# THE "LOCK-IN" MECHANISM AND OVERPRODUCTION OF COTTON

# IN THE POST-BELLUM SOUTH

by

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In peasant societies it is frequently observed that small-scale independent farmers find themselves controlled by the local moneylender. The small farmer requires food and supplies throughout the year. Unless his carryover from a previous crop leaves him in a position to finance himself, he will require seasonal credit from an external source. Whenever the supply of such credit is monopolized, the moneylender is able to gain control of the farmers' lives. When the monopoly power is used to ensure that the farm will not produce adequate surpluses for the coming year, the peasant-farmer can be "locked-in" to a system of "debt peonage."

Contemporaries alleged that such a lock-in mechanism operated to prevent post-Civil War Southern farmers from choosing the crop mix which was most advantageous. By forcing the farmer to concentrate his resources on growing cotton rather than food crops which could supply the work animals and family on the farm, the merchant was able to maximize the volume of his business both as a cotton merchant and as a provisioner. The effect was to keep the farmers in a form of serfdom.[1] Historians have subsequently uncovered an impressive amount of circumstantial evidence supporting this view.[2] Such an interpretation has not gone unchallenged, however. Recently several economists have questioned whether such an exploitative system could have persisted over

[1] Most influential in establishing this view of the South were the paper by George K. Holmes (1893) and the books by Charles Otken (1894) and M. B. Hammond (1897).

[2] The more comprehensive historical treatments of the post-bellum South can be found in: Woodman (1967), Salutos (1960), and Shannon (1947). Also see our examination of debt peonage in Ransom and Sutch (1972).

a long period.[3/] These criticisms have raised two basic questions:
a) What was the source of the local credit monopoly? b) When such a
monopoly exists, what are the mechanisms and motives for interference
with the farm's production on the part of the merchant?

In this article, we present a model which highlights the essential
economic meahcnisms which operated to reduce economic efficiency and which
allowed the merchant to exploit the farmer. While the model is abstract,
it illustrates how both inefficiencies and exploitation could have persisted
in an agricultural society where there was a high degree of economic
freedom and reasonably well organized markets for agricultural products.
To be sure, the model assumes the continuing presence of monopoly over
credit. In an earlier article we discussed the source of this monopoly
power and the barriers to entry which served to protect it [Ransom and
Sutch (1972)]. The present article focuses on two ways in which the
merchant could have exercised his monopoly power: the charging of exhor-
bitant rates of interest for short term credit, and the practice of
requiring a minimum level of cotton cultivation as a pre-condition for the
granting of credit. In the second part of the article we examine historical
evidence to support the view that both of these monopolistic practices
were widely used. Of course, the merchant's monopoly power over credit
could have been--and undoubtedly was--used in other ways as well. However,
we believe that our simple model captures the most significant mechanism
of exploitation operating in the post Civil War South.

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[3/] See the remarks of: Brown and Reynolds (1973), pp. 862-871; DeCanio
(1973), pp. 608-611, 631-633; Higgs (1973), pp. 166-167; Reid (1973),
pp. 106-107; and Wright (1973), pp. 175-176.

## The Pure Theory of the Cotton Lock-In

Consider a cotton farm with a fixed supply of land, labor, working stock and other inputs. The farm operator must decide which proportion of the inputs will be devoted to cotton production and which proportion will be devoted to corn.[4] Assume that technological considerations limit the outputs obtainable to points on or inside of the production possibilities frontier illustrated in Figure 1 by the curve CC'. Further suppose that the needs of man and beast dictate that a minimum requirement of corn (or corn substitutes) be produced or purchased. The line MM' in Figure 1 demarcates this minimum.[5]

If there were no interference, the farm operator would choose to operate at that point on the production frontier which was just tangent to a straight line whose slope represents the relative price of corn and cotton.[6]

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[4] The lock-in is almost always discussed with respect to cotton farms. However, any staple crop which cannot be fed to animals (tobacco, sugar, hemp, etc.) could be substituted in the following model in the place of cotton. For simplicity we assume there are only two crops: cotton and corn. This should pose no difficulties when we come to generalize our results, since many of the other food crops were simply corn substitutes: wheat, oats, rye, barley, buckwheat, etc.. In 1880, for example, 39 percent of the total tilled acreage in the cotton belt was devoted to cotton, and 33 percent to corn [U. S. Census (1880)]. We have defined the "Cotton Belt" in 1880 as those counties located in the major cotton growing regions of North Carolina, South Carolina, Georgia, Alabama, Tennessee, Mississippi, Louisiana, Arkansas, and Texas.

[5] This minimum requirement of food represents that which would be necessary to just support the food-consuming factors of production on the farms--including the farmer and his family.

[6] This is the standard result of the economic theory of maximizing behavior in a free market. The farmer would not choose a point within the frontier, since such points are technologically inefficient.

Suppose that corn and cotton prices were such that the farmer would choose a production of corn more than sufficient to meet the minimum needs of the farm itself (the point Q, determined by the price line PP in Figure 1, illustrates such a case). The farm operator would sell his surplus corn (Y-M) and obtain income from this source in addition to that gained from the sale of his cotton (X). We can measure his net income in terms of cotton by converting the surplus corn at the given price relative and adding it to the cotton production. Since W-X is the cotton equivalent of Y-M bushels of corn and X is the cotton production, the total net income must be W. [7]

Another possibility is that prices of corn and cotton were such that the profit maximizing farm would choose to grow less corn than it required for feed and food. Such a case is illustrated in Figure 2. If PP is the relative price line, the farm will produce at the point S, where his output would be Y bushels of corn and X bales of cotton. In this case, a fraction of the cotton crop (X-W) would have to be traded at the prevailing prices for corn to make up the corn deficit of M-Y. After the trade, the farmer will be at point A, with a net income measured in bales of cotton, of W.

In the post-Civil War South many farms were not self-sufficient and thus were forced to purchase corn to meet their food deficits. [8] Moreover, most of these farms required credit in order to purchase corn

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[7] We call this net income, since it is net of the minimum food and feed requirements (M).

[8] According to our estimates based on our sample of cotton belt farms in 1880, at a very minimum over 60 percent of the farms were not self-sufficient [Ransom and Sutch (1972), Table 6, p. 663].
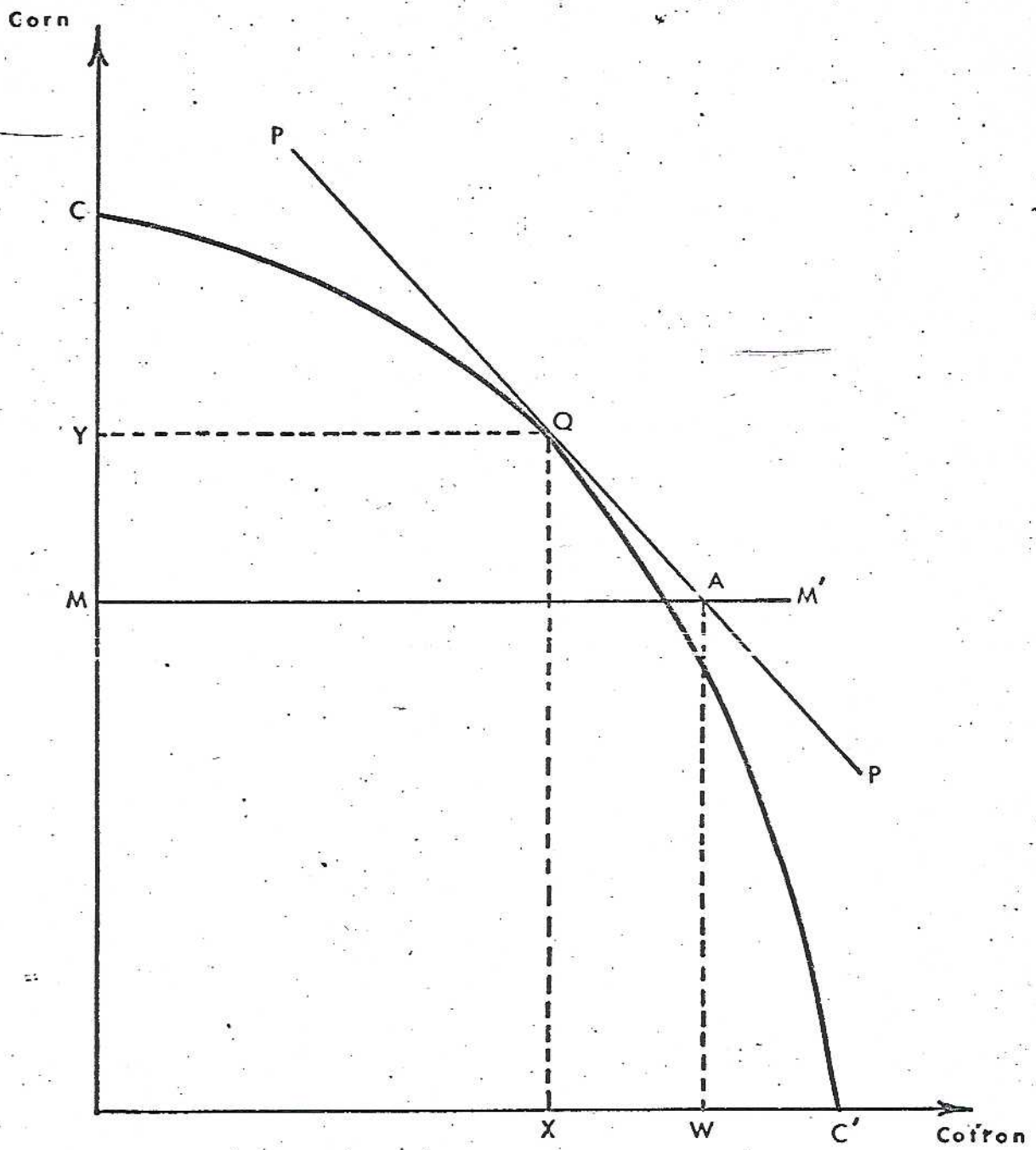
FIGURE ONE: A SELF-SUFFICIENT FARM

needed before the cotton crop had been picked.[9/]  The only source of
credit was the local merchant who, because of his isolated location
and the high cost of transportation, had an effective monopoly.[10/]
The merchants employed their monopoly power to exact an exorbitant price
for corn.[11/]  These "credit prices" for corn far exceeded the farmgate
prices received by farmers who produced surplus corn.  Thus, instead
of facing the price line PP in Figure 2, the farmer who purchased corn
faced a relative price line with a gentler slope, like P'P'.  If he
still chose to produce X bales of cotton, he could at best achieve
point D by dealing with the merchant.  However, he would not choose
this alternative.  Rather, production would be at point F (where a line
parallel to P'P' is just tangent to the production frontier) and the
farmer would trade at the monopoly prices he faced to reach point G.
Notice, however, that while net income at point G is greater than at D,
it is unambiguously less than the net income which the farmer would
have achieved had he faced the farmgate selling price for corn rather
than a monopolistic one (at point A).  This farm is being exploited by
a monopolist.

The price line confronting a farm operator who faces two different
corn prices--a price at which corn can be sold (relevant when he is
above MM') and a price at which he must buy corn (relevant when he is

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[9/]  According to a survey taken by the Georgia Department of Agriculture
in 1875 and again in 1876, over seventy percent of the farms in that
state required some credit to see them through the year.  See Georgia
Department of Agriculture, (1875) p. 2, (1876) p. 9.

[10/]  The source of this monopoly power, and the reasons for its persis-
tence, is discussed in our paper on debt peonage [Ransom and Sutch (1972)].

[11/]  We summarize the evidence for this assertion below.
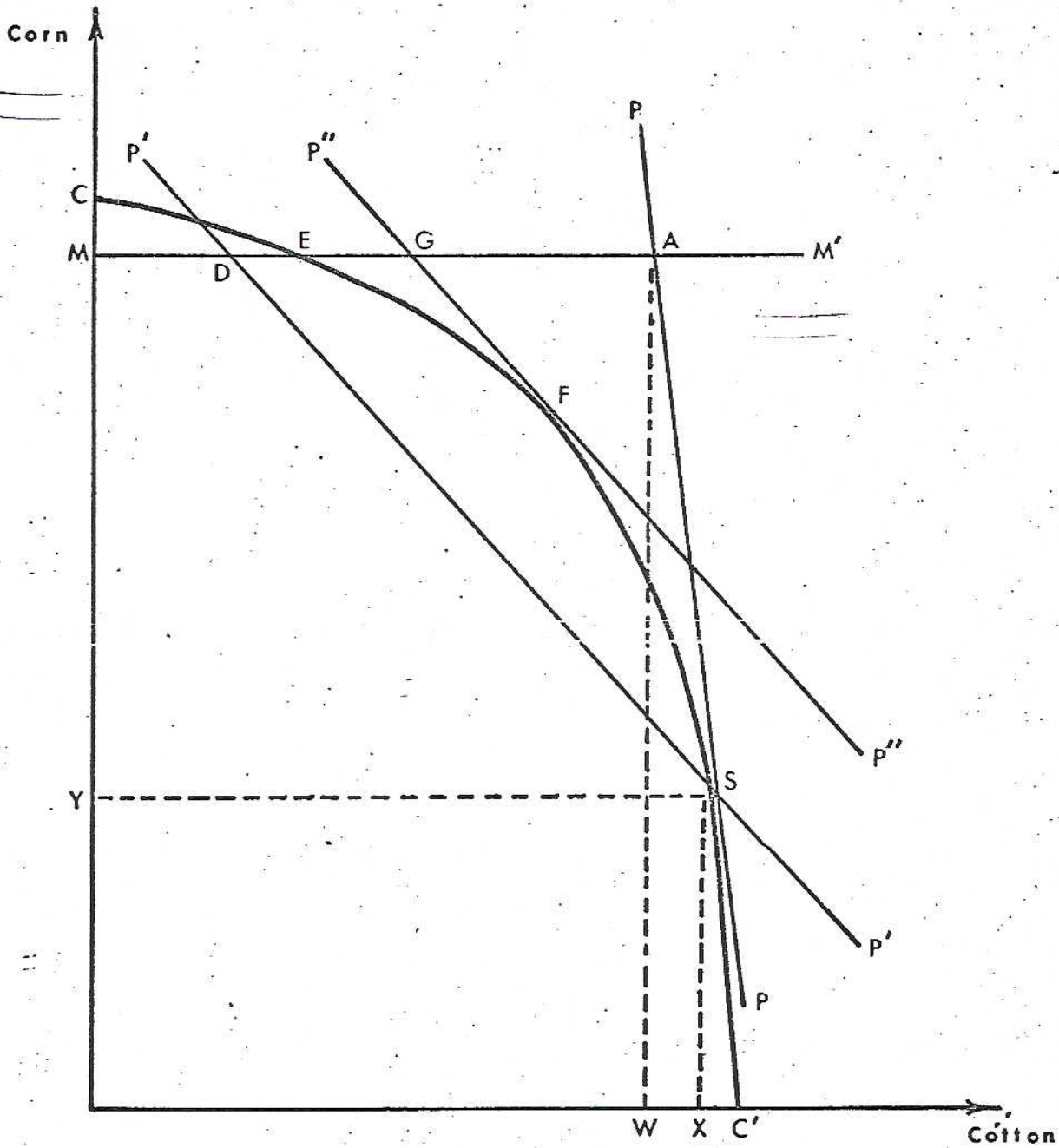
FIGURE TWO:  A NON-SELF-SUFFICIENT FARM

below MM')--has a kink in it at the point of intersection with MM'. The situation is illustrated in Figure 3, where the relative price relationship is shown by the kinked line PGP'. The segment PG reflects the relative farmgate selling price of corn while the slope of the GP' segment measures the relative credit purchase price for corn. The farm operator whose situation is illustrated in Figure 3 will choose to produce at point F, which entails less cotton production than would be the case were he not exploited by a monopolist.[12] Such a farm cannot be said to be locked-in, since the farmer is free to respond without interference to the prices he faces.

The basis of the lock-in mechanism as it was purported to have operated in the post Civil War South was that the merchant required collateral to back the credit extended during the year. A lien on the growing cotton crop was the form this collateral invariably took. In fact, the merchants used their monopoly position to insist on cotton as the only acceptable form of collateral. In other words, there was not only a minimum level of food products necessary for the farm's operation, but also a minimum level of cotton production determined by the merchant whenever credit was required.[13]

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[12] This is the case because the higher price for corn which must be purchased from a merchant will induce the farmer to grow more corn than he would when confronting a lower farmgate price of corn.

[13] This paragraph is intended as a statement of assumptions for our theoretical model, not as a description of historical fact. Nevertheless, each of the statements can be supported as meaningful generalizations of the historical reality. In our characterization of the situation presented elsewhere, we summarize evidence to support these generalizations [Ransom and Sutch (1972), (1973)]. Other treatments are given in Banks (1905), Hemphill (1882), Hammond (1897), and Holmes (1893).
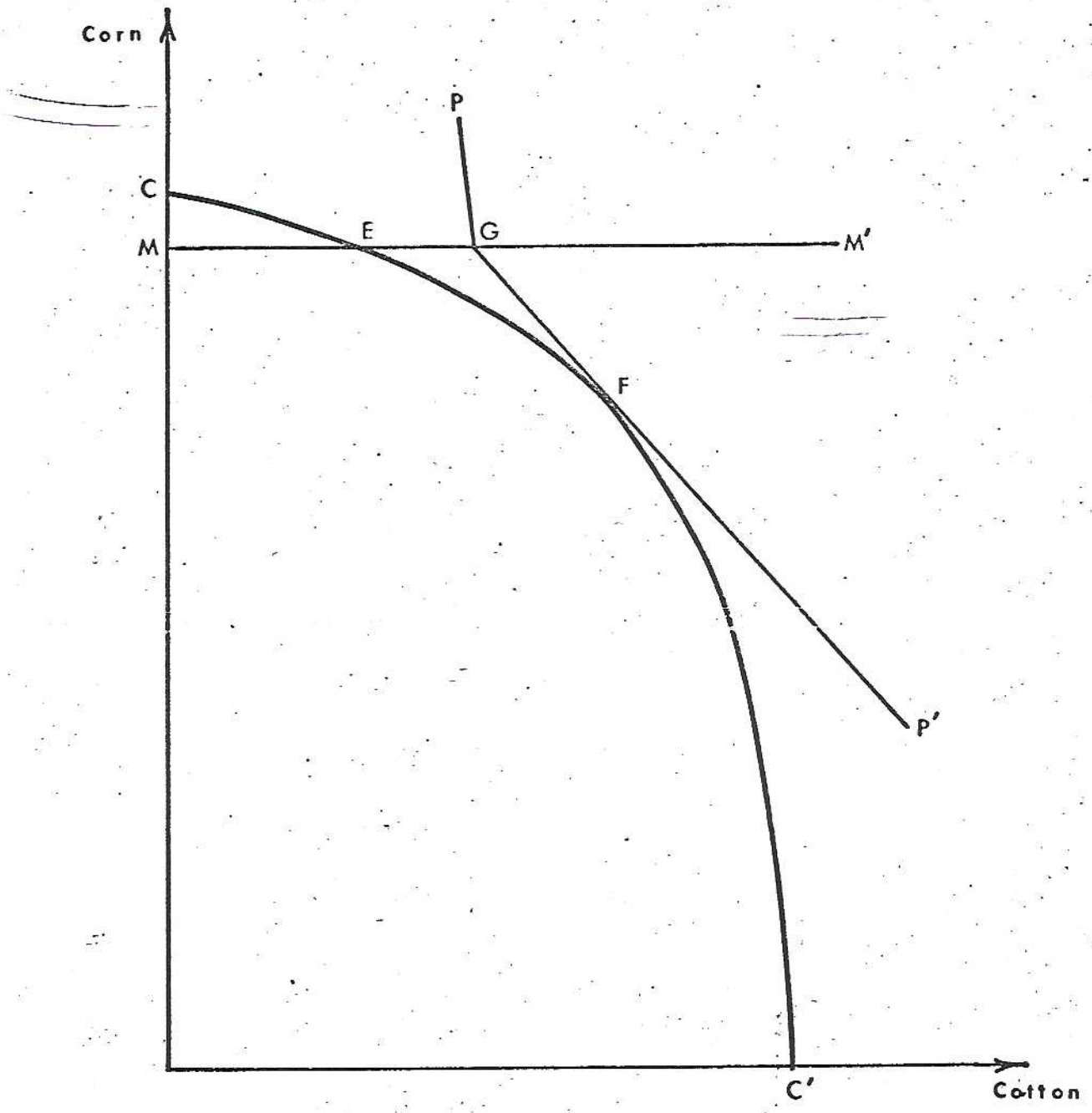
FIGURE THREE: THE DUAL PRICE STRUCTURE OF THE POST-BELLUM SOUTH

Consider Figure 4. The production possibilities of a hypothetical farm is illustrated, together with six parallel price curves of the type depicted in Figure 3. The price line $P_5GP_5$ determines the optimal point of production from the farm's point of view (at point F).[14] Given the farmgate price (reflected in the slope of the upper segment of the price lines) for corn and cotton, the farm operator should produce at point S to assure an optimal allocation from society's point of view.[15] In either case, as we have illustrated them, the production of corn would be less than the minimum required. The farmer would therefore turn to the merchant to supply his corn deficit.

Suppose that the minimum level of cotton production required by the merchant before he will extend the credit necessary to finance the farmer's request is L.[16] Since the farm operator must produce L bales of cotton (and only Y bushels of corn), he will be forced to purchase M-Y bushels of corn at the monopolistic credit price to reach point B. This farm is locked-in. The operator would prefer to produce at F and trade to G. But he is forced by the system to a position where his net income is lower. This farm is also overproducing cotton, given its market frame of reference, since at F it would produce fewer than L bales of cotton.

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[14] This corresponds exactly to the situation depicted in Figure 3.

[15] This situation corresponds exactly to that depicted by the tangency at S in Figure 2.

[16] We discuss the manner in which the merchant determines this amount of cotton below. We have chosen to illustrate the case where L is to the right of the cotton produced at point F, since only then would the farmer be locked in to a production of cotton in excess of his desired crop mix.
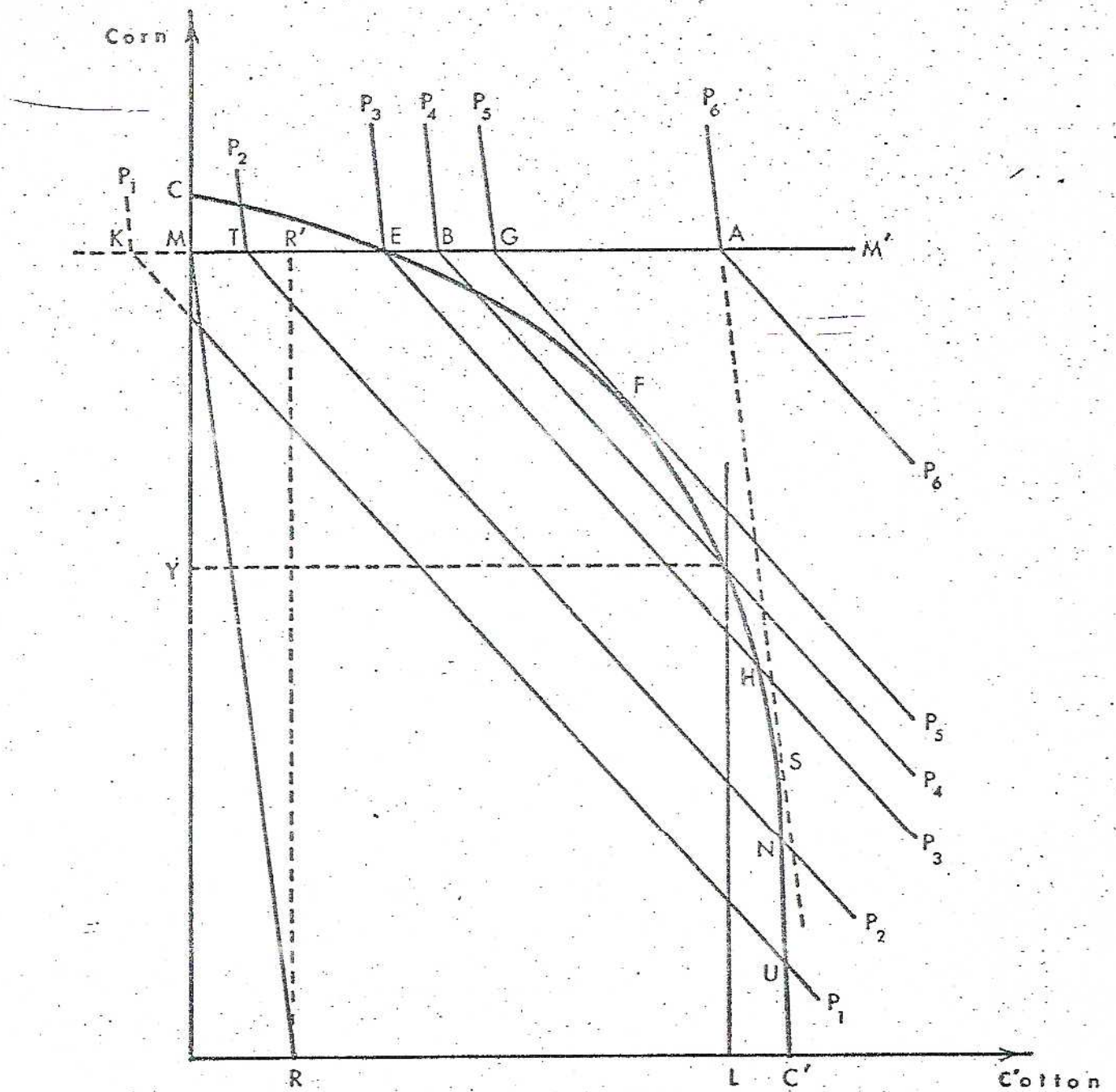
FIGURE FOUR:  THE LOCK-IN

If the minimum level of cotton production demanded is to the right of H, then the welfare of the farmer is worse than the exactly self-sufficient farm which produces at E. An example in Figure 4 is the farm forced to produce at N and then trade to T. When this is the case, the farm operator would do better to move his production mix to E. He would then avoid the need to purchase corn and thereby avoid the need for credit. Having escaped the need for credit, the farmer frees himself from the merchant's power.[17] If such a switch were possible, the lock-in could never force a farm to a production position to the right of H (and a corresponding income position to the left of E).

Unfortunately the Southern farmer was frequently unable to make such a move (from N to E). Unless the net proceeds of one year's crop for a self-sufficient farm located at E were sufficiently great to provide completely for the minimum needs of the farm during the following year, the farm operator would be forced to borrow again. In the diagram, the cotton equivalent of the minimum corn required (assuming the farmer can purchase it at the favorable cash price) is R.[18] (The slope of MR is equal to the slope of the upper segments of the PP curves.) If R--or equivalently R'--lies to the right of the current year's net

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[17] This statement assumes that the only supplies required during the year are corn. If we extend the analysis to include the possibility that other types of supplies will be required (clothing, seed, fertilizer, farm implements, etc.) then switching to E will avoid the need for credit only if the farmer is able to save enough out of net income (E) to provide these additional items without asking for credit. This assumes that some source of supply is available for these items at reasonable "cash" prices.

[18] The slope of MR is equal to the slope of the upper segments of the PP curves. We assume that the farmer has cash resources from his previous sale of cotton.

income position (as in the case illustrated in Figure 4: R' lies to the right of T) the farm operator will be unable to finance the move that year by himself. Unless he can find a non-exploitative source of credit, the farmer will be locked-in for one more year.[19]

This situation is what we term debt peonage. The farmer has no choice but to submit to the merchant's monopoly power again for the coming year. Perhaps after several years he could save enough to finance himself for one year and escape the trap. But notice that even then he escapes to E, which is a lower income than either his exploited (but not locked-in) position at G or the optimum (from society's point of view) and unexploited position at A. If R' were to lie to the right of E there is not even this hope of escape. A year of production at E in this situation would not produce sufficient net income to carry the farm through the next season without credit. The farmer would be trapped in continual debt peonage.[20]

It is even possible for the merchant to require so much cotton that the farmer's net income would be negative. This is the case illustrated in Figure 4 when the merchant requires production at point U. With a

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[19] In the post-bellum South, he would be unlikely to find such a source of credit. Rural banks were few in number and unlikely to be willing to bear the risk involved in making such collateralless loans. See Ransom and Sutch (1972) for a discussion of the rural banking situation at this time.

[20] Note that the requirement discussed here amounts to saying that unless a self-sufficient farm initially without resources can produce enough income to meet its minimal food and feed requirements for two years (the current year plus the coming year) it cannot avoid the continual need for short-term credit during the growing season.

relative price line $P_{1K}P_1$, net income is negative.[21] This represents
a case of debt peonage so extreme that the farm operator remains in
debt to the merchant even after his entire cotton crop is sold. The
terms of most crop liens required in such instances that the farm
operator recontract for the next season with the same merchant to
protect the remaining debt. As we have noted, effective debt peonage
exists well before this extreme is reached.

It is not likely that the merchant would find it in his own interest
to push the farmer to this extreme situation of negative net income.
After all, the maximum amount the merchant can exploit from the farm is
the entire net production. This is achieved when the net income of the
farm operator has been driven to zero. Any further reduction in net
income would only create an ever-growing debt facing the farmer as his
net income continued negative year after year. Eventually, this debt
would have to be written off, since the farm would be incapable of
generating income to pay it under these arrangements.

In fact, a growing debt would have at least two disadvantages from
the point of view of the merchant. First, the farmer might become
disheartened at his continual lack of success and cease to work dili-
gently and efficiently. This would be particularly true if the merchant

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[21] Recall that net income is net of human as well as animal food
requirements. Thus, the farmer and his family will not starve at
zero net income. They will have a food deficit in such a situation
however.

was obligated to provide the corn necessary to make up the minimum needs.[22] With his basic needs covered, and no hope of earning more, the farmer would have no incentive to exert himself to full capacity and efficiency. The merchant, therefore, will find it in his own interest to allow the farmer a positive net income in order to insure that the farm will produce at a point on the production frontier rather than at one inside of it.

A second factor which would induce the merchant to permit a positive net income, is the possibility that repeated losses and a mounting debt would lead the farm operator to abandon the farm in question (and all debts) and seek new opportunities elsewhere. While such a default would be illegal, in practice apprehending the debtor and gaining full financial restitution would be unlikely.

Rather than force the farm operator into debt at the end of each year, the profit maximizing merchant would follow a more restrained policy. He would push the farmer to some level of net income less than $R'$ (a year's worth of provisions) which would keep the farmer in debt peonage, but still earning an income sufficiently above zero to keep from stifling his hopes and inspiring default. For example, the

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[22] Not only humanitarian motives would lead the merchant to make such a guarantee. He could afford to do so regardless of the farmer's ultimate ability to pay for the debt with cotton at the going credit price, because the farmer's output would always cover the minimum corn needs when the corn is valued at the farmgate price. In terms of Figure 4, it must always be true that either R lies to the left of C', or M lies below C. If this were not the case, the farm would not be able to support itself, and no one (not the farmer, the landowner, nor the merchant) would find it profitable to operate. The farm would go out of production. Granted that the merchant could afford to make such a guarantee, he would always do so to retain his own source of income.

merchant might insist that the farmer produce at point N in Figure 4, so that he buys corn and is left with a net income of T (which is smaller than R'). [23]

Up to this point we have taken as given the credit price of corn and the volume of cotton required for collateral. To complete our theoretical model, we must now turn our attention from the farmer to the merchant, who controlled these two parameters.

If he were an absolute monopolist, the merchant would have the power to alter both the selling price of corn and the amount of cotton to be offered as collateral. He could therefore leave the farmer with whatever net income the merchant wished. To maximize his own profits (the total revenue from the sale of corn at the "credit" price less the value of the corn purchased at the farmgate price), the merchant would minimize the quantity of corn which had to be bought and maximize the price at which it was sold. In practice, however, the merchant was not an absolute monopolist. He was a local monopolist who, at least at the borders of his territory, faced a nominal amount of competition from the merchants in adjacent neighborhoods. This competition at the fringes undoubtedly meant that the merchant faced a demand for corn that exhibited some elasticity. This elasticity would limit the extent to which it was advisable to raise the "credit" price for corn. A

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[23] The editor of the Rural Carolinian, writing in 1876, suggested that merchants would retroactively "adjust" any debt owed at the end of the year to prevent the new income of an unlucky farmer from becoming negative:

"...[I]mmediately [the farmer] is offered several cents a pound for his cotton more than it is worth... . [The merchant] offers this bonus to induce the rascally inclined customer to pay his debts." [Rural Carolinian (1876), Vol. 7, p. 178.]

point would be reached where further increases in corn prices would drive enough farms (in the long run) to neighboring merchants to offset the increase in revenue per farm.[24]

It should also be pointed out that a policy of allowing the farmer greater corn production while simultaneously raising the credit price of corn so as to maximize profits from the sale of corn, would run the danger of threatening the merchant's control over the farmer as the farm approached self-sufficiency. We can suppose, then, that the optimal "credit" price is set by demand considerations, and that the merchant sets the volume of cotton production demanded as collateral to be consistent with the relative price of corn, the "target" net income which he is willing to allow for the farm, and the production possibilities of the farm. In Figure 4, we suppose that the slope of the price lines below MM' reflects the optimal monopolistic price for corn. If T represents the target net income for the farm (chosen to yield a positive net income which is less than R'), then with production possibilities CC', the merchant will maximize his return if the farm produces at N. This result is ensured by the merchant's insistence that at least enough cotton be produced to force the farmer to N.

Up to this point, we have been considering the interaction between the merchant and the farm operator. We have neglected a third interest in the farming operation: the landlord. Would he have acquiesced to a system embodying both exploitation and inefficiency? As it turns out, the answer is "yes," because it makes no difference who owns the land.

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[24] The standard model of monopolistic pricing applies here.

If the farm operator is also the land owner, he will do whatever he can to avoid the merchant's monopoly power. But should shortage of liquid assets drive him to the merchant for credit, his ownership of land would give him no extra advantage. He could be "locked-in." If the land was owned by the merchant, there would be no conflict of interest. The final case is ownership of land by a third party. In such a case, the landowner would expect to receive at least his opportunity rent.[25/] Anything less than this would induce him to operate the farm himself, or sell the land. Beyond this, there remains only the question of how the monopoly profits are divided between merchant and landowner. If the landowner had sufficient resources to finance his own tenants directly, he could threaten the merchant's monopoly and thereby participate in the monopoly proceeds.[26/] If not, he could do nothing to interfere with the merchant's operation.

## The Dual Price System in the South

The theoretical analysis of the lock-in mechanism presented in the first part of this article depended upon the assumption that the merchant earned a monopoly profit on the sale of corn. If he did not, the merchant would have no incentive to force the farmer to grow more cotton than the farmer wished. Increases in the quantity sold do not

[25/] "Opportunity rent" is the implicit rent which the landlord would receive by operating the farm himself.

[26/] This possibility did not, in fact, result in any serious erosion of the merchant's monopoly position in the post-bellum South. There were very few landlords with liquid assets who were not already merchants or involved in some merchandising enterprise.

increase the profits of either a pure competitor or an imperfect

competitor in Chamberlianian equilibrium. The lock-in would appeal

only to a merchant with monopoly power.

There is a substantial body of contemporary evidence that such

monopoly power existed--that farmers who were forced to buy corn and

other supplies on credit were required to pay prices in excess of the

average and marginal cost of these items. One series of data is

particularly noteworthy in this regard. Beginning in 1878, and

continuing on a regular basis through 1890, the Department of Agri-

culture of the State of Georgia collected from every county the selling

prices of corn charged by the local merchants.[27/] The Department,

following the example of the United States Department of Agriculture,

established a corps of correspondents, apparently several in each of

Georgia's 137 counties,[28/] to report regularly on the condition of crops

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[27/] Space does not permit us to present all of the quantitative evidence
we have gathered on this point. There were two earlier surveys, one
in 1875 and one in 1876, and one later one taken in 1892, also by the
Georgia Department of Agriculture. The presentation of the results
were not complete in those years and therefore they are not reported
here. The Georgia surveys also occasionally collected the prices of
bacon and fertilizer. Since the results of the surveys on these items
are consistent with the more complete corn data, these prices are not
presented here. The State of Louisiana's Commissioner of Agriculture
conducted similar surveys in his state beginning in 1886 and lasting
until, at least, 1896. The North Carolina Bureau of Labor Statistics
took at least one survey of merchants' mark-ups, in 1887. These surveys
yielded information quite consistent with Georgia's, and therefore this
data is not examined here.

[28/] In 1884 the Georgia Commissioner of Agriculture, J. T. Henderson,
wrote to Louisians's Commissioner, T. J. Bird, that Georgia had "from
three to five or more" correspondents in each county, selected "from
different parts of the counties." [Letter dated November 10, 1884,
printed in Louisiana Department of Agriculture (1886), pp. 4-5.]

and other items of interest. These correspondents were "carefully selected with reference to their intelligence, practical experience and sound judgment."[29]

These "crop-reporters" were surveyed regularly by the Department and at least once a year (on May first from 1881 through 1889) they were asked: "What is the cash price per bushel for corn May 1st?" and "What is the credit price per bushel at the same date?". Their responses were tabulated and averaged by the Department. In Table 1 we have reproduced these prices along with the farmgate selling price of corn on the first of the previous December, as collected and tabulated by the United States Department of Agriculture.

The market price for corn, when the customer could pay cash, ranged from 6 to 34 percent above the December price and, over the thirteen years of observation, it averaged 17 percent higher. Presumably the merchants did not have a monopoly on corn sold for cash, since local farmers who grew surplus corn might have stocks to sell in May. So long as the potential competition from this source existed, the merchant could not for long charge exorbitant cash prices. Therefore, the seventeen percent increase in corn prices between December and May probably represents a fair charge for the storage and related expenses incurred in inventorying the grain for five months.

The credit prices in May, according to the Georgia Survey, ranged from forty to seventy percent--and averaged 53 percent--above the December prices. In other words, an additional 36 percent was charged

29/ "Consolidation of the Reports of Crops &c. ...(October 15, 1875)" in Janes (1875), p. 130.

## Table 1

## Corn Prices, Georgia, 1878-1890

Prices in Dollars per Bushel

| | Farmgate Selling Price; December 1st of Previous Year | Purchase Price Charged by Merchants; May 1st of Given Year | | Ratio of Purchase Price to Selling Price | |
|------|------|------|------|------|------|
| Year | In Currency | For Cash | On Credit | Cash | Credit |
| 1878 | .68 | .75 | 1.05 | 1.10 | 1.54 |
| 1879 | .61 | .75 | .975 | 1.23 | 1.60 |
| 1880 | .70 | .78 | 1.02 | 1.11 | 1.46 |
| 1881 | .69 | .89 | 1.12 | 1.29 | 1.62 |
| 1882 | .97 | 1.13 | 1.38 | 1.16 | 1.42 |
| 1883 | .65 | .72 | .95 | 1.11 | 1.46 |
| 1884 | .67 | .90 | 1.14 | 1.34 | 1.70 |
| 1885 | .70 | .74 | .98 | 1.06 | 1.40 |
| 1886 | .58 | .67 | .92 | 1.16 | 1.59 |
| 1887 | .60 | .68 | .92 | 1.13 | 1.53 |
| 1888 | .63 | .79 | .98 | 1.25 | 1.56 |
| 1889 | .60 | .66 | .87 | 1.10 | 1.45 |
| 1890 | .55 | .68 | .85 | 1.23 | 1.55 |
| | | | Average, 13 years | 1.17 | 1.53 |

Sources:

Farmgate Selling Price:

1878:   United States Department of Agriculture, Report of the
Commissioner of Agriculture for the Year 1877, (Washington,
Government Printing Office, 1878), p. 168.  This source
gives the price in currency.  The source of the farmgate
prices for the other years gives the December first, 1877
price in gold.

1879-90:   United States Department of Agriculture, Prices of Farm
Products Received by Producers, Volume 3, "South
Atlantic and South Central States" Statistical
Bulletin Number 16, (Washington, Government Printing
Office, 1927), p. 106.

Purchase Price:

1878:   Georgia Department of Agriculture, "Consolidation of the
Reports of Crops..." Circular Number 55, (July 10, 1878),
p. 11.  The prices are for July first.

1879:   Georgia Department of Agriculture, "Supplemental Report--1879"
Circular Number 4, New Series, (January 15, 1880), p. 7.
The prices are "average" for the year.

1880:   Georgia Department of Agriculture, "Supplemental Report--1880"
        Circular Number 14 1/2, New Series, (January 15, 1881), p. 6.
        The prices are "average for the year.

1881:   Georgia Department of Agriculture, "Quarterly Report...
        April 30th, 1881" Circular Number 17, New Series, (May 18,
        1881), Table 1.

1882:   Georgia Department of Agriculture, "Crop Report...April, 1882"
        Circular Number 26, New Series, (May 15, 1882), p. 29.

1883:   Georgia Department of Agriculture, "Crop Report...April, 1883"
        Circular Number 41, New Series, (May 14, 1883), p. 16.

1884:   Georgia Department of Agriculture, "Crop Report...April, 1884"
        Circular Number 53, New Series, (May 12, 1884), p. 11.

1885:   Georgia Department of Agriculture, "Crop Report...May, 1885"
        Circular Number 66, New Series, (May 12, 1885), p. 12.

1886:   Georgia Department of Agriculture, "Crop Report...May, 1886"
        Circular Number 79, New Series, (May 10, 1886), p. 11.

1887:   Georgia Department of Agriculture, "Crop Report...May, 1887"
        Circular Number 90, New Series, (May 9, 1887), p. 6.

1888:   Georgia Department of Agriculture, "Crop Report...May, 1888"
        Circular Number 104, New Series, (May 8, 1888), p. 7.

1889:   Georgia Department of Agriculture, "Crop Report...May, 1889"
        Circular Number 116, New Series, (May, 1889), p. 7.

1890:   Georgia Department of Agriculture, "Supplemental Crop Report--
        1890" Circular Number 3, Third Series, (January, 1891),
        p. 10.  A typographical error in the original has been
        corrected.  Prices are "average" for the year.

(above and beyond the legitimate costs incurred in storage) merely for extending the necessary credit. Of course, a portion of this premium represents an interest charge on the credit extended. Since the merchants' credit prices were ascertained on May first of every year (from 1881 through 1889) and the traditional repayment date was set as November first, the loan was for six months.[30/] Using this time period, we have computed the implicit interest rates charged by the merchants for the years 1881 through 1889 and present them in Table 2.[31/] They range from a low of 44.3 percent to a high of 74.6 percent and averaged 59.4 percent per annum. Since short-term interest rates in New York during this period ranged generally from four to six percent and never above eight percent,[32/] we can safely assume ten percent as the opportunity cost of

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[30/] A six month loan is the longest loan period consistent with the original sources. The November first date is implicit in statements accompanying the original data for the years 1881 and 1883. This date is explicitly mentioned repeatedly in the December crop reports throughout the period. However, the May report for 1887 refers to the loan as "...a credit of hardly more than four months" [Georgia Department of Agriculture, (1887), p. 6].

[31/] These interest rates differ from those presented by Hammond (1897), p. 153 which were derived from the same sources. The prices we have based our calculations on were taken uniformly from the May first Crop Reports and are thus fixed in time. Hammond generally used the prices based on the December Crop Reports, which asked for an average price charged over the entire year. The appropriate time span for these loans is less clear, therefore we preferred the May first prices. We also noted that Hammond made a number of arithmetic errors when computing his interest rates.

[32/] This statement is based on the commercial paper rates in New York City with 60 to 90 days maturity. Macaulay (1938)[Table 10, pp. A141-A161].

Table 2

Implicit Interest Charged
By Georgia Merchants, 1881-1889

| Year | Percentage Annual Rate of Interest |
|------|------------------------------------|
| 1881 | 51.7 |
| 1882 | 44.2 |
| 1883 | 63.9 |
| 1884 | 53.3 |
| 1885 | 64.9 |
| 1886 | 74.6 |
| 1887 | 70.6 |
| 1888 | 48.1 |
| 1889 | 63.6 |
| Average | 59.4 |

Source: Computed from data on Table 1.

the funds involved.[33] This leaves an unexplained excess of approximately

fifty percent per annum. Some of this might be explained by default risk,

but it should be remembered that the loans were secured with a lien on

the growing crop and the merchant had the legal right under the terms of

these liens to insure that the crop was properly tended. Under the

circumstances it is not likely that the default rate was very high. It

was certainly not as high as thirty-one percent, which would be the

default rate needed to justify a ~~fifty~~ sixty percent interest charge when the

opportunity return on default-free loans is ten percent.[34] Clearly, the

merchants of Georgia were exploiting a healthy monopoly profit from the

sale of corn on credit terms.

## The Cotton Lien

The power to charge exhorbitant credit prices by itself, as our

theoretical discussion noted, would allow the merchant to exploit any

farmer who was not self-sufficient. His monopoly profits could be even

further increased if he was able to force the farmer to become more

dependent on purchased supplies. We suggest that this end was frequently

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[33] We are allowing for a three percent differential between New York
and the cotton South. Richard Sylla calculated an average difference
in gross earnings of National Banks in New York and the Southern States
to be from 1.0 to 3.33 percent in the interval 1888-1900 [Sylla (1966),
p. 672]. Lance Davis (1965) provides detailed figures behind Sylla's
calculations (p. 360-65) and additional data on mortgage returns
suggesting a three percent differential is most generous (p. 375).

[34] It may be relevant to point out that a survey of general merchandise
stores in Louisiana in 1926 revealed that the default rate on credit sales
was only 5.4 percent [Morehead (1929), p. 41]. Note, however, that this
observation is quite late, after the appearance of the mail order houses
and the chain stores altered the general pattern of merchandising in the
rural South considerably, and undoubtedly increased the risk to
merchandising carried out under the old pattern.

accomplished in the post-bellum South through the requirement of most crop liens which stipulated that a given volume of cotton be planted as a precondition for merchantile credit. Unfortunately, direct evidence that the typical Southern merchant actually dictated the crop mix of his customers by this device and forced the overproduction of cotton is not yet available.[35/] Nevertheless, a strong case can be made that this practice was common.

Historians who have studied merchandising in the South have relied on the testimony of contemporary witnesses and an examination of surviving crop-lien contracts to conclude that food production was discouraged and cotton or other cash crops required as collateral.[36/] Agriculturalists at the time, almost without exception, insisted that a shift from cotton to food would increase the income of farmers; and they frequently deplored the merchant's power to block this reform.[37/] While the historical

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[35/] It is possible that such evidence might be found in surviving merchant records which are preserved in several collections which are cited in the research by Clark (1946), Sisk (1955) and Bull (1952). However, documenting from these sources that monopolistic practices were widespread would be difficult, because of the limited observations which these surviving records afford the investigator.

[36/] Early studies commenting on crop-lien contracts include: Hammond (1897), pp. 150-152; Otken (1894), pp. 54-64; and Banks (1905). More recently, Shannon (1945), pp. 89-95; Bull (1952), pp. 41-42; and Woodman (1967), pp. 295-304 have studied the question.

[37/] One eloquent champion of such reform was Henry C. Grady [Grady (1881), p. 723]. Editors of agricultural journals with wide influence in the South such as the Rural Carolinian and the Southern Cultivator hammered away incessantly on the benefits from self-sufficiency. State officials such as Thomas Janes, Commissioner of Agriculture of Georgia, and W. N. Jones, Commissioner of Labor of North Carolina, devoted their agencies' efforts to documenting the merchants' exploitation through the crop lien [Janes (1875), pp. 53-56; Jones (1887), p. 129].

record leaves little doubt that merchants attempted to increase cotton production, the extent to which they succeeded in producing a significant disparity between the actual crop mix and the desired crop mix remains uncertain.

A direct measurement of the distortion produced would be quite desirable. What is required is an estimate of the marginal gain or loss to the farm from a small shift in output towards increased self-sufficiency. Farmers who were the victims of the merchant's lock-in would, in normal circumstances, be in a position to gain significantly by sacrificing cotton output for increased corn production.

The task of performing this calculation is frought with difficulties. Most serious is the lack of reliable data on which to base the estimate. The only comprehensive source of microeconomic data for such a test is the manuscript census of agriculture, taken in 1880. Unfortunately, although this census data can be used to gain considerable insight into the typical farming practices, it is not complete enough to allow estimation of a production function, or even to allocate the inputs-- other than land--to the separate crops grown.[38/] Therefore, estimates of the marginal returns to different crops would require numerous assumptions concerning the allocation of factor inputs and the nature of the production function. These assumptions would have to be supported from contemporary accounts of farm practices. The job is a complex one, and remains to be done.

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[38/] The major deficiency of this data is reliable information on labor inputs.

For the present, we have constructed only a rough approximation of the difference between the return to corn and cotton at the margin. Our procedure estimates the gain to be realized when a typical farmer reduces his cotton cultivation by one acre and uses the freed resources to raise corn which he otherwise would have to purchase. Our underlying data are a sample of small family farms drawn from the cotton belt regions of the South reported in the 1880 manuscript census.[39/] We focus on the small farms since our analysis suggests that such farms were most likely to have been victims of the merchant's monopoly power.

Across the farms sampled, the average yield of lint cotton per acre was 178.2 pounds, while the average yield of corn was 11.3 bushels per acre.[40/] Evaluating the cotton at 9.4 cents per pound, the December 1st farmgate price averaged for the three years 1878, 1879, and 1880,[41/] suggests that an average farmer who reduced his cotton production by a single acre would lose $16.75 worth of cotton output.[42/]

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[39/] The sample includes 3,356 farms. The procedures used to collect and manipulate the data are discussed in Ransom and Sutch (1973), pp. 146-148. The small family farm is defined as having fifty or fewer acres in crops, and hiring twenty-six or fewer weeks of labor. We estimate that 69.7 percent of all farms in the cotton South fit this definition in 1880. See Ransom and Sutch (1973), Table 1, pp. 132-133.

[40/] This measure of corn output is an underestimate, since it does not include an evaluation of the corn fodder produced as a by-product, and which was fed to animals. This fodder was sufficiently important that it would outweigh the counterbalancing effects of two other neglected items: the sale of cottonseed and the seed requirements for corn.

[41/] Price data is from Holmes (1912).

[42/] The use of average yields will underestimate the size of the actual net gains or overstate the net losses from a marginal adjustment, since the farmer would presumably choose to switch that acre which would give the largest net gain or smallest net loss, rather than an acre which would give only an average difference.

There is a great deal of evidence from contemporary accounts that
the resources freed by the release of one acre of cotton could cultivate
roughly two acres of corn.[43/] As a single example, we call attention
to an Alabama correspondent of the Southern Cultivator, who wrote in
1870 that: "[e]very observing farmer knows, that for each additional
acre of land planted in cotton, two must be deducted from the number
in corn".[44/] Similar statements, reports of experiments, and descrip-
tions of actual practice supporting this marginal rate of transformation
abound in the literature of the day. Therefore we accept this "rule of
thumb", and assert that the loss of 178 pounds of cotton would be
compensated for by a gain of 22.6 bushels of corn. Since this added
corn output would free the farmer from the necessity of purchasing that
amount of corn from the merchant, we value it at the merchant's credit
price. Taking the average credit price over the three years 1878 through
1880 from Table 1 gives us a value of $1.02 per bushel.[45/] Therefore,
the gain to the average farmer from his additional corn would be in the
neighborhood of $23.05; leaving a net gain of $6.30 from the swap of
cotton to corn.[46/] This represents a sizeable gain from the farmer's

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[43/] Cotton required considerable more labor and animal power than did
corn. Also, note that our calculation assumes that an extra acre of land
can be readily obtained. Since land rent was typically charged as a
fixed fraction of the output--be it cotton or corn--it is clear that if
we can establish that a switch from one acre of cotton to two acres of
corn will increase gross income; then we will have established that income
net of rent would also be increased.

[44/] Southern Cultivator, XVIII, (March 1870), p. 82.

[45/] This figure is for the state of Georgia. However, scattered evidence
of credit prices in other states convinces us that the Georgia price
provides a reasonable proxy for the entire Cotton South.

[46/] We note that there will still be a gain at the margin even if corn
were evaluated at the cash prices given in Table 1.

point of reference. He would stand to increase his marginal income by
38 percent if he reduced cotton output and thus lessened his dependence
on the merchant.

We hasten to caution the reader that this calculation can, at best,
support a qualitative rather than a quantitative conclusion. Nevertheless,
taken together with other evidence, it suggests that the typical small
family farm which filled its food deficit at the merchant's prices was
overproducing cotton. We also know that most of the small family farms
had food deficits, and that merchants did a large volume of business on
credit. We have established that the merchant charged exhorbitant
credit prices. Out theoretical model argues that, under these conditions,
the merchants would have found it to their advantage to insist on
excessive cotton production in order to impose a lock-in which would keep
their customers in a state of debt peonage. Since this theoretical
deduction is supported by the rough calculations reported here, and the
weight of historical opinion and contemporary comment, we conclude that
Southern merchants succeeded in imposing this exploitative mechanism on
a significant number of Southern cotton farmers.

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