Agricultural Productivity in the Lower South, 1720-1800

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The eighteenth century American economy was overwhelmingly agricultural. At the end of the century over 83 percent of the labor force was employed in the farm sector (Weiss 1992, p. 22), and it seems likely that this figure was even higher earlier in the century. Consequently prospects for economic growth depended heavily on improvements in agricultural productivity. Because crops and agricultural practices varied considerably between regions, any effort to identify trends in agricultural productivity is best conducted at the regional, or even sub-regional level.

In this paper we draw together the available evidence on agricultural productivity trends in the Lower South, the region comprising what became the states of South Carolina, North Carolina, and Georgia between about 1720 and 1800. We begin by reviewing what can be gleaned from the observations of eighteenth century observers. These accounts focus primarily on the export sector of the economy, but they provide a number of clues about the pace of change in this sector, and the sources of likely sources of productivity improvement. Then we consider two sources of quantitative data: export statistics, and slave prices.

Although we are far from being able to construct a comprehensive account, the three sources of evidence that we consider here all point to similar conclusions. From 1720 to 1800 output per worker appears to have risen modestly, increasing by no more than 30 percent, corresponding to an average annual rate of increase of no more than 0.3 percent per year. The pace growth appears to have been quite uneven, however, with most of the increase concentrated in the 25 years preceding the American Revolution. Growth was much slower in the decades

before 1750, and the disruptions caused by the Revolution depressed agricultural production and caused productivity to stagnate during the last quarter of the century.

1. Contemporary Descriptions

In light of the agricultural sector's importance it is hardly surprising that agricultural practices attracted a good deal of attention among contemporary commentators. Their observations offer a number of important clues about trends in agricultural productivity. Unfortunately, their attention was concentrated primarily on the production of the region's export staples—rice, indigo, naval stores, and cotton. It is important to bear in mind, however, that these export crops constituted only about one-fifth to one-quarter of the value of regional production for most of the period. The vast majority of agricultural labor was devoted to the production of domestically consumed food crops, about which contemporaries were largely silent.[1]

For most of the eighteenth century, South Carolina dominated regional exports. Georgia was not settled until the 1730s, and it grew slowly at first, constrained by its founders efforts to prohibit slavery. After the prohibition on slavery in Georgia was lifted its contribution to exports did expand as rice producers established plantations in lowland areas. Although North Carolina's population was actually larger than South Carolina's the lack of good internal transportation and the absence of good ports inhibited its contributions to regional exports—though naval stores and rice production did extend northward from South Carolina in the Cape Fear region of North Carolina (see Egnal 1998, ch. 6).

[1] These figures are based on calculations in Mancall, Rosenbloom and Weiss (2000). While the value of staple exports is for the most part directly observed, the value of food crops for domestic consumption must be inferred on the basis of likely levels of consumption. No plausible set of assumptions about the value of the colonial diet would, however, radically alter the implications of these calculations about the relative importance of exports.

Following its introduction in the late seventeenth century, rice quickly emerged as South Carolina's and the region's dominant export crop. By the 1720s, the value of rice exports was already twice that of the next leading export—naval stores—and in the late colonial period—rice accounted for close to three-fifths of regional export earnings (Egnal 1998, p. ?). In the 1740s, South Carolina planters added indigo to their list of cash crops, and it quickly replaced naval stores as the second leading export, a position it maintained until the 1790s, when planters rapidly substituted cotton for indigo throughout the interior areas of the region.

Two potential routes to productivity advance can be identified. On the one hand, productivity advances could be achieved through the introduction of new, more efficient, methods of cultivating particular crops. On the other hand shifts from lower-valued to higher-valued crops could raise productivity even if techniques of cultivation remained stagnant. Contemporary descriptions suggest that while techniques of rice cultivation were relatively dynamic, contributing to improvements in output per worker, and per acre, there was little change in the way other crops were produced.

Rice

Reflecting the important place of rice exports it attracted considerable contemporary discussion. More recent historical discussions have drawn heavily on these contemporary accounts.[2] From this analysis a broad consensus appears to have emerged about the evolution of rice cultivation.

Over the course of the eighteenth century, methods of rice cultivation underwent several important changes. From the beginning of the century to about 1720 rice was grown mainly in

[2] Among recent discussions see especially Gray (1958, pp. 279-80), Clifton (1981), Dethloff (1982), Chaplin (1992), Egnal (1998, pp. 103-4), and Morgan (1998).

upland areas where planters relied on rainfall to provide irrigation. Rice flourished in the South Carolina climate, but harvests were small and unpredictable in this period. By the 1720s, planters had shifted much of their crop to swampy, low country land, where they could better control irrigation by damming freshwater streams and ponds to create reservoirs. Uneven rainfall still created problems, however, because of the risk that excessive rains could flood fields, or droughts result in too little water.

A number of scholars have found discussions of the use of tide-induced changes in river levels to provide an even more reliable source of irrigation as early as the 1730s. But adoption of tidal irrigation was slow proceeded slowly until the 1780s, reflecting the large sunk cost of planters investments in existing irrigation systems. During the Revolution, many planters were unable to maintain these systems, however, and after the war they chose to invest in newer tidal irrigation methods, rather than in the replace older irrigation investments.[3] The more regular availability of water substantially reduced labor requirements in cultivation. First, fields could now be completely drained before weeding. At the same time, the more regular flooding of fields reduced the growth of weeds reducing the amount of labor required (Morgan 1998, p. 156).

Paralleling these changes in cultivation methods were a number of efforts to mechanize post harvest processing. In particular a number of devices to reduce the labor required in beating and pounding rice were introduced in the second half of the 18th century. Morgan (1998, p. 155) notes that the first plantation sale to mention a pounding mill dates from 1754. Few other notices appeared in the 1750s, but pounding mills were mentioned much more frequently in the 1760s

[3] For descriptions of these changes in technique see Chaplin (1992); Gray (1958, pp. 279-80); Clifton (1981); Dethloff (1982, p. 238); Egnal (1998, pp. 103-4); Morgan (1998, pp. 155-57).

and 1770s. According to one observer these horse driven devices could pound as much rice in one day as 16 slaves. In the 1780s and 1790s planters began to build water-powered mills.

Rice production was a labor-intensive process, requiring a substantial year-round labor force. Nonetheless the peak labor demands which occurred during June and July, when the crop was cultivated, must have been the binding constraint on how much could be produced (Morgan 1998, pp. 149-53). Improvements in irrigation, and especially the introduction of tidal irrigation helped to reduce this peak labor demand, thus expanding capacity. The impact of these changes is reflected the descriptions numerous eighteenth-century observers. Based on extensive analysis of these sources Peter Coclanis (1989, p. 97) summarizes them as follows:

> Contemporary estimates of rice yields in the low country in the early eighteenth century, that is before the employment of irrigation, generally run to about 1,000 pounds of clean rice per acre. By the time of the America Revolution, however, when almost all low-country rice was produced in irrigated inland- or tidal swamps, yields were much greater. Though estimates vary, about 1500 pounds of clean rice per acre seems to have been the norm….We see a similar increase in…[yield per worker] over the course of the eighteenth century. Whereas James Glen, writing in 1748, stated that it was "a common computation throughout the province" that a good working hand on a rice plantation produced about 2250 pounds of clean rice per year the figure for an *average* hand had apparently grown to about 3000 to 3600 pounds yearly during the second half of the eighteenth century, with good hands capable of even more.

Taking these figures at face value implies a 50 percent increase in output per acre, and an increase of between 33 and 60 percent in output per worker.

Indigo

Indigo was first grown in the lower South in any quantity in the 1740s. During this decade the market for rice was depressed because of international conflicts that substantially raised shipping and insurance costs. Because indigo had a much higher value relative to weight than rice, it could much more easily bare these costs than could a bulky commodity like rice. In 1749, Britain began to offer a bounty for indigo production, further encouraging the crop.

Indigo made a good companion to rice growing. Its growing season was relatively short, but its peak labor demands did not coincide with those for rice. It was sown in April and harvested in July. A second cutting was possible in late August or early September, and sometimes a third cutting could also be made later in the fall (Morgan 1998, pp. 160-61). Processing steps required great care, and the quality of the resulting product depended on the quality of judgements made during processing. Processing also had to proceed quickly once the crop was cut. As a result the indigo crop-cycle was completed by the end of October, when rice beating began.[4]

The equipment necessary to process indigo represented a significant capital outlay, but indigo could still be grown on a much smaller scale than rice, providing the opportunity for small holders to enter into cash production. Nonetheless, indigo cultivation does not appear to have diffused widely. Chaplin (1993, p. 203) reports that processing equipment was recorded in just 3.1 percent of probate inventories from the 1740s. This figure was somewhat higher in later decades, but displayed no long run trend, varying from 5.3 percent of inventories in the 1750s, to 4.4 percent in the 1760s, 5.6 percent in the 1770s, and 4.5 percent in the 1780s. Chaplin found no mentions of this equipment in the 1790s. Indigo cultivation appears to have been more

important in the backcountry, however, where Johnson (1997, p. 44) found that between 1750 and 1800 indigo vats were listed in 11 percent of inventories—with most of these cases coming from the 1760s and 1770s.

In the low country, indigo replaced naval stores as the primary employer of slave labor outside of rice production. Indigo could also be grown in mid- and up-country regions, and could be produced on a relatively modest scale. Consequently it provided the basis for the expansion of commercial agriculture into interior regions not suited to rice. Because the time requirements for the crop were limited, however, slaves on indigo plantations outside the low country "must have spent almost half the year growing provisions, rearing stock, and producing naval stores" (Morgan 1998, p. 163). Although the introduction of indigo facilitated the expansion of settlement into interior regions of South Carolina, there was relatively little indigo cultivated in other parts of the region.[5]

In contrast to rice, there is little indication that techniques of making indigo changed over the course of the century. This is consistent with scattered evidence on output per worker gathered by Chaplin (1993, p. 203) from published sources and farm accounts. These data, which are summarized in Table 1 indicate that there was no clear trend in indigo production per worker.

Cotton

Sea Island cotton had been grown in the Lower South in small quantities for some time, but large-scale cultivation of cotton began only in the 1790s. During this decade cultivation

[4] Contemporary accounts summarized in Gray (1958, pp. 296-97) suggest that each hand could cultivate 2 acres of indigo, one acre of rice, and enough food to provide his or her own provisions. If rice was not planted then during the winter, hands would be employed making naval stores, or cutting lumber, shingles, and staves.

expanded very rapidly, and cotton largely replaced indigo as the primary cash crop of producers in interior regions of South Carolina. It was also quickly adopted by farmers in interior regions of Georgia (Gray 1958, p. 683; Chaplin 1993, p. 305). Because cotton was introduced at the end of the century, changes in technique cannot have been a factor in agricultural productivity. But the shift from indigo to cotton may have contributed to an increase in output per worker, if—as appears likely—cotton was a higher value crop.

Food Crops

Despite the quantitative significance of domestically produced food crops in overall agricultural production there has been relatively little discussion of the impact of changes in technique on productivity. Most of the available evidence concerns corn—the major staple in southern diets. This evidence suggests that productivity in this sector was limited at best.

Early colonists adopted Indian methods of cultivation, intercropping corn with beans, peas, and pumpkins. According to Gray (1958, p. 173): "The seed was planted in hills, frequently with beans and peas, 4 or 5 feet apart. Usually the ground was not broken between the plantings of corn except when a hole was made for planting pumpkins, squashes, or melons. For a long time the colonists made little use of the plow, either in preparing the soil or in cultivating it, though plowing became more general in the latter part of the colonial period."

Reported yields varied substantially. Bolziusm (1957, p. 257) reports that around 1750 corn yields were 25 bushels per acre, plus beans, and a large number of pumpkins, melons, and cucumbers. According to his reports each slave could cultivate as many as 4 acres of these provision crops in addition to 3 acres of rice each year. It seems likely that these yields reflect

[5] According the U.S. Bureau of the Census (1975, Series Z432-Z435), Georgia's exports of indigo accounted for just 3 or 4 percent of the regional total in most years.

the relatively high fertility of newly cleared lands. According to Gray, it was common to cultivate corn in the same fields continuously, thus reducing soil fertility. In eastern North Carolina "year after year the nearly exhausted fields were scratched with light trowel or shovel plows to obtain yields of 6 to 12 bushels of corn and 4 to 8 of wheat" (Gray 1958, p. 909). The situation was similar but not as bad in Southern North Carolina, South Carolina, and Georgia. Since Atack and Batemen (1987) estimated corn yields in the mid-nineteenth century were from 4 to 18 bushels per acre in the Northeast, and from 17 to 43 bushels per acre in the midwest, there appears to be little reason to suppose that corn production was subject to any appreciable improvement in productivity over time.

2. The Volume of Agricultural Exports

Data on the volume of agricultural exports from the Lower South provide an alternative perspective on changes in the agricultural sector over the course of the eighteenth century. Table 2 summarizes the available data on the volume of the region's principal exports—rice, indigo, naval stores, and cotton—from South Carolina and Georgia over the course of the eighteenth century. These data clearly reflect the rapid expansion of rice cultivation after 1720. Exports of rice from South Carolina increased five-fold from 1720 to 1740, then doubled again in the next 30 years, reaching a peak in 1770 of over 65 million pounds, a level that would not be reached again during the eighteenth century. Although rice exports from Georgia grew even more rapidly from 1750 to 1770, increasing by a factor of 25, they still constituted less than one-fifth of the regional total. After 1750 indigo exports grew rapidly over the next two decades. Surprisingly they remained quite high in 1790 despite the absence of British bounties. They

collapsed dramatically over the next decade, however, nearly vanishing as cotton exports boomed.

Assuming that exports constituted a roughly constant share of production for each of the export crops, the ratio of exports to the labor force employed in their production should provide a rough indication of variations in productivity.[6] All of the region's exports were produced primarily using slave labor, and production of these exports was the primary employment of the region's slave population outside its one major urban center—Charleston. To obtain a measure of the labor force employed in the production of export crops, however, it is necessary to deduct the slave population of Charleston, which was employed primarily in non-agricultural activities. In Table 3 we show the rural slave populations for both South Carolina and Georgia, along with per slave export figures for each of the principal export crops.

Looking first at South Carolina, there was a rapid increase in rice exports per slave between 1710 and 1730, corresponding to the diffusion of rice cultivation, after which exports per slave leveled off for the next thirty years. Presumably rising rice exports per slave in this early period reflect both the impacts of shifting labor out of other less remunerative activities and the effects of improved irrigation techniques on output per worker. The stability of exports per slave after 1730, however, suggest that only modest gains in productivity were achieved after this date. Exports per slave did increase between 1760 and 1770, suggesting some possible improvements, but after the Revolution per slave exports fell substantially reflecting the disruption to production and markets caused by the war and American independence.

Between 1750 and 1760, exports of indigo on a per slave basis grew quite rapidly as production became more widespread. But there is no indication in the data of any subsequent

[6] This is not a novel idea. See Nash (1992), and Coclanis (1989) for additional discussion of per slave export data.

improvements in productivity in this crop. After 1790, per slave exports essentially vanished, as exports of cotton shot up to nearly 160 pounds per slave.

Turning to Georgia, exports of rice per slave remained relatively low in 1750, but rose rapidly over the next 20 years overtaking South Carolina by 1770. In contrast to South Carolina, Georgia's exports of rice remained relatively high in 1790, but then plummeted by 1800.

Movements in exports per slave for individual crops reflect both changes in productivity, and shifts in the allocation of labor between crops. To get a picture of overall productivity it is necessary to combine the separate export series into a single output index. Nash (1992, Table 6) has done this for South Carolina using data on relative prices to express each series in terms of its equivalent weight of rice, and then summing the separate series to arrive at what he describes as a "volume" index of exports for the period 1710 to 1770. In Table 4, we extend his series to 1800 using data on rice, indigo and cotton.[7]

Between 1710 and 1720 exports per slave increased rapidly as rice production replaced other (largely unmeasured) activities. Between 1720 and 1750, the index leveled off, showing essentially no growth. Thus, it appears that the gradual increase in rice exports per slave in this period was due primarily to the reallocation of labor away from naval stores. After 1750 exports per slave began to rise again, increasing nearly 50 percent in the next 20 years. This expansion appears to reflect both the spread of indigo production, and rising exports of rice per slave in the late colonial period. Export volumes dropped sharply between 1770 and 1790, reflecting the

[7] Nash's volume index includes Naval Stores, which we ignore, as they constituted only about 1.25% of the value of exports in 1770, and does not include cotton, which only became important at the very end of our period. To convert cotton and indigo to rice equivalent values for the post 1770 period, we have used long run average prices of each commodity so as to capture their equilibrium relationship. For rice we used its average price between 1780 and 1800 which was $3.18 per cwt.; for indigo we were obliged to use its price in 1792 (the only year for which we could find a quotation) which was $1.21 per lb., for cotton we used its average price between 1796—the beginning of large scale cultivation—and 1810, which was $0.21 per pound. We used this longer period for cotton to reduce the impact of the very high prices of this commodity during its early expansion. These data imply that one pound of indigo was equivalent to .388 cwt. of rice, and one pound of cotton was equivalent to 0.067 cwt. of rice.

sharp fall off in rice exports after the Revolution. By 1800, however, export volumes had recovered to their 1770 level. Thus it appears that the cotton boom of the late 1790s was successful both in replacing indigo, and in providing a substitute for the weakening market for rice.

Table 4 suggests that the combined effects of improvements in rice cultivation and the emergence of new, higher value crops over the course of the century did provide an important source of agricultural productivity growth. Overall it appears that productivity in the export sector may have increased by as much as 45 percent between 1720 and 1800, with the bulk of this increase occurring in the twenty years between 1750 and 1770. The growth of exports per slave appears to be relatively respectable. For the half century from 1720 to 1750 it implies an average annual increase of 0.8 percent per year. Assuming that labor productivity in the non-export sector did not grow as quickly, these figures set an upper bound on the plausible range of productivity estimates for the agricultural sector as a whole.

3. Slave Prices

Rising agricultural labor productivity should have manifested itself in an increase in the cost of labor relative to the prices of the region's agricultural products. Assuming that the employers of labor maximize profits they will hire labor until the marginal product of labor is equated to the real (product price deflated) cost of labor. Thus, any increase in the marginal (and hence average) product of labor should be reflected in rising labor costs. While this equality is typically derived in the case of wage labor, it should apply equally in the case of slaves, who constituted the major source of "hired" labor in the Lower South. The only complication arises because rather than focusing only on the current marginal product of labor, planters would

consider both the current and expected future marginal products of the workers they were purchasing. That is, profit-maximizing planters would purchase slaves until the net present value of the expected stream of future production, net of maintenance costs, was equal to the real price of slaves. Thus any increase in the productivity of slaves that lowered the cost of their maintenance or raised the value of their production of cash crops should have been reflected in an increase in their price relative to the crops they were being used to produce.[8]

Many accounts have emphasized the fact that the mainland colonies faced a highly elastic supply of slave labor for most of the eighteenth century.[9] This fact does not, however, affect the usefulness of slave prices as a measure of shifting agricultural labor productivity. Suppose that the supply of slaves was indeed perfectly elastic. In this case the price of slaves would be exogenous to planters in the Lower South. If the introduction of new irrigation techniques raised the productivity of labor, planters' demand for slaves would rise, and slaves would be imported until the marginal product of labor had returned to equality with the price of slaves. At this point, labor productivity would be no higher than it had been before the introduction of the new techniques. Put another way, planters would move down their new demand curve until the increase in the ratio of labor to capital and land had restored equilibrium

Fortunately it is possible to reconstruct with reasonable confidence the behavior of slave prices and the prices of the Lower South's chief exports for much of the eighteenth century. Drawing on data contained in probate inventories from South Carolina we have constructed an

[8] The price of slaves would of course have also been affected by a variety of other factors. Among these the most prominent of these were the slave's life expectancy and the rate of discount used to equate future and current earnings. Over the course of the eighteenth century, life expectancy was almost certainly rising, a fact that should produce some increase in slave prices even if productivity remained constant. Less is known about the rate of discount, but if it had any long-run trend it was probably downward, which would again tend to cause slave prices to rise. Thus, it is possible that increases in slave prices may slightly overstate any increase in labor productivity, thus biasing our analysis toward a finding of increased productivity.

[9] This view is founded less on empirical evidence, than on the fact that the mainland colonies accounted for a relatively small part of total New World slave purchases, and that markets for slaves were relatively competitive.

annual time series of slave prices covering the years from 1722 to 1809 (see Mancall, Rosenbloom, and Weiss 2000b). Prices of rice, indigo, and cotton are reported in Cole (1938), and we have used these to construct an index of export prices. In Figure 1 we graph indexes of slave prices and export prices over the entire period covered by the data. The underlying series are reported in Table 5. Between 1722 and 1740, slave prices remained roughly stable, while our export price index followed an upward trend. After 1739, however, King George's war disrupted Atlantic commerce, and caused export prices to collapse, followed by slave prices. With the return of peace at the end of the decade, both export prices and slave prices began to rise, and continued to increase until the beginning of the American Revolution—at which point there is an interruption in both series. It is apparent, however, that growth in slave prices outpaced export prices in the years prior to the Revolution. Prices of both slaves and the region's exports were extremely high in the immediate aftermath of the Revolution, but fell sharply by the early 1790s. Starting in the mid-1790s, however, this downward movement was reversed, and both price series shot upward, presumably in response to the commercial opportunities created by the introduction of widespread cotton cultivation in the region.

A clearer sense of long-run trends in the real cost of labor can be obtained by looking at the longer period averages reported at the bottom of Table 5. Despite some short-run fluctuations, it appears that the real cost of labor remained roughly stable from the 1720s through the 1750s. But beginning in the 1760s the real price of slaves began to increase, a trend that continued into the early 1770s, and persisted in the second half of the 1780s. At its peak, in the early 1770s, the real price of slaves was 60 percent higher than it had been in the 1720s. In the 1790s, however, slave prices fell sharply relative to export prices, returning the real slave price

index to approximately where it had been in the 1720s. Real slave prices recovered in the first decade of the nineteenth century, reaching a level 35 percent above the 1720s.

The parallels between real slave price movements and the other evidence cited above are striking. Like measures of exports per slave, slave prices remained largely unchanged from the 1720s, through the 1750s. But beginning in the 1760s, as indigo production spread, both export volumes and real slave prices began to increase. Strong international demand for rice, and the diffusion of tidal irrigation techniques provided additional reinforcement to these trends, boosting export volumes and real slave prices in the 1770s. Depressed demand conditions in the early 1790s limited the region's opportunities and depressed both export volumes and slave prices, but with rising world demand for cotton after the middle of the decade, both export volumes and slave prices began to recover, approaching their pre-Revolution levels by the end of the century.

Over the course of the entire 1720-1800 period slave prices suggest that labor productivity may have risen as much as 35 percent. Moreover, it appears that most of this increase was accomplished in the decades immediately preceding the Revolution, while the periods prior to 1760 and after 1775 appear to have been ones of relative stability. The increase in real slave prices is smaller than the 45 percent increase implied by the change in the volume of exports per slave, but nonetheless quite similar. Since movements in the real price of slaves reflects the combined effects of productivity changes in both the export and non-export sectors of the economy, hoewever, the fact that the increase in the price of labor was this close to the increase in export volume suggests that the non-export sector may have been more dynamic than might otherwise have been supposed..

4. Conclusions

Improving agricultural productivity was the key to economic growth in eighteenth-century America. From the descriptions of contemporary observers we know that technological changes in rice production and the introduction of new crops such as indigo and cotton provided a number of opportunities for planters in the Lower South to raise agricultural productivity levels. Gauging the overall impact of these improvements is more difficult. But data on the volume of exports and slave prices provide two largely independent sources of quantifiable evidence. As we have shown here, these two bodies of evidence are remarkably consistent with one another, and with what we can glean from narrative accounts of the region. Both suggest that the period from the late 1750s until the Revolution was a period of pronounced improvement in output per worker, but that the periods preceding and following this were ones of essentially stagnant productivity. Overall, productivity growth was modest, increasing by perhaps 35 to 45 percent over the course of the eighty years from 1720 to 1800, suggesting an average annual rate of growth of between 0.4 and 0.5 percent per year.

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Table 1:
Contemporary Observations of Indigo Output Per Worker

DATE	Pounds per Worker	Source
1749	60-160	Gov. James Glen
1757	90-180	Alexander Garden
1767	45	John Murray
1773	60	William Bartram
1775	100	*American Husbandry*
1784a	50	Porcher Family Account Book
1784b	125	John David Schoepf
1786	53	Porcher Family Account Book

Source: Chaplin (1993, p. 203).

Table 2:
Exports of Principal Export Staples from
South Carolina and Georgia, 1710-1800

	South Carolina				Georgia	
	Rice	NavalStores	Indigo	Cotton	Rice	Cotton
Year	1000cwts	1000 bbls	1000lbs	1000lbs	1000lbs	1000lbs
1710	15.55	6.62				
1720	62.28	37.47				
1730	161.09	16.33				
1740	305.90	16.73				
1750	304.08	17.46	57.46		4.31	
1760	399.02	9.73	481.14		21.45	
1770	656.03	11.97	561.39		106.80	
1780						
1790	503.10		839.67		296.80	
1800	385.90		3.4	20000	171.30	10000

Notes and Sources: South Carolina data for 1710-70 from Nash (1992, Table 6), much of which is in turn from Coclanis (1989). These figures are five-year averages centered around the date shown. Rice exports from Georgia in 1750 and 1760 are from U.S. Bureau of the Census (1975, series Z484). Indigo in1790 from Gray (1958, p. 610); 1800 from Gray (1958,p. 611) Rice in 1790 and 1800 from Gray (1958, p. 1023); 1790 is the average of exports from 1790-92, 1800 is the average of exports for 1798-1800. Rice exports from Georgia in 1790 and 1800 are calculated as the difference between the figure for South Carolina and the total U.S. export figure from Gray (1958, p.1023)

Table 3:
Exports of Principal Staple Crops Per Slave
From South Carolina and Georgia, 1710-1800

	South Carolina					Georgia		
	Slave Population	Rice	Naval Stores	Indigo	Cotton	Slave Population	Rice	Cotton
Year	(1000s)	lbs	barrels	lbs.	lbs.	(1000s)	lbs.	lbs.
1710	4.73	328.83	1.40					
1720	10.48	594.39	3.58					
1730	18.14	888.01	0.90					
1740	36.67	834.25	0.46					
1750	36.67	829.17	0.48	1.57		1.00	431.00	
1760	52.88	754.53	0.18	9.10		3.58	599.50	
1770	68.90	952.11	0.17	8.15		10.63	1005.18	
1780	97.00					20.83		
1790	99.41	506.09		8.45		29.26	1014.22	
1800	136.33	283.06		0.02	146.70	59.40	288.36	168.34

Notes and Sources: Export data from Table 2. Population data for South Carolina reflect Coclanis' (1989, p. ?) revisions of data from U.S. Bureau of the Census (1975, series Z?). From these we have subtracted estimates of the slave population of Charleston. The Charleston figures for 1770 forward are from Coclanis (1989, p. 115). Data for earlier years are based on estimates from Morgan (1984, p. 188) for 1720 and 1760. We have filled in other years on the assumption that the rate of growth of Charleston's population was constant prior to 1770.

Table 4:
Volume Index of South Carolina Exports
and Exports per Slave, 1710-1800

Year	Volume of Exports 1000 cwt. rice equivalents	Slave Population (1000s)	Volume of Exports per Slave	
			lbs of rice equivalents	Index (1770=100)
1710	22.24	4.73	470.11	33.74
1720	100.12	10.48	955.39	68.57
1730	177.58	18.14	978.96	70.26
1740	322.80	36.67	880.28	63.18
1750	351.59	36.67	958.81	68.81
1760	659.04	52.88	1246.29	89.44
1770	960.04	68.90	1393.39	100.00
1780		97.00		
1790	907.93	99.41	913.33	65.55
1800	1900.73	136.33	1394.21	100.06

Notes and Sources: Volume Index, 1710-1770 from Nash (1992, Table 6). 1790 and 1800 are obtained by extrapolating Nash's series based on the percentage change in the volume of exports of rice, indigo and cotton calculated relative to 1770 as described in the text. Population data are from Table 3.

Table 5:
Real Slave Prices, 1722-1809

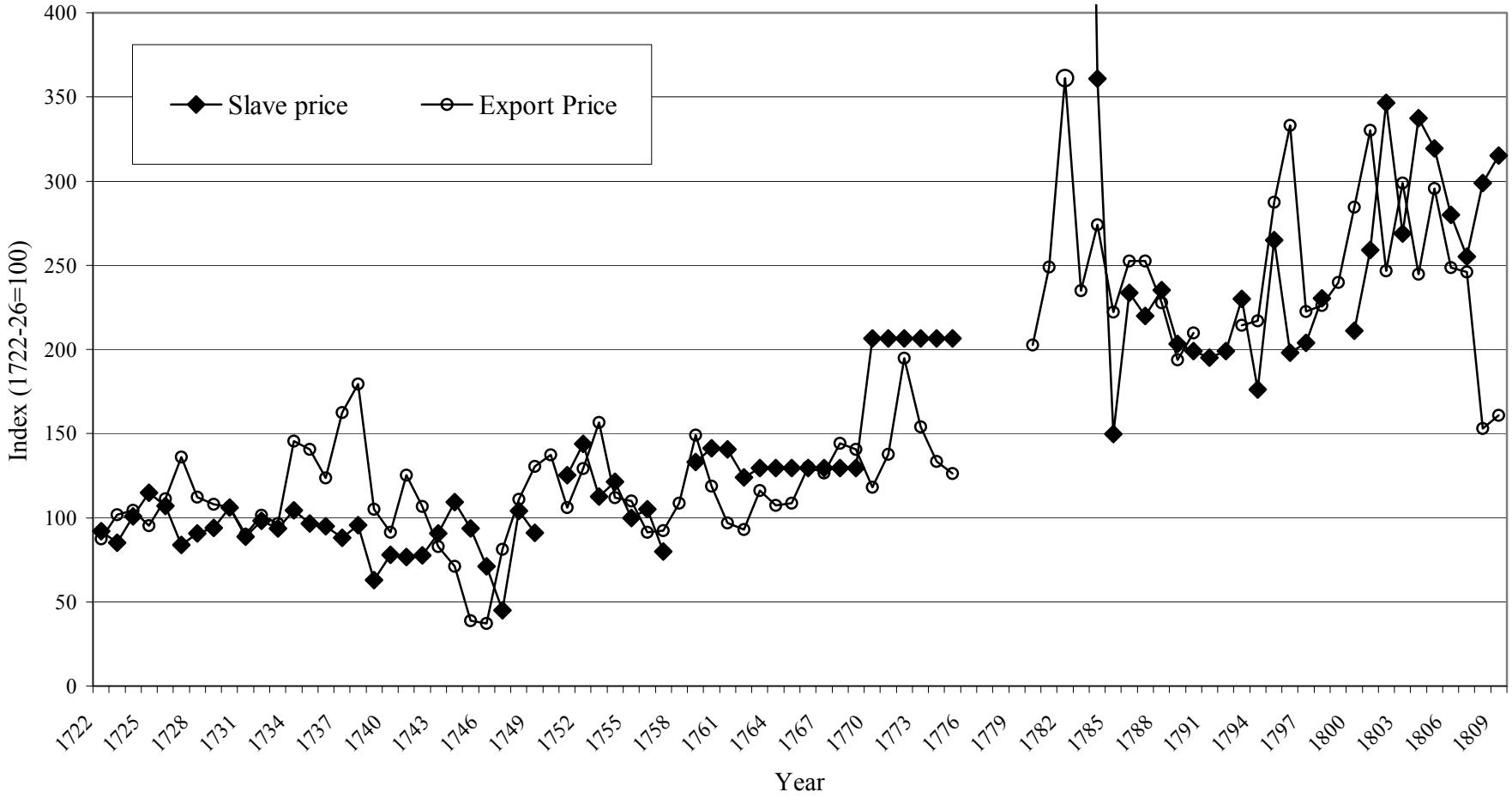
Year	Nominal Slave Price[a] (dollars)	Export Price Index[b] (1770=100)	Real Slave Price (dollars)	Real Slave Price Index (1722-26=100)
1722	109.63	74.1	147.96	104.71
1723	101.32	86.1	117.63	83.24
1724	120.17	88.3	136.11	96.32
1725	136.52	80.5	169.49	119.94
1726	127.46	94.2	135.36	95.79
1727	99.85	115.1	86.76	61.40
1728	107.83	94.9	113.65	80.43
1729	111.65	91.4	122.10	86.41
1730	126.19	90.1	139.98	99.06
1731	105.75	76.2	138.70	98.15
1732	116.81	86.0	135.84	96.13
1733	111.53	81.7	136.52	96.61
1734	124.14	123.3	100.72	71.27
1735	115.01	119.0	96.69	68.42
1736	112.95	104.6	107.96	76.40
1737	104.86	137.6	76.21	53.93
1738	113.62	151.9	74.79	52.92
1739	74.87	88.9	84.25	59.62
1740	92.97	77.4	120.13	85.01
1741	91.24	106.1	86.03	60.88
1742	92.56	90.3	102.52	72.55
1743	107.97	70.2	153.75	108.80
1744	130.15	60.2	216.22	153.01
1745	111.59	33.0	338.54	239.57
1746	84.67	31.5	268.52	190.02
1747	53.70	68.8	78.05	55.24
1748	123.74	93.8	131.94	93.37
1749	108.35	110.3	98.19	69.48
1750		116.1		
1751	149.06	89.8	166.07	117.52
1752	171.26	109.3	156.64	110.85
1753	134.15	132.5	101.21	71.62
1754	144.42	94.8	152.33	107.79
1755	119.02	93.0	127.99	90.57
1756	125.01	77.4	161.43	114.24
1757	95.12	78.1	121.73	86.15
1758		91.9		
1759	158.57	126.2	125.69	88.94
1760	168.09	100.5	167.26	118.37
1761	167.48	81.9	204.47	144.70

Year	Nominal Slave Price[a] (dollars)	Export Price Index[b] (1770=100)	Real Slave Price (dollars)	Real Slave Price Index (1722-26=100)
1762	147.64	78.8	187.42	132.63
1763	154.30	98.4	156.83	110.98
1764	154.30	90.9	169.71	120.10
1765	154.30	92.0	167.70	118.68
1766	154.30	110.1	140.17	99.19
1767	154.30	107.1	144.10	101.97
1768	154.30	122.1	126.35	89.42
1769	154.30	119.1	129.61	91.72
1770	245.70	100.0	245.70	173.87
1771	245.70	116.5	210.93	149.27
1772	245.70	164.8	149.06	105.49
1773	245.70	130.3	188.51	133.40
1774	245.70	112.9	217.67	154.04
1775	245.70	106.9	229.86	162.66
1776				
1777				
1778				
1779				
1780		171.6		
1781		210.8		
1782		305.6		
1783	1110.00	198.7	558.55	395.26
1784	429.64	231.8	185.31	131.14
1785	178.12	188.2	94.65	66.98
1786	278.03	213.8	130.05	92.03
1787	261.54	213.8	122.34	86.57
1788	279.91	192.7	145.25	102.79
1789	241.82	164.1	147.36	104.28
1790	236.86	177.7	133.33	94.35
1791	232.05	0.0		
1792	236.80	0.0		
1793	273.64	181.6	150.71	106.65
1794	209.73	183.6	114.23	80.84
1795	315.24	243.2	129.61	91.72
1796	235.81	281.8	83.67	59.21
1797	242.56	188.5	128.71	91.08
1798	274.28	191.3	143.35	101.44
1799		203.0		
1800	251.35	240.8	104.40	73.88
1801	308.33	279.6	110.29	78.05
1802	412.22	208.9	197.35	139.66
1803	320.00	253.0	126.49	89.51
1804	401.46	207.2	193.80	137.14

Year	Nominal Slave Price[a] (dollars)	Export Price Index[b] (1770=100)	Real Slave Price (dollars)	Real Slave Price Index (1722-26=100)
1805	380.00	250.2	151.89	107.49
1806	333.33	210.5	158.37	112.08
1807	303.57	208.4	145.70	103.10
1808	355.56	129.6	274.46	194.22
1809	375.00	136.2	275.28	194.81
Longer Period Averages				
1722-29	114.30	90.5	128.63	91.03
1730-39	110.57	105.9	109.17	77.25
1740-49	100.44	73.8	163.75	115.88
1750-59	137.08	100.9	139.14	98.46
1760-69	156.33	100.0	159.36	112.77
1770-79	245.70	121.9	206.96	146.45
1780-89	397.01	209.1	197.64	139.87
1790-99	250.77	206.3	126.23	89.33
1800-09	344.08	212.4	173.80	122.99

Notes and Sources: Slave prices are the average value of adult male slaves from probate derived from probate inventories in each period. See Mancall, Rosenbloom, and Weiss (2000b) for further discussion of these data. For the colonial period, prices were recorded in South Carolina pounds. We converted these to Pounds Sterling using annual exchange from McCusker (1978, pp. 222-24), and then multiplied these values by the exchange rate between dollars and Pounds Sterling of 4.44 suggested by McCusker (1992). Export price data are from Cole (1938, pp.). To capture shifts in the structure of exports, we construct the export index by chaining together indices for several shorter periods. From 1722 through 1747 the index uses the price of rice. From 1747 through 1775, the index uses rice and indigo prices, giving rice a weight of 0.75 and indigo a weight of 0.25. From 1775 to 1795 the index uses the price of rice exclusively, because no other price data are available. From 1795 through 1809 the index uses the prices of rice and cotton each equally weighted.

Indexes of Slave Values and Export Prices, South Carolina, 1722-1809



Source: Table 5.