services from that stock (Gallman, 1966). Because those figures were calculated as the product of the stock of dwellings and an annual flow of housing service emanating from that stock, we used an index of change in the stock of dwellings to extrapolate the 1800 figure backward to 1700. We based the index on Jones's (1980, p.78) estimate of the rate of growth of wealth per capita between 1700-25, 1725-50, and 1750-74, and Gallman's (1992, p. 95) estimate of the rate of growth of the real value of structures between 1774 and 1799. In effect we have assumed that the dwelling share of wealth and of structures remained constant over the period.
Table 3
Per Capita Values of Agricultural Output for Colonists and Slaves in the Lower South, 1720 to 1800

<table>
<thead>
<tr>
<th>Year</th>
<th>Food Consumed</th>
<th>less Food Imported</th>
<th>Food Produced</th>
<th>Firewood</th>
<th>Agricultural Exports to Other Colonies</th>
<th>Total</th>
<th>Agricultural Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1720</td>
<td>28.98</td>
<td>2.08</td>
<td>26.89</td>
<td>4.12</td>
<td>7.94</td>
<td>1.64</td>
<td>9.58</td>
</tr>
<tr>
<td>1740</td>
<td>28.78</td>
<td>1.59</td>
<td>27.19</td>
<td>4.11</td>
<td>10.67</td>
<td>1.55</td>
<td>12.22</td>
</tr>
<tr>
<td>1770</td>
<td>29.01</td>
<td>1.05</td>
<td>27.96</td>
<td>5.74</td>
<td>7.13</td>
<td>1.42</td>
<td>8.55</td>
</tr>
<tr>
<td>1800</td>
<td>30.80</td>
<td>1.05</td>
<td>29.75</td>
<td>6.10</td>
<td>4.98</td>
<td>1.50</td>
<td>6.48</td>
</tr>
</tbody>
</table>

*Average Annual Rates of Change*

<table>
<thead>
<tr>
<th>Period</th>
<th>Food Consumed</th>
<th>less Food Imported</th>
<th>Food Produced</th>
<th>Firewood</th>
<th>Agricultural Exports to Other Colonies</th>
<th>Total</th>
<th>Agricultural Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1720-1770</td>
<td>0.002</td>
<td>-1.362</td>
<td>0.078</td>
<td>0.669</td>
<td>-0.215</td>
<td>-0.282</td>
<td>-0.226</td>
</tr>
<tr>
<td>1720-1800</td>
<td>0.077</td>
<td>-0.853</td>
<td>0.127</td>
<td>0.493</td>
<td>-0.581</td>
<td>-0.108</td>
<td>-0.487</td>
</tr>
<tr>
<td>1720-1740</td>
<td>-0.034</td>
<td>-1.357</td>
<td>0.055</td>
<td>-0.007</td>
<td>1.489</td>
<td>-0.282</td>
<td>1.225</td>
</tr>
<tr>
<td>1740-1770</td>
<td>0.027</td>
<td>-1.366</td>
<td>0.093</td>
<td>1.122</td>
<td>-1.335</td>
<td>-0.282</td>
<td>-1.182</td>
</tr>
<tr>
<td>1770-1800</td>
<td>0.200</td>
<td>0.000</td>
<td>0.207</td>
<td>0.201</td>
<td>-1.189</td>
<td>0.183</td>
<td>-0.920</td>
</tr>
</tbody>
</table>
Table 3 Continued

Notes: The value of food consumed per capita ($c$) is a weighted average of the value consumed by the colonists ($c_c$) and that consumed by the slaves ($c_s$), and the average for the colonists is a weighted average of that consumed by an adult ($c_c$) and that consumed by a child ($c_k$), where the weights are their respective shares of the population. Children are those under the age of 10. We assumed that the per capita consumption figure for free colonists was constant over time and equal to the value we estimated for 1800. The rationale for this assumption is described in the text.

The per capita figure for slaves was assumed to equal 75 percent that of a colonist in 1800, which amounted to 6.9 cents per day. We assumed that the daily cost a century earlier was equal to the least-cost diet estimated by Kahn (1992). His estimate in 1860 prices equaled 75 percent of the cost estimated by Fogel and Engerman or Sutch. Because our 1800 figure is comparable to their estimates, we set the 1700 figure at 75 percent of our 1800 figure. We then assumed that the value of slave consumption increased at a constant rate between 1700 and 1800.

We used statistics on tonnage entering and leaving Charleston (United States Bureau of the Census, Series Z-266-285) to estimate the value of food imported from other colonies and the value of agricultural exports to other colonies in 1731-35. We assumed that the value of each increased at a constant rate between those estimates and the baseline figure for 1770, and assumed also that they changed at the same rate in the decade before 1730. We estimated the 1731-35 figures in two different ways. In one version we assumed that the value per shipping ton in 1731-35 equaled that in 1770, and thus changes arose only from changes in the tonnage engaged in coastal shipping. In a second version we assumed that intra-colonial shipments comprised the same share of all shipments (foreign and coastal) in 1731-35 as they did in 1770. Thus changes in shipping tonnage as well as changes in the value of shipments per ton for the entire carrying trade entering and leaving Charleston influence the estimate. We used whichever value was more favorable to economic growth.
### Table 4
GDP Per Capita for Colonists and Slaves, Native Americans, and the Combined Population

<table>
<thead>
<tr>
<th>Year</th>
<th>Colonists and slaves</th>
<th>Native American Indians</th>
<th>Population Variant I</th>
<th>Combined GDP per Capita</th>
<th>Indian share</th>
<th>Combined GDP per Capita</th>
<th>Indian share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1720</td>
<td>$50.80</td>
<td>$35.30</td>
<td>0.30</td>
<td>$46.00</td>
<td>0.55</td>
<td>42.90</td>
<td>0.55</td>
</tr>
<tr>
<td>1740</td>
<td>54.80</td>
<td>34.80</td>
<td>0.13</td>
<td>52.20</td>
<td>0.28</td>
<td>49.60</td>
<td>0.28</td>
</tr>
<tr>
<td>1770</td>
<td>54.25</td>
<td>35.80</td>
<td>0.04</td>
<td>53.50</td>
<td>0.10</td>
<td>52.60</td>
<td>0.10</td>
</tr>
<tr>
<td>1800</td>
<td>59.00</td>
<td>34.10</td>
<td>0.01</td>
<td>58.60</td>
<td>0.04</td>
<td>58.20</td>
<td>0.04</td>
</tr>
</tbody>
</table>

**Average Annual Rates of Change**

<table>
<thead>
<tr>
<th>Period</th>
<th>Colonists and slaves</th>
<th>Native American Indians</th>
<th>Population Variant I</th>
<th>Combined GDP per Capita</th>
<th>Indian share</th>
<th>Combined GDP per Capita</th>
<th>Indian share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1720-1770</td>
<td>0.13</td>
<td>0.03</td>
<td>-3.9</td>
<td>0.30</td>
<td>-3.3</td>
<td>0.41</td>
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<tr>
<td>1720-1800</td>
<td>0.19</td>
<td>-0.04</td>
<td>-3.7</td>
<td>0.30</td>
<td>-3.3</td>
<td>0.38</td>
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<tr>
<td>1720-1740</td>
<td>0.38</td>
<td>-0.07</td>
<td>-4.1</td>
<td>0.64</td>
<td>-3.3</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>1740-1770</td>
<td>-0.04</td>
<td>0.09</td>
<td>-3.8</td>
<td>0.08</td>
<td>-3.4</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>1770-1800</td>
<td>0.28</td>
<td>-0.16</td>
<td>-3.4</td>
<td>0.31</td>
<td>-3.3</td>
<td>0.34</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Figures for colonists and slaves are from Table 2. The assumptions used to make the conjectures for Native Americans are described in the text. Given the method of estimation, the per capita value for Indians does not change with a change in the size of the Indian population. The combined figures do change as they are weighted averages of the per capita values for colonists and slaves and values for Indians, the weights being population shares.

The Indian population figures underlying the calculations are from Wood (1989, table 1). We have interpolated where necessary assuming constant rates of growth between figures reported by Wood. The figures used in Var. I included those Indians in NC and SC east of the mountains plus the Creeks in Georgia and Alabama. The Var. II figures include those in Var. I plus the Cherokee, Choctaw and Chickasaw. We have put the share of the Indian population aged 10 and over at 76 percent in all year. The figures were based on reports made in 1703, 1708 and 1725, covering 350 Indians in the first case, 1,400 in the second and 4,002 in the third (Morgan 19??, p. 144 and Klingberg, 1939, p. 496). We used the average of the three observations.

Evidence from Oglethorpe's expedition against St. Augustine indicates that the value of an Indian diet may have been as low as 30 percent that of a male colonist (CRSC, vol. II, pp.175-201). We have put the relative value at 75 percent in all years in order not to exaggerate the impact of the decline of the Indian population on the multiethnic estimate of GDP per capita.