

Roger Ransom and Richard Sutch

THE IMPACT OF THE CIVIL WAR AND OF
EMANCIPATION ON SOUTHERN AGRICULTURE^{*/}

There is a widespread belief, which has been encouraged by historians' treatment of the Reconstruction period, that the Civil War devastated the South; that the loss of human life, work animals and other livestock was enormous; that the destruction of houses, barns, fences, bridges, railroads, and levees paralyzed agriculture; that the burning of cities, factories, warehouses and wharves crippled the Southern economy. The well-known stories of Sherman's march to the sea; the burning of Richmond, Atlanta, Columbia and Charleston; the raids into northern Alabama; and other, less dramatic, incidents add to the popular image of widespread destruction. Every account of the Reconstruction period comments on this devastation, and a number of historians and economists have asserted that the loss of Southern capital from the war severely affected the economic recovery of the South.^{1/}

As a matter of fact, the actual destruction was not as important as the popular tradition suggests. Judged by its impact on the Southern economy, the physical damage wrought by the Civil War was not a significant factor in the Reconstruction period. It is true that the impact of the war was felt by the railroad network, a number of manufacturing establishments, and those few cities burned by the armies. However, it is generally recognized that the disabling effects of this damage were quickly overcome. Despite the fact that the rolling stock of Southern railroad companies was decimated during the fighting, and that much of the existing

track was in disrepair, the railroads of the South--aided by Northern capitalists and the Union Army--were quickly restored to operating order. Rolling stock was replaced by the federal government, and by 1867 the railroads were reported to be in as good a condition as before the war.^{2/} Manufacturing experienced a similar dramatic recovery from whatever disruption and destruction it had suffered.^{3/}

Southerners at the time were proud of this revival. As early as October of 1866 the Comptroller General for the State of Georgia reported that:

"Even the most sanguine are astonished at the zeal and energy displayed by our people in reconstructing their private fortunes. Our railroads have been repaired, commercial intercourse with the world reopened, cities and villages which were but a few months since masses of charred ruins rebuilt as if by magic, and our planting interest, though less prosperous than heretofore, owing to the change of labor and unpropitious seasons, has not been less active. We have every reason to hope that this is but the beginning, the ground swell of a great and glorious future, if fortune will continue to favor us."^{4/}

Apparently, fortune did not continue to favor the major economic activity of the South, which was agriculture.^{5/} The economic impact of the Civil War must be judged, not by its effects on industry or transportation, but by its impact on Southern agriculture. Despite the impressive recovery elsewhere in the economy, the agricultural output of the South following the war was significantly below that produced with slavery. The cotton crop of 1866 was only 30 percent of the 1859 level in the five states which together formed the heart of the cotton belt: South Carolina, Georgia, Alabama, Mississippi and Louisiana.^{6/} As Figure 1 dramatically illustrates, the contrast of postwar output with the 1859 level is striking. It took fifteen years for these five cotton states to recover their prewar level of cotton output. The decline in production of other crops and the slow

speed of their recovery was as startling as that of cotton; corn fell by 50 percent, wheat by 50 percent, and oats by 26 percent.^{7/} Outputs of rice, sugar, and tobacco also declined substantially.

Many writers have concluded from such statistics that the war substantially reduced the agricultural potential of the South. According to these accounts, the cotton South lost a significant fraction of its agricultural factors of production: labor, land, work animals, and other forms of capital (farm implements, cotton gins, etc.). It was these losses which, according to this view, explain the decline in agricultural output.

Such conclusions, however, are unwarranted. Historians and economists who have argued the case that the devastation of the South was a serious blow have typically committed three errors.

First, virtually all writers have failed to clearly distinguish the impact of the abolition of slavery--which stripped slaveowners of a substantial part of their wealth and greatly diminished the amount of labor available in the South--from the impact of the war itself. Second, many writers have generalized descriptions of localized destruction, pillaging and looting; or descriptions of individual destitution and bankruptcy; to the entire South.^{8/} Finally, they have relied upon comparisons of the 1870 census tabulations with those of the 1860 census to provide statistical evidence of widespread destruction. This procedure greatly exaggerates the extent of losses during the decade because of deficiencies in the 1870 census.^{9/}

Deficiencies in the 1870 Census

This last point is particularly serious inasmuch as the ninth census

of the United States provides the only comprehensive statistical summary of the Southern economy for a year soon after the war. Because of this, comparisons of aggregates from 1870 with their counterparts from previous censuses have been extensively used by historians and economists to support their arguments that the economic potential of the South had been severely reduced. However, the use of the 1870 census for such comparisons is suspect. There is ample evidence that the population was substantially undercounted in the former Confederate States, though at the time of that census these deficiencies were not fully apparent. The slow rate of population increase measured between 1860 and 1870 was attributed at that time to the high mortality during the war decade. In the introduction to the population volume of the 1870 census the low increase in the South's black population was explained thus:

Drawn largely from the plantations, where their increase was natural, rapid, and sure, to cities and camps, where want, vice and pestilence made short work of the multitudes hastily gathered, inadequately provided for, and left for the first time to their own control, while so much of the impulse to procreation depended on the profits of slave-breeding was withdrawn by the abolition of chattelism, it is only to be wondered at that the colored people of the South have held their own in the ten years since 1860.^{10/}

There was ample contemporary support for such an interpretation. General O. O. Howard, the Superintendent of the Freedmen's Bureau, estimated "the loss of African life by the war" at 25 percent.^{11/} A Mississippi planter opined that along the Mississippi River, 50 percent of the Negroes had died in epidemics during 1863-1864.^{12/} Throughout the South there were frequent complaints from planters of a "labor shortage." The newspapers and magazines of the times were full of complaints about the difficulty of hiring Black workers. Typical is the comment of a correspondent of the

Rural Carolinian, from Anderson County, South Carolina in 1870:

Labor is very scarce in this section, and, I think, over the country there is not more than one farmer in ten with hands enough. I know several plantations on which there is not a hand. I do not know of one but would employ one or more additional hands if they could get them.^{13/}

A survey of planters taken early in 1869 by the Boston cotton firm of Loring and Atkinson also produced numerous comments on the labor problem. The editors summarized the results of their canvassing:

Our correspondents are unanimous in showing that there was a decided difficulty in obtaining hands in 1868, and that although not universal, yet it was felt more or less all over the South. . . . [A]s additional evidence of the dearth of labor, the burden of the answers to the question, 'What are the chief needs of your neighborhood?' is, laborers, laborers, reliable laborers . . . It can be safely stated that the labor power at present is not more than one-half of what it was in 1860.^{14/}

Contemporaries seemed to think that this labor shortage was caused in large measure by the decimation of the Black population during and shortly after the Civil War. Yet, while there is no question that mortality--among whites as well as blacks--was considerable, the population of the South could not have declined between 1860 and 1870. The official tabulations showed an increase in both the total Negro and the total white populations of the five cotton states, and these figures, based on the enumeration of 1870, understate the post-war population.^{15/}

After the results of subsequent censuses were published, it became clear that the 1870 population figures for the former Confederate States were much too low.^{16/} The extent to which the 1870 census underestimated the population of the Southern States can be gauged by estimating the true black population of the United States in 1870.^{17/} Since there was little or no international migration into or out of the United States by blacks,

we can base such an estimate on the results of subsequent, more reliable, census tabulations. The 1880 census, which is considered to be quite complete, provides the control for a revision of the 1870 enumeration. If we accept an estimate of the black population in 1870 which is too small, it would imply a growth rate between 1870 and 1880 too large to be acceptable. For example, accepting the tabulated enumeration in 1870 implies a growth rate for the black population of 34.8 percent over the following decade. Such a rate of increase would exceed the highest decennial growth rate observed during slavery: 31.4 percent in the decade 1820 to 1830.^{18/}

Our 1870 estimate was constructed by extrapolating the age distribution of the black population as enumerated in 1880 backward to 1870;^{19/} using assumed survival rates for each age cohort consistent with those observed both before the Civil War and after 1880. These assumed rates were chosen with some care; attention was paid to the implied survival rates for the 1860's implicit in our choice of survival rates for the 1870's. Table 1 presents our results. Our estimated black population of 1870 is five and a quarter million, which suggests that the census enumeration was 6.6 percent below the mark, and that between 1860 and 1870 the decennial growth rate was 17.6 percent; between 1870 and 1880 it was 26.0 percent.^{20/} Our estimate of the black population is, of course, only an approximation; however, we feel that it provides a measure of the extent to which the Southern population was undercounted, and that it also provides a firm benchmark for the black population in 1870.^{21/}

Our estimate of the Black population in 1870 also allows us to infer the war-related mortality among Negroes. The official enumeration, if

TABLE 1: ESTIMATE OF THE AGE DISTRIBUTION OF THE NEGRO POPULATION IN 1870

Age	Assumed Survivals per Thousand 1870-1880	Estimated Negro Population in 1870 (Thousands)	Implied Percentage Undercount in 1870	Implied Survivals per Thousand 1860-1870
0-9	969	1,503	3.4	969
10-19	907	1,315	11.4	862
20-29	760	951	7.7	749
30-39	840 ^a	587	7.3	780
40-49	820	390	3.2	713
50-and over	625	478		
All Ages	858	5,225	6.6	838

^aThe apparent anomaly of a survival ratio for 30-39 year olds higher than that for 20-29 year olds is explained by the tendency of all nineteenth century census to underenumerate the 20-29 year old cohort relative to the 10-19 and 30-39 year old cohorts.

accepted, would require that approximately ten percent of the Black population died as a direct result of the war and its immediate aftermath. Our adjusted population estimate suggests a more reasonable--though still enormous--death rate of 3.6 percent. Certainly we can confidently reject the contemporary notion that ten to twenty-five percent of the Blacks were killed or died in epidemics during the Civil War decade. As we shall argue below, the contemporaries exaggerated the loss of life because of their myopic view of the labor supply under the new system.

The fact that there was a substantial undercount of population in the ninth census casts considerable doubt on the accuracy of the census of agriculture taken at the same time. Superintendent of the Census Walker cautioned readers of the problems of collecting agricultural data in the South, specifically referring to the "great number of farms in each of the former slave states, of undetermined acreage."^{22/} It is apparent from his discussion that the statistics on total acreage were not adjusted to account for those farms which did not report their size. An examination of the original manuscripts of the Ninth Census returned by the Assistant Marshals for several Southern counties confirms Walker's suspicions about the completeness of the returns. We have also noticed that there is a substantial non-reporting problem with questions other than those relating to acreage asked by the enumerators. The value of the farm, the number and value of farm implements, and other variables seem to be frequently unreported.^{23/}

The only piece of concrete evidence which we have found on the effect of underreporting or underenumeration on the aggregate statistics suggests that the extent of underenumeration in the 1870 census may have been substantial. The cotton firm of Latham, Alexander and Company estimated the

production of cotton based on shipments of the crop to major ports. These figures imply that the cotton crop of 1869 was understated in the 1870 agricultural returns by approximately 12 percent.^{24/} The skepticism of the superintendent and the implications of the cotton figures lead us to conclude that any evidence based on the 1870 Census of Agriculture must be viewed with great doubt. The huge fall in aggregate magnitude of such variables as tilled acreage, value of farms, number and value of livestock, and the number and value of workstock which are frequently cited from the census surely exaggerate the true change over the decade 1860 to 1870.

Nevertheless, it is easy to see why contemporaries--and historians--were able to believe the enormous destruction implied by the census figures. After all, the Civil War *had* wrought great destruction when compared to the previous wars fought on American soil. Never before had the civilian population and their economic livelihood been an explicit target of warfare on such a scale. Viewing this contrast, it was easy, perhaps, to assume that the economic impact of the war must have been large.

The Financial Ruin of Slave Owners

Historians have frequently cited individual reports of financial ruin to support their claims of a general disaster. Of course, from the point of view of a slaveowner, there can be no question that the abolition of slavery was a severe financial blow. Slaveholders had a considerable fraction of their wealth invested in slave "capital." According to Lewis Gray, whose two volume study of antebellum Southern agriculture still represents the most authoritative treatment of the slave economy, the

investment in slaves for a typical cotton plantation of sixty hands would amount to at least 50 percent of the total investment required.^{25/} Other estimates place the investment in slaves at an even higher fraction of the required investment.^{26/} We estimate the market value in 1860 of the two million blacks in the five cotton states conservatively at \$1.6 billion.^{27/} Accepting the census enumeration of total real and personal property in 1860 presented in Table 2, the holdings of slaves by our estimate would have represented 46.4 percent of the total wealth held by residents of the five cotton states. The value of slaves would have been nearly 60 percent of the total capital invested in agriculture, and would have completely overshadowed the minuscule \$38 million invested in the manufacturing establishments of the five states.

No wonder that the abolition of slavery was viewed by the slaveholders as a disaster of the first order of magnitude. Nevertheless, the outlawing of slavery did not destroy the "capital" embodied in the black population. The apparent disappearance of 50 percent of the southern capital stock represented not a loss to the South, but a transfer of ownership of "human capital" from the slaveholder to the ex-slave himself. As a free man, the former slave "owned" himself and the right to profit from his own labor as he saw fit. Apparently, it is because so much of Southern history has been written from the perspective of the slaveowner that this transfer of ownership has been incorrectly viewed as a loss to the entire Southern economy. Former slaveowners' laments about their destitution and financial ruin cannot be generalized and used as evidence of the destructive impact of the Civil War.

TABLE 2: THE COMPOSITION OF WEALTH IN THE FIVE COTTON STATES, 1860

Asset	Value in Millions of Dollars	Percentage of Total Wealth	Census Source ^a (Volume & Page)
Slaves	1,589	46.4	-b-
Farmlands and buildings	868	25.4	<u>Agriculture</u> , p. vii
Farm animals	172	5.0	<u>Agriculture</u> , p. cxxvi
Farm implements	48	1.4	<u>Agriculture</u> , p. x
Manufacturing capital	38	1.1	<u>Manufactures</u> , p. 729
Other real estate	364	10.6	-c-
Other Assets	343	10.0	(Residual Statistic)
Total	3,442	100.0	<u>Statistics</u> , p. 319

^aSource references are from U.S. Census Office, Eighth Census, as follows: Agriculture of the United States in 1860..., (Washington: G.P.O., 1864); Manufactures of the United States in 1860..., (Washington: G.P.O., 1865); Statistics of the United States (including mortality, property, etc.) in 1860..., (Washington: G.P.O., 1866). The five cotton States are: South Carolina, Georgia, Alabama, Mississippi, and Louisiana.

^bEstimated from the age-sex composition of the slave population given in: U.S. Census Office, Eighth Census, Population of the United States in 1860..., (Washington: G.P.O., 1864) pp. 592-597. The relative price of slaves for each age and sex cohort relative to that for male slaves, 20 to 29 years old, in New Orleans was generously provided by Stanley Engerman and Robert Fogel and is based upon their extensive sampling of Southern probate records and slave sale records. The slaves in South Carolina and Georgia were evaluated using the Engerman-Fogel data for the "Old South"; those from Mississippi, Alabama and Louisiana were evaluated using the "Louisiana" series. The price of average male field hands, 20 to 29, in 1860 in New Orleans was estimated as \$1500. See footnote 27 for details.

^cEstimated by subtracting the value of farmlands and buildings from the total value of real estate given in U.S. Census Office, Eighth Census, Statistics of the United States...in 1860..., p. 319.

The Implication of Emancipation to Agriculture

The most important economic change in this period was the sudden and substantial decline in the amount of labor provided by the freed slaves. Emancipation gave the ex-slave the freedom to lighten his burden and, for the first time, reserve a portion of his time to himself. The result was that the amount of labor offered by each freedman and his family was substantially less than when slavery forced every man, woman, and child to work long hours throughout the year. *This withdrawal of labor was an inevitable result of any emancipation scheme.* This phenomenon should be distinguished from the direct effects of the Civil War, and should not be considered as one of the "costs" of the war.^{28/}

To indicate how substantial this decline in labor supply was, we have constructed a conjectural estimate of the decline in the man-hours supplied per capita by the black population to agriculture, which is presented in the Appendix and summarized in Table 3. We have strived to make our estimate conservative; one that can be considered a lower bound on the actual decline. The reductions in labor force participation, the number of days worked, and the number of hours spent each day together produced an estimated fall in available man-hours per capita of between 28 and 37 percent of the labor which was extracted through the coercion of slavery. Since even the high estimate of this decline is quite cautious, we confidently assert that the post-war labor supply per-capita could not have been much greater than two-thirds of the pre-war standard. It was as if one-third of the labor force had disappeared. It was this reduction in man-hours per capita, not a decimation of the Black population, which explains the "labor shortage" complained of by so many landowners after the war.

TABLE 3: THE PERCENTAGE DECLINE IN MAN-HOURS PER CAPITA OFFERED BY THE RURAL BLACK POPULATION AFTER EMANCIPATION

	Percent Decline 1860 to 1870	
	Low Estimate	High Estimate
(1) Fraction of rural population employed in agricultural occupations	17	24
(2) Average number of days worked per year	8	11
(3) Average number of hours worked per day	9	10
(4) Net effect of (1) through (3)	28.3	37.2

Source: Appendix.

This shrinkage of the effective labor supply had a profound impact on the ability of the South to produce cotton. In the nineteenth century, cotton was a labor-intensive crop, and, in the land-abundant American South, labor had always been the constraining factor which limited production. We estimate that the total agricultural labor supply for the five cotton states must have fallen by at least 12.5 percent between 1860 and 1870. This estimate takes account of the growth population, the change in the fraction of the population in cities and towns, and--for blacks--the decline in the labor supply offered per capita.^{29/} The amount of agricultural labor provided by the black population fell by at least 26 percent over the decade. This loss of black labor was particularly crucial to the plantation economy, which produced most of the cotton in 1860 and which relied exclusively on slave labor.

The fact that cotton production in the early 1870's was about 25 percent below the prewar level (see Figure 1) is consistent with the argument that the constraint on cotton production was black labor. With the technology of the time, there were only limited possibilities for substituting other factors of production for labor. The effective limitation was the amount of cotton which could be picked per hand. At the time of the Civil War no mechanical devices to save labor in the picking of cotton were in use.^{30/} Not only were relatively fixed proportions of land and capital to labor required for cotton production; it was also true that only limited possibilities existed for the substitution of draft animals for labor. As one observer explained in 1869: "Some planters are also increasing their teams to substitute for manual labor, but this will be only a partial good, for the crops cannot be gathered by mule power, and the gathering is always the great difficulty."^{31/}

The Impact of the War on The Use of Land

The South's endowment of land was not substantially affected by the war, however the reduction in the labor supply apparently significantly reduced its utilization. Contemporary reports frequently mention acreage left uncultivated "for the want of labor."^{32/} All of the available evidence is consistent with this assertion. The extremely high price of cotton in the first years after the war--reflecting the continued wartime shortage of cotton--must have encouraged farmers to plant as much cotton as possible. The cultivation of cotton as we have mentioned, was quite labor intensive, so a shortage of labor would have put a considerable constraint on the acreage planted. Thus, some land must have been taken out of production altogether.

The presence of this "redundant" land acted to depress land prices. A fall in land values was widely commented upon in the contemporary literature. According to a survey made by the United States Department of Agriculture in 1867, the value of farmland had declined from the 1860 level in every one of the former Confederate States. The depreciation in land values was greatest in the five cotton states; ranging from a fifty-five percent fall in Georgia to a seventy percent fall in Louisiana.^{33/} The reasons for the sharp reductions in land value were, according to the Department's correspondents: "general indebtedness, scarcity of money, want of reliable laborers, great loss of capital in slaves, want of capital, unsettled condition of the country, general poverty of the people, fear of confiscation, and negro dominion."^{34/} The much lower values of land were apparently not the result of temporary disorganization and disruption following the end of the war. The survey just cited was taken in 1867,

two and a half years after the close of hostilities. Two years later, another survey quoted farmland prices ranging from \$2 to \$8 per acre,^{35/} while in the years before the war average cotton land was valued at between \$15 and \$25 per acre.^{36/} If Georgia is taken as typical, this decline in the value of improved farmland continued throughout the 1870's.^{37/}

The land of the South, measured in acres, was, of course, left largely intact after the war.^{38/} To be sure, much of the land had stood uncultivated for several years, and the resulting overgrowth and soil erosion posed a greater problem in preparing the land for planting than would have been the case in a normal year. To clear the undergrowth and break ground for planting would, by a generous estimate, require an additional two man-days per acre.^{39/} If we assume a generous 50 cents a day were required for wages, and rations per hand,^{40/} each acre left uncultivated would require an additional investment of \$1 to restore it to prime condition. Average cotton land before the war was evaluated at between \$15 and \$25 per acre, therefore the loss of value attributable to wartime neglect would amount to no more than 4 or 7 percent. This loss applies only to those acres which were taken out of cultivation. Surely a considerable proportion of the acreage continued to be tilled as the South struggled to feed itself during the years of the Union blockade. Moreover, the lower rate of land utilization accompanying the labor shortage would mean that some of the overgrown land would not have to be reclaimed at all. In summary, then, the aggregate burden attributable to wartime neglect of land could not have been very large.

The Impact of the War on Workstock

According to the popular account, the conflict between the two armies decimated the South's livestock population. Working animals were withdrawn

from the farms by the Confederate Army as draft animals and mounts. Not only was the mortality among these animals quite high, but breeding would have been curtailed, substantially affecting the usual rate of increase. Also according to popular accounts, the Union Army confiscated or destroyed those animals they found in their path. The most infamous example--and probably the most extreme--was Sherman's general order that "the army will forage liberally upon the country during the march . . ." Regarding work stock, Sherman's orders read: "As for horses, mules, wagons, etc., belonging to the inhabitants, the cavalry and artillery may appropriate freely and without limit . . ."^{41/}

It is probably true that the loss of livestock was substantial throughout the cotton South. The 1870 enumeration indicates a fall of nearly one-third in the number of working stock between 1860 and 1870 in these states.^{42/} Because of the deficiencies of this census, this probably represents an upper bound to the actual decline. Nevertheless, even if we accept a decline of one-third in the number of working stock, it does not follow that a shortage of animals crippled agricultural recovery.

Though quite vocal regarding the scarcity of labor, contemporary observers are silent regarding any shortage of working stock. It seems that the shortage of labor meant that the disappearance of animal power went largely unnoticed. As an indication that no relative shortage of work animals existed in the year immediately after the war, we note that the market price of mules in February 1868 was *less* than before the war. Toward the end of the 1850's the price of mules seems to have been over \$100,^{43/} and similar values were quoted for horses. In 1868, the average value of mules reported by the

U.S. Department of Agriculture ranged between \$72 in Mississippi to \$85 in South Carolina. The average prices of horses ranged from \$60 in Louisiana to \$73 in South Carolina.^{44/} Had a "shortage" existed, a substantial increase in price, not the observed decrease, should be exhibited by the statistics.^{45/} This decline in the prices of work animals is even more noteworthy in view of the high price for cotton in 1867-1868 relative to its prewar level.

The Impact of the War on Agricultural Capital

Workingstock were clearly the most important form of agricultural capital, however farm implements--plows, harrows, hoes, etc.--were also necessary factors of cotton production. While direct destruction of agricultural implements in the course of warfare must have been quite small,^{46/} the neglect of four years probably took a substantial toll. Nevertheless, the capital outlay required for these implements was a relatively small amount. By a liberal estimate, a large prewar plantation required only \$10 worth of implements per working hand.^{47/} Nor should all of the cost of re-equipping a farm be attributed to the direct effects of the war. Depreciation of farm implements used or neglected during the War would have required some replacement of capital in any event. Contemporary estimates of the rate of depreciation seem to range from 10 to 25 percent per year.^{48/} At that rate of depreciation, four years of "normal" use would have reduced the value of farm implements by one-third to two-thirds even without the destruction from military actions.

Depreciation may have required replacement or repair of buildings,

wagons, and fences on the farm. But even in those regions where the loss of this form of capital was extensive, much of the damage could be repaired during the first year of operation. D. Wyatt Aiken informs us that on his own farm he spent three months in the summer of 1866 to put his plantation in shape: "land was cleared, rails were mauled, fences renewed, old houses torn down and rebuilt; the dilapidation consequent upon the war was wiped out, and by 1st January, 1867, the marketable value of my plantation had increased to an amount equal to the value of a good crop. . .^{49/}

It seems quite plausible to assume that the loss of farm capital due to the war could have been replaced within the course of a single season. Of course, with the substantial decline in labor, it would not have been necessary--or even economically wise--to replace all that was lost. Just as in the case of the working animals, failure to completely restore the capital stock to a pre-war level would not imply that a shortage existed. The great irony of a war to free the slaves was that the destructive effects of the war were, in an economic sense, largely irrelevant because of the effect *emancipation* had on the supply of labor.

It is obvious, of course, that the destruction of *any* factor of production has to be viewed as a loss to an economy's potential. Unless a factor exists in such quantities, relative to other factors, that it is actually redundant--in other words, unless its value has fallen to zero--it can still contribute to economic output. In this sense, then, the aggregate economic potential of the South was diminished by the destruction wrought by the war.

Nevertheless, the impact of the Civil War has been greatly distorted and exaggerated. Our point is that the aggregate level of output is *not* of

primary concern. What *is* of interest to economic historians is the impact of the war on the productivity of labor. If our analysis of the problem is correct, the Civil War may have had little or no depressing effect on labor productivity. Even with a substantial loss of capital and work animals, labor productivity need not have fallen. After a brief period of adjustment, the reduced supply of labor, with relatively abundant land and sufficient workstock and capital, could have been as productive--or even more productive--than before the war. In fact, emancipation should have substantially increased productivity per man-hour.

The Effects of Emancipation and the Welfare of Southerners

Of course, the reduced level of labor employed meant that the total economic output of the region declined, and since the population had grown, per capita output also fell. However, it does not follow that the economic welfare of Southerners fell in proportion. Since the decline in labor force participation was voluntary, the value of the leisure made possible by emancipation obviously exceeded, in the view of the laborers, the value of the output foregone. Aggregate economic welfare must have increased. For the freedmen, this point is obvious. Every ex-slave had, after freedom, both a higher level of consumption (as slaves they received little beyond that necessary for subsistence), and considerably more leisure time. And, what probably seemed to them the most important of all, they had been granted a measure of economic freedom. White laborers (and free black laborers) would have benefited from any rise in labor productivity accompanying the decline in the labor supply. It is not obvious--indeed, it is probably not true--

that the former slaveholding class felt better off after the war than before. The abolition of slavery without compensation meant that this group suffered a considerable capital loss. Granting, nevertheless, that the ending of slavery was highly desirable from *society's* point of view, the distribution of the "cost" of the change is irrelevant for the *level* of aggregate economic welfare. Aggregate economic welfare increased since the increase in welfare on the part of the freedmen exceeded that lost by their former masters.^{50/}

The really profound shock during the Civil War decade to the Southern economic system was the emancipation of four million slaves. While this structural change had many implications, the most important effect on the South's economic capacity was the freedman's new right to determine the amount of labor he would supply to the market. The absence of coercion meant that most black workers chose to reserve some time for leisure activities. We have estimated the decline in the number of effective man-hours per capita resulting from this effect to be approximately one-third of the standard under slavery. It was this fall in the available labor supply which explains both the decline in aggregate output and the lower utilization of other factors of production. Many historians and economists have confounded this effect of emancipation (which was enormous) with the effects of the wartime destruction (which were relatively small). However, the two are logically distinct. The abolition of slavery might have been accomplished--perhaps by a compensated emancipation scheme such as that suggested by Lincoln^{51/}--without a war and without the destruction consequent upon a war.

FOOTNOTES

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1/ Among the traditional historians who have emphasized the damage from the war are: Walter L. Fleming, *The Sequel to Appomattox* (New Haven: Yale University Press, 1919), p. 87; James L. Sellers, "The Economic Incidence of the Civil War in the South," *Mississippi Valley Historical Review*, 14, (September 1927); Fred A. Shannon, *The Farmer's Last Frontier* (New York: Holt, Rinehart & Winston, 1945), pp. 78-79; and E. Merton Coulter, *The South During Reconstruction, 1865-1877* (Baton Rouge: Louisiana State University Press, 1947), Chapter 1. Though not rejecting the earlier view, recent works have treated the subject more cautiously. For example, James G. Randall and David Donald, *The Civil War and Reconstruction*, Second Edition (Boston: D. C. Heath Company, 1961), pp. 517, and 543-547; and Hodding Carter, *The Angry Scar: The Story of Reconstruction 1865-1877* (New York: Doubleday and Sons, 1959), pp. 35-44, both emphasize the short term damage to the South from the War. Eugene Lerner, "Southern Output and Agricultural Income, 1860-1880," *Agricultural History*, 33, (July 1959)

presents the most detailed study by an economist.

It is perhaps surprising that the extensive debate on the economic impact of the Civil War--initiated by the Beards and carried forward by Louis Hacker--deals almost exclusively with the war's effect on the industrial North. (See the collection of essays in Ralph Andreano, editor, *The Economic Impact of the American Civil War*, Second Edition, (Cambridge: Schenkman, 1972). It appears that most economic historians accept the idea that the South was devastated. For example, see the recent paper by Mark Aldrich, "Flexible Exchange Rates, Northern Expansion, and the Market for Southern Cotton," *Journal of Economic History*, XXXIII, (June 1973); and the one by Charles Bischoff, "Relative Wages, Capital, and Industrial Growth in the New South: 1865-1900," (Unpublished paper read to the Proceedings of the Western Economic Association, Santa Clara, August, 1972).

2/ For a detailed discussion of the Southern railroad recovery after the war, see John F. Stover, *The Railroads of the South* (Chapel Hill: University of North Carolina Press, 1955).

3/ Lerner presents various indicators of Southern manufacturing activity documenting the speed with which the small industrial sector of the South recovered from the war. Lerner, "Agricultural Output of the South,..."

4/ John T. Burns, *Annual Report of the Comptroller General of the State of Georgia...October 16, 1866* (Macon: J. W. Burke & Co., 1866).

5/ As late as 1880, eighty percent of the Southern labor force was in agriculture. See Ann Rattner Miller and Carol P. Brainard, "Labor Force Estimates," in Simon Kuznets and Dorothy Swaine Thomas, *Population Redistribution and Economic Growth, United States, 1870-1950* (Philadelphia, American Philosophical Society, 1957), pp. 609-618.

6/ Our argument will be developed with a focus on these five states. The emphasis on these states reflects our view that the ultimate recovery of the South depended on the recuperative powers of these cotton areas. Nevertheless, many of the arguments developed are quite pertinent to the issue of wartime damage as it affected economic recovery in other major regions of the former Confederacy.

7/ Production data for these crops for 1860 are taken from: Census Office, Eighth Census, 1860, *Agriculture in the United States in 1860...* (Washington: G.P.O., 1864). For 1866 the sources are: U. S. Department of Agriculture, Charles C. Clark, "Corn Crops of the United States, 1866-1906," *Bureau of Statistics--Bulletin 56*, (Washington: G.P.O., 1907); U. S. Department of Agriculture, Charles C. Clark, "Wheat Crops of the United States, 1866-1906," *Bureau of Statistics--Bulletin 57, Revised* (Washington: G.P.O., 1908); and U. S. Department of Agriculture, Charles C. Clark, "Oat Crops of the United States, 1866-1906," *Bureau of Statistics--Bulletin 53* (Washington: G.P.O., 1907).

8/ Sellers, "The Economic Incidence of the Civil War," provides an explicit example of this type of argument through generalization; Carter, *The Angry Scar*, uses the diary of a South Carolina planter to demonstrate his belief that destruction was widespread.

9/ Lerner's widely cited study is particularly vulnerable to this criticism. He relies very heavily on 1870 census data to support his conclusion that: "wherever the war touched the South. . .the aftermath was disorganization, ruin, and suffering," Lerner, "The Agricultural Output of the South..." p. 117. Many other writers have referred to census data for evidence that there was considerable destruction.

10/ U. S. Census Office, Ninth Census, 1870, *The Statistics of Population of the United States...*, Volume I (Washington: G.P.O., 1872), p. xviii.

11/ Howard's estimate was quoted in April of 1870 by a contributor to the *Rural Carolinian* Volume I, (1870), p. 433 . This estimate is also consistent with those made by the editor of *DeBow's Review* in 1866 [After the War Series, Volume I, (1866), p. 304]; and by the editor of the *New Orleans Times* in the same year as quoted in *DeBow's Review*, I, (1866), pp. 433-434.

12/ F. W. Loring and C. F. Atkinson, *Cotton Culture and the South Considered with Reference to Emigration* (Boston: A. Williams, 1869), p. 8. For other observations regarding mortality among Negroes see also pp. 3, 9, 16 and 106.

13/ *Rural Carolinian*, I, (May 1870), p. 510.

14/ Loring and Atkinson, *Cotton Culture...*, p. 21.

15/ U. S. Census Office, Ninth Census, 1870, *A Compendium of the Ninth Census* (Washington: G.P.O., 1872), p. 12.

16/ The problem of this undercount is discussed in: U. S. Census Office, Tenth Census, 1880, *Compendium of the Tenth Census* (Washington: G.P.O., 1883), pp. liv-lxxvi; and U. S. Census Office, Eleventh Census, 1890, *Compendium of the Eleventh Census: 1890...* (Washington: G.P.O., 1892), Part I, pp. xxxv-xliii. Also see Francis A. Walker, "Statistics of the Colored Race in the United States," *Publications of the American Statistical Association*, II (N.S.), Numbers 11 and 12, (September-December 1890). In 1890 the census office set the "official" estimate of the undercount of the Negro population of the United States at 9.5 percent, and of the white population of the United States at 2.2 percent (*Compendium of the Eleventh Census: 1890*, pp. xxxv-xliii). As we note in the text below, these adjustments are almost certainly too large. They were made by assuming a constant rate of increase between 1860 and 1880 in the eleven Confederate States plus West Virginia and Kentucky.

17/ Since virtually all blacks lived in the South at that time, their relative undercount in the national population would reflect the extent of the deficiency in the enumeration of the Southern States.

18/ U. S. Bureau of the Census, *Historical Statistics of the United States* (Washington: G.P.O., 1960), p. 9.

19/ The age distribution of the Negro population was not published in 1880, only that for the *nonwhite* population, which includes American Indians, Chinese and Japanese, as well as blacks. We have used the published figures to distribute the total Negro population to the various age categories. The black population was 97.453 percent of the nonwhite population in 1880 (*Historical Statistics...*, p. 10).

20/ The estimates in the table imply that the undercount in 1870 was highest among teenagers, a quite plausible outcome. They also suggest that the survival rate of the Negro population during the Civil War decade (838 per thousand) was below that of the following decade (858). Incidentally, it was also below that of the last decade of slavery (848). The estimates of the black population by age group imply that the ratio of children 0-9 years old, to women 20-39 years old, was approximately 1.95. This suggests that there was a significant decline in fertility from that observed under slavery. In 1860, the ratio of children under 10 to women 20-39 was 2.18, about 12 percent higher (U. S. Census Office, Sixth Census, 1860, *Population of the United States in 1860...* (Washington: G.P.O., 1864), pp. 616-623. This implication is also quite plausible, since fertility among slave women had been encouraged by slave masters, and the evidence is strong that the birth rate was increased beyond that which would have occurred without white interference. See Richard Sutch, "The Breeding of Slaves for Sale and the Westward Expansion of Slavery, 1850-1860," in Stanley Engerman and Eugene Genovese, editors, *Race and Slavery: Quantitative Studies* (Princeton: Princeton University Press, 1974).

21/ Because of the difficulty of adjusting for interstate migration of the white population and the allocation of the estimated war-related deaths of whites between Southern and Northern states, we have not attempted to compute similar estimates for the white population. However, there can be no doubt that the official revision of the 1870 census of the white population is also too high, and it is probable that the Southern white population suffered from the war to a smaller extent than did the black population.

22/ U. S. Census Office, Ninth Census, 1870, *The Statistics of Wealth and Industry of the United States...*, Volume III, (Washington: G.P.O., 1872), p. 72.

23/ A ten percent sample of farms from six Southern counties revealed the following rates of nonreporting among farms which *did* report the number of acres:

value of the farm--3 percent

value of the farm implements--16 percent

value of livestock--7 percent

The counties sampled were: Attala, Mississippi; Cowetta, Georgia; Robertson and Red River, Texas; Madison, Louisiana; and Georgetown, South Carolina.

The percentage of farms which did not report acreage is difficult to determine from the manuscripts. Editing of the original manuscripts, which apparently took place in Washington, makes it difficult to determine the number of farms actually visited by the enumerators.

24/ The cotton movement estimates were published in U. S. Department of Agriculture, James L. Watkins, "Production and Price of Cotton for 100 Years," *Miscellaneous Bulletin Number 9* (Washington: G.P.O., 1895), pp. 10-12. These figures have been accepted as the primary source for "official" annual cotton statistics. (See U. S. Department of Agriculture, George K. Holmes, "Cotton Crop of the United States, 1790-1911," *Bureau of Statistics--Circular 32* (Washington: G.P.O., 1912); and also U. S. Department of Agriculture, Agricultural Marketing Service, "Cotton and Cotton Seed: Acreage, Yield, Production, Disposition, Price, Value; by States, 1866-1952," *Statistical Bulletin Number 16* (Washington: G.P.O., 1955). By contrast with 1870, the Census of 1860 underenumerated the cotton crop of 1859 by less than four percent and the 1880 Census undercounted by only 0.1 percent. Francis Walker, superintendent of the 1880 Census reported that special care was taken that year to accurately enumerate the cotton crop (U. S. Census Office, Tenth Census, 1880, *Report on the Production of Agriculture in the United States...*, Volume III, (Washington: G.P.O., 1883), p. xviii.

25/ Lewis C. Gray, *History of Agriculture in the Southern United States to 1860* (Washington: The Carnegie Institution, 1933), Volume I, p. 542.

26/ See, for example, the estimates by: Thomas Govan, "Was Plantation Slavery Profitable?" (in Hugh Aiken, editor, *Did Slavery Pay?* (New York: Houghton Mifflin, 1971)), pp. 117, 113, 130. Alfred Conrad and John Meyers, "The Economics of Slavery in the Antebellum South," (in Aiken, *Did Slavery Pay?*), pp. 142-144. Richard Sutch places the estimated investment of slaves

as between 61 and 66 percent of the total capital required for the slave plantation, "The Profitability of Slavery--Revisited," (in Aiken, *Did Slavery Pay?*), p. 227.

27/ See Table 2. This estimate is based upon the age and sex composition of the slave population reported in U. S. Census Office, Eighth Census, *Population of the United States in 1860...*; the average price of slaves for each age and sex cohort relative to the price of male slaves, 20-29 years old, in New Orleans; and is keyed to an 1860 price for prime-age field hands in New Orleans of \$1500. The use of this benchmark price probably understates the aggregate value of slave capital; authoritative sources consistently report higher figures. U. B. Phillips estimated the New Orleans price of a prime male field hand in 1860 as \$1800, *Life and Labor in the Old South* (Boston: Little, Brown & Co., 1963, originally published in 1929), p. 117; also see Conrad and Meyer, "The Economics of Slavery...", pp. 169-170. Lewis Gray reports: "Prime field hands sold for \$1500, \$1800, and \$2000, and in 1860 reached an average of \$1800," *History of Agriculture in the Southern States...*, Volume II, p. 666.

Our figure also underestimates the value of the total slave stock since no adjustment was made to account for the premiums which would have been paid for slaves with specialized skills. Fogel and Engerman report that the premium paid for blacksmiths varied from 59 to 90 percent depending upon age; the price of carpenters ranged from 39 to 73 percent above their field hand counterparts; and the price for cooks exceeded that for female hands by 48 to 109 percent.

Robert Fogel and Stanley Engerman, "The Market Evaluation of Human Capital: The Case of Slavery," unpublished paper presented to the Annual Cliometrics Conference, Madison, Wisconsin, April 1972; p. 14. Another estimate of the value of slaves in 1860, made by Louis Rose, suggests that the five cotton states lost \$1.9 billion worth of slave capital; "Capital Losses of Southern Slaveholders Due to Emancipation," *Western Economic Journal*, III, (Fall 1964), p. 51.

28/ This point is important when comparing the "costs" of the Civil War with the costs of alternative schemes to free the slaves. The estimate of the economic costs of the Civil War made by Claudia Goldin is flawed because she unintentionally includes as an element of the costs the decline in output attributable to this decline in labor force participation, "The Economics of Emancipation," *Journal of Economic History*, XXXIII, (March 1973), pp. 79-81. That such a withdrawal of labor on the part of freed slaves is not unusual following emancipation is suggested by the experience of the West Indian Colonies, where slavery was peacefully abolished and slaveholders were partially compensated for their losses. See Alan H. Adamson, *Sugar Without Slaves: The Political Economy of British Guiana, 1838-1904* (New Haven: Yale University Press, 1972). In his review of slavery throughout the world, William Kloostober found that a shortage of labor followed emancipation in the United States, British West Indies, Mauritius, and the Portugese Colonies. *Involuntary Labor Since the Abolition of Slavery*, (Leiden: E. J. Brill, 1960), pp. 191-194.

29/ The published population figures for 1870 were adjusted upwards by 6.6 percent to reflect the underenumeration discussed above. The fraction of the total population living in towns of 3000 or more in 1870 was computed from the 1870 census returns. The corresponding urban population for 1860 was estimated from the population change recorded in those towns for which both 1860 and 1870 population data were available in the published census volumes. The black rural population was assumed to supply one-third less labor per capita in 1870 than was the case in 1860 (see TABLE 3). We assumed no per capita change in the supply of labor offered by whites. The labor force participation ratio for whites in both years was estimated as 0.40, based on evidence from a sample of Southern farms in 1880. See Roger Ransom and Richard Sutch, "The Ex-Slave in the Post-Bellum South: A Study of the Economic Impact of Racism in a Market Environment," *Journal of Economic History*, XXXIII, (March 1973), p. 143. The participation ratio for slaves in 1860 was taken to be 65 percent; consistent with our estimates in Table A of the Appendix.

30/ U. S. Patent Office, Benjamin Butterworth, *The Growth of Industrial Art* (Washington: G.P.O., 1888), p. 10.

31/ Loring and Atkinson, *Cotton Culture...*, p. 54.

32/ *Ibid.*, pp. 8, 10, 12, and 84-85. Since neither the Census of 1860 nor the Census of 1870 reported the number of acres in crops, it is not possible to confirm this decline in acreage reported by contemporary observers. Some commentators have noted the very large reported decline in improved

acreage between the two censuses. In 1860, the five cotton states reported 26.8 million "improved acres," while in 1870, according to the census, only 21.1 million acres were reported as improved. The decline exceeds 20 percent. "Improved acres" include, in addition to tilled land, land left fallow or devoted to meadows or pastures, U. S. Census Office, Tenth Census, (1880), *Report on the Production of Agriculture...*, pp. 11 and 16.

33/ U. S. Department of Agriculture, *Report of the Commissioner of Agriculture for 1867* (Washington: G.P.O., 1868), pp. 102-119. Prices in South Carolina and Alabama fell sixty percent and in Mississippi, according to the Report, the decline was about sixty-five percent (p. 119). The loyal states, over the same period, without exception saw farms increase in value. The figure for Georgia is confirmed by the Georgia State Comptroller General, who presented data based on property tax returns, implying an average decline of 42 percent in the value of an acre of land between 1860 and 1867. The figures include "wild" lands as well as "improved" acreage. *Annual Report of the Comptroller General of the State of Georgia...1866*, Table A, p. 7; *Report of Madison Bell, Comptroller General of the State of Georgia...August 11, 1868 to January 1, 1869* (Atlanta: Samuel Band, 1869), Table C.

34/ U. S. Department of Agriculture, *Report of the Commissioner...for 1867*, p. 105. The comments quoted are from South Carolina.

35/ The survey by Loring and Atkinson in 1869 makes numerous reference to the price of land, particularly on pp. 101-126. The highest price mentioned was from Crawford County, Georgia, where "at private sale land will bring from five to ten dollars per acre. Choice places twelve dollars, or perhaps fifteen dollars, though that would be an exception," *Cotton Culture...*, p. 112.

36/ Lewis Gray estimates \$35 for cleared land and \$10 for uncleared to be "as nearly typical as possible," *Agriculture in the Southern United States...*, Volume I, p. 542. See also the examples in Govan, "Was Plantation Slavery Profitable?" pp. 111, 117, and 130; and in U. S. Department of Agriculture, James Watkins, "The Costs of Cotton Production," *Division of Statistics, Miscellaneous Series--Bulletin Number 16* (Washington: G.P.O., 1899), pp. 44-45.

37/ See the *Annual Report of the Comptroller General of the State of Georgia* for the years 1870 through 1884.

38/ The only notable exception was those areas along the Mississippi River where levies had broken during the war, flooding land which had previously been cultivated (*DeBow's Review*, I, (1866), p. 434). The number of acres involved did not account for a significant fraction of the prewar cotton production.

39/ Whitelaw Reid, a northern journalist travelling in the South, gives one of the few detailed descriptions of the work required to prepare land "neglected" during the war. In describing the Louisiana plantation where he

witnessed this work, he noted: "[B]riars grew everywhere, and the ground was covered with logs." Two gangs of workers, a "trash gang" and a gang of "log-rollers" went ahead of the plow crews to clear the land. Trash gangs were necessary even in normal years, but presumably an additional force was required this particular year. According to Reid, the trash gang was composed of 20 to 25 young women, there were apparently 12 log-rollers and the plow gang could not have exceeded 14 to 19 men since "less than fifty hands" were involved in the whole operation. The three gangs worked through the field together. This suggests that the labor requirements for clearing the land were approximately twice that necessary for plowing (Whitelaw Reid, *A Tour of the Southern States 1865-1866* (New York: Harper & Row, 1965, originally published in 1866), pp. 495-497). Since "[a] man or boy with a good horse and plow, ought to plow about 1 1/3 acre per day" (*Rural Carolinian*, I, (January 1870), p. 208) and there is evidence that the crew observed by Reid was doing better than this, the estimate in the text seems quite liberal.

40/ See the discussion of wages in U. S. Department of Agriculture, *Report of the Commissioner ... 1867*, p. 416.

41/ Sherman, however, had his heart in the right place; the officers were asked to discriminate between "the rich, who are usually hostile, and the poor or industrious, usually neutral or friendly." William T. Sherman, "Special Field Order No. 120...Kingston, Georgia, November 9, 1864," *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*, Serial 1, Volume XXXIX, Part 3, Correspondence (in U. S. Congress,

House of Representatives Miscellaneous Document 223, 52nd Congress, 1st Session), (Washington: G.P.O., 1892), p. 713.

42/ U. S. Census Office, Tenth Census, 1880, *Report on the Production of Agriculture...*, pp. 12, 16-17. "Working Stock" are defined as horses, mules, asses and working oxen.

43/ This figure is given by Gray, *Agriculture in the Southern States...*, Volume I, p. 542. Watkins, "Cost of Cotton Production," p. 46, notes prices above \$100 around 1855.

44/ U. S. Department of Agriculture, *Report of the Commissioner...for 1867*, p. 92. The prices quoted are in currency, and were obtained through a survey of the Department's crop correspondents.

45/ The estimates of the U. S. Department of Agriculture indicate that no appreciable change took place in the stock of Horses, Mules, or Asses between 1867 and 1870. U. S. Department of Agriculture, *Livestock on Farms, January 1, 1867-1919: Revised Estimates; Number, Value per Head, Total Value: By States and Divisions*, (Washington, U.S.D.A., 1938), pp. 94, 96, 104, 106, 110. Had a shortage of workstock been felt in 1867, we would expect that imports from other states and increased breeding activity would be the response, causing a rise in the stock of working animals.

46/ Again, Sherman's march through Georgia would be the most extreme case of military destruction. Except where some "local hostility" was encountered, the army was expected to limit its confiscation to food and animals. In his

orders Sherman was quite explicit regarding the destruction of property: "To the army corps commanders alone is entrusted the power to destroy mills, houses, cotton gins, etc. ..." (Sherman, "Special Field Order Number 120," p. 713). Nevertheless, Southern observers insisted that the destruction of property was widespread. See, for example, the colorful descriptions provided by Coulter, *The South During Reconstruction*, pp. 2-3.

47/ Gray, *History of Agriculture in the Southern States...*, Volume 1, p. 542.

48/ Inasmuch as accounting methods of Southern farmers were crude even by contemporary standards, this depreciation rate represents a guess which is based on scattered reports in the *Rural Carolinian* and *Southern Cultivator* regarding the costs of cotton farming in the 1870's.

49/ D. Wyatt Aiken, "Does Farming Pay in the South?" *Rural Carolinian*, II, (1871), p. 323-324.

50/ Beyond the loss of capital invested in slaves, the most serious loss suffered by the whites was that produced by the decline in the value of land, reflecting its reduced productivity. This, as we have noted, was a result of the labor "shortage" after emancipation.

51/ For a consideration of a variety of emancipation schemes--including Lincoln's--see Goldin, "The Economics of Emancipation."

APPENDIX A:

ESTIMATES OF LABOR SUPPLIED BY SLAVE AND FREE LABOR

The estimates discussed in this appendix reflect the authors' judgment reached after an extensive review of agricultural labor systems both before and after the Civil War. Only those source citations to specific references have been included. A detailed summary of our estimates is provided in Table A.

With slavery, a very high labor force participation ratio was obtained through compulsion. Even the aged, disabled, and the very young were put to work. To account for those *rural* slaves who were not employed, who were engaged as personal servants, cooks, or in some other nonagricultural occupation, we have assumed that 2 to 5 percent of all adult males, 5 to 10 percent of all adult females, and 10 to 15 percent of all the children aged 10 to 15 were not members of the agricultural labor force. Such an estimate is certainly a generous allowance.

To estimate the labor force participation following emancipation, we examined the occupations of blacks ten years or older from the manuscript census of population for 1870 from the rural populations of: Cowetta County, Georgia (excluding the town of Newman); Gwinnett County, Georgia; Dallas County, Alabama (excluding the towns of Selma and Cahawba); and Morehouse Parish, Louisiana (excluding the town of Bastrop). This study revealed that the proportion of the male population engaged in agricultural occupations ranged from 65 to 95 percent; the proportion of women at work in agriculture varied from 25 to 63 percent. At a minimum, it seems reasonable that the reduction in labor force participation of men averaged at least 5 percentage points, the value assumed for Table A. We have also assumed a decline in

the participation ratio for women to a range between 0.50 and 0.67. Such estimates are consistent with the tabulation of occupations presented in the 1870 census.^{1/} That our assumed participation ratio for women may be much too high is suggested in a survey taken by the Georgia State Department of Agriculture in October of 1874, which revealed that only 28 percent of the "able bodied Negro women" were at work on the farm.^{2/} The labor force participation ratios given in Line (1) of Table A for 1870 imply an overall labor force participation ratio for the black population in that year of between 46 and 54 percent. A survey of several hundred planters in Georgia, taken in October, 1874, found that on their farms the labor force participation of resident Negroes was 42.5 percent.^{3/} The reductions in labor force participation presented in Table A alone would result in a 17 to 24 percent decline in the labor supply offered by a given population.

Based on a discussion by Gray, we estimate that male adult slaves worked 268 to 289 days of the year.^{4/} This estimate allows for 48 to 52 Sundays off; 13 to 26 Saturdays; 12 days of illness; and 3 to 7 holidays per year. Females worked the same number of days as the men except for relief during advanced pregnancy and recovery after delivery, which we estimate as averaging between five and seven days per year per women. This estimate is based on Gray's statement that slave women were typically released from farmwork for four to six weeks per birth.^{5/} Assuming one live birth every five years from age sixteen on gives an average reduction of five to seven days per woman per year. This is a generous allowance, since it implies a birth rate larger than that actually observed. Children were, from all reports, put to work at ages varying from six to twelve and

assigned field work along with their parents.^{6/} However, it is likely that children worked fewer days than did adults. We have therefore assumed they received every Saturday and Sunday off, were excused for illness for a total of three weeks, and received ten to twenty-one holidays during the year.

After emancipation, blacks insisted on all or part of Saturday off, and usually demanded additional holidays as well. Testimony to these demands can be found in contemporary surveys and commentary.^{7/} The 1874 survey of Georgia planters revealed that Negro wage hands averaged 5.0 days per week (or 260 days per year, assuming a full 52 week year); "croppers" averaged 4.6 days per week (or 239 days per year); renters 4.4 days a week (or 229 days per year). The average for all blacks was given as 4.7 days per week (or 244 days a year). The average for white workers was 4.8 days per week. According to the report, "The remainder of the time is spent in visiting, hunting, idleness, etc."^{8/} Charles Seagrave's Louisiana study found that the typical Class I field hand averaged about 225 days worked in 1866-67.^{9/} Based on these sources, we have conservatively assumed that the number of days worked per year by men ranged from 242 to 276--a reduction of between 13 and 26 days per year. For women and children, we assume a 26 day reduction. These estimates are presented in Line (2) of Table A. The implied decline in number of days worked per year would, by itself, account for an 8 to 11 percent decline in the labor supply.

The frequent references to "sunup to sundown" labor for slaves suggests a yearly average of around 12 hours per day. Gray gives an estimate of 15 to 16 hours of work per day for slaves during the busy season.^{10/} Therefore,

we assume that male slaves worked 12 to 14 hours per day. Because women were allowed time off for child care--particularly nursing mothers--we have taken 11 to 13 hours as their average workday. Children over 10 years of age were assumed to work 10 to 12 hours daily. We assume that free laborers in 1870 uniformly worked one hour less per day than had been the practice under slavery. The Freedmen's Bureau set as a standard 10 hours per day in the summer, and 9 hours per day in winter.^{11/} Complaints of substantially larger reductions voiced in Loring and Atkinson's survey suggest that our assumed fall of one hour for the postwar norm is probably quite modest.^{12/} Such a one hour decline in the working day would, by itself, reduce the available labor supply by 9 to 10 percent.

The overall effect of these changes in labor force participation, in days worked per year, and in hours worked per day, is computed in Line (4) of Table A. We have also computed the effective number of male-equivalent man-hours supplied to agriculture by each member of the rural population.

TABLE A: ESTIMATE OF THE LABOR SUPPLY PER CAPITA BY THE RURAL BLACK POPULATION: 1860 to 1870

	Slavery--1860		Free Labor--1870	
	Males 16 and Over	Females 16 and Over	Males 16 and Over	Females 16 and Over
(1) Fraction of rural population engaged in agriculture	.95-.98	.90-.95	.90-.93	.50-.67
(2) Average number of days worked per year	268-289	261-284	242-276	235-258
(3) Average number of hours worked per day	12-14	11-13	11-13	10-12
(4) Manhours supplied to agriculture per person [(1) x (2) x (3)]	3055-3965	2584-3507	2396-3337	1175-2074
(5) Effective value of one man-hour (adult male = 1) ^a	1.00	0.75	1.00	0.75
(6) Male-equivalent manhours supplied per person [(5) x (4)]	3055-3965	1938-2630	2396-3337	881-1556
Total male-equivalent manhours supplied to agriculture per capitab		1607-2124		1009-1524

NOTES TO TABLE A:

^aWomen were usually regarded as three-fourths and children as two-thirds as productive as men (L. C. Gray, *History of Agriculture in the Southern United States to 1860*, (Washington: Carnegie Institution of Washington, 1933), Vol. I, pp. 548-549). The rates charged to "rent" or hire slaves corroborate this evidence (U. S. Department of Agriculture, *Report of the Commissioner of Agriculture for the Year 1867*, (Washington: G.P.O., 1867), p. 416). The relative efficiency [Line (5)] taken with our estimates of the number of hours supplied in 1870 [Line (4)] agrees closely with the differential rates of annual pay offered in 1867 (*Ibid.*, p. 416).

^bThe three cohorts' contributions were weighted by their share in the population of 1860: .285, .281, and .131, respectively. U. S. Census Office, Eighth Census, *Populations of the United States in 1860...*, (Washington: G.P.O., 1864), pp. 616-623. The balance of the population (children under 10) are assumed to not work under either slavery or freedom.

FOOTNOTES TO APPENDIX

1/ U. S. Census Office, Ninth Census, 1870, *The Statistics of Population of the United States...*, (Washington: G.P.O., 1872).

2/ Georgia Department of Agriculture, "Extract from a Consolidation of the Reports of Crops, etc.,...July 15, 1875," Circular Number 15, *Annual Report of Thomas P. Janes, Commissioner of Agriculture of the State of Georgia, For the Year 1875*, (Atlanta: J. H. Estill, 1876), p. 109.

3/ Georgia Department of Agriculture, "Extract From Circular Number 10 (February 20, 1875)," *Annual Report...For 1875*, p. 88.

4/ Lewis C. Gray, *History of Agriculture in the Southern States to 1860*, (Washington: The Carnegie Institution, 1933), Volume I, pp. 556-557.

5/ *Ibid.*, I, p. 562.

6/ *Ibid.*, I, p. 549.

7/ F. W. Loring and C. F. Atkinson, *Cotton Culture and the South Considered With Reference to Emigration* (Boston: A. Williams, 1869); D. Wyatt Aiken, "Alabama from an Agricultural Point of View," *Rural Carolinian*, Volume I, (April 1870), p. 407.

8/ Georgia Department of Agriculture, "Circular Number 10....," pp. 87-89.

9/ Charles E. Seagrave, "The Southern Negro Agricultural Worker: 1850-1870," (unpublished Ph.D. dissertation, Stanford University, April 1971), pp. 43 and 45.

10/ Gray, *History of Agriculture in the Southern States...*, Volume I, p. 557.

11/ See the sample labor contracts for the Bureau in Seagrave, "The Southern Negro Agricultural Worker...", pp. 103 and 136. Similar contracts were used throughout the South.

12/ See, for example, Loring and Atkinson, *Cotton Culture...* .