PUSH AND PULL IN MIGRATION FROM SOUTHERN FARMS[1]

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"Changing patterns in Southern agriculture are not to be guaged in production tables and machine sheds or at credit rating desks in banks. They are to be more accurately appraised in the political headlines of the nation's press."[2]

TENANCY, MIGRATION AND WELFARE

There is a general consensus among regional economists that the transfer of labor between the farm and non-farm sectors of the South has been the major source of the region's growth in per capita income and its ability to "catch up" with the rest of the nation.[3] Moreover, the convergence of regional incomes may be ranked as the most important achievement of the national economy from the point of view of distributional equity.[4] Given this success it may seem somewhat academic to analyse in detail the process of Southern off-farm migration. However, it is important to recognize that behind the talk of convergence rests a sense of complacency concerning the natural workings of the American economy.[5] Before too much credit is taken (or advice to underdeveloped economies is given), we would do well to analyse the welfare implication of the South's transformation. The question posed here is not whether that transformation was "necessary," but whether the human costs of industrialization were unnecessarily high.[6]

The bulk of the economic literature concerned with off-farm migration in the United States has used as its prototype the "pull model of migration.[7] This traditional formulation of the problem generally has been based on an equilibrium assumption such as the following: the agricultural population transfers to industrial pursuits up to the point where the return in industry is equal to the return in agriculture (or some "equilibrium" multiple of that figure.)[8] As pointed out by Schultz and more recently by Todaro this type of model, if it is to be realistic, must be modified to include the high sensitivity to unemployment, empirically observed in off-farm migration flows. This emphasis on unemployment, and hence the level of aggregate demand in the industrial sector, suggests that the problem becomes one of modeling the interfact between a "Keynesian" economy with sticky wages and involuntary unemployment and a "traditional" economy which will continue to absorb all the labor that is available.[9]

Theoretical work along the lines suggested above has generally led to a secenerio of development in which the "pull" of the urban-industrial economy over time reduces the agricultural labor force and raises its productivity. This process then leads to a commercialization and rationalization of the agrarian sector. Thus the various models generated by the Lewis school have viewed commercialization as a response to migration, but not a cause.[10]

A model that starts from the institutional relations that govern land ownership can lead to a very different analysis of the migration process. Using as a prototype Marx's analysis of the enclosure movement which preceeded England's industrial revolution, such a theory emphasized the commercialization of agriculture as a process stemming not from the drain of a traditional labor force, but rather from technological and institutional changes and a growing commercial spirit in the land owning class. In particular, if these

technological and institutional changes have favored less labor intensive techniques than traditionally employed, landlords are motivated to push the tenant class off the land.

To reopen a traditional argument concerning the importance of the English enclosure movement can serve little purpose here. Yet much of the controversy over that issue stands as a warning. T. S. Ashton has perhaps best summarized the dangers of a push model of migration. With reference to the move off English farms, Ashton writes, "in so far as people left for the towns, the relatively high wages paid there are sufficient explanation of the movement. But the notion that poor men, like rich capitalists, might respond to opportunities of personal gain seems to arouse mental resistance. ..."[11] Ashton points out that this unwillingness to allow that a poor farmer may make calculated economic decisions is carried to "adsurdity" by one "able historian" who suggested that "a combination of circumstances, not the least of which was the higher and steadier wages paid in factories, drove the agricultural spinner, and later the weaver, to forsake his cottage for the factory." (Italics Mr. Ashton's.)

And yet there is a sense in which Ashton has over simplified the argument to the point almost of tautology. In some sense all migration is due to the comparison of alternative possibilities. Short of the forced migration of a slave trade, there are probably few cases in which some element of choice is not exercised by the migrant group. In the same way that classical theory suggests that there will always be a wage rate at which labor can be sold, a potential migrant can always remain where he is. The question is not whether a choice has been made, but rather what has been the potential migrant's point of reference. In particular it seems reasonable to distinguish between the case in which migrants move from their accustomed environment and that in which a major institutional change or deterioration of conditions has drastically altered the potential migrant's point of reference.

A recent example of this latter type of situation has been the result of the massive technological changes occuring in the agriculture of the Mississippi Delta. In this area since 1950, the technological possibilities of the cotton picker, and more recently advances in weeding technology, have led to a substantial and discontinuous decline in the demand for labor.[12] This process has resulted in a conversion of an intensive tenant agriculture to a machine oriented corporate agriculture. And yet it could well be argued that those former tenants who moved off the land in this period could if they wished have lowered their wage rates or raised the rents they were willing to pay up to a point competitive with the mechanized agriculture.

While the above may seem a parody of the pull arguments it does point up the importance of major institutional and technological changes to the process of migration. While such changes are not instantaneous in time, they tend to alter dramatically the options available to the individuals involved. It is this type of drastic change in options that seems fittingly labelled a push force. Moreover the correlation of opportunities elsewhere and off-farm migration does not necessarily imply a causal relation between the two. Indeed, many of the technological and commercializing forces that lie behind a push off the land may originate in the same complex of "modernization and industrialization" that produces non-agricultural employment.

The above discussion suggests that not only should pull forces on the farm population of the South tend to create a highly elastic supply of labor for the non-farm economy, but also that this supply might be significantly augmented as the result of major push forces. Both hypotheses are interesting in their

own right. However, to the extent that movement originating in the latter manner would not necessarily be well correlated with the "needs" of the non-farm sector, it becomes interesting to determine the relative importance of the two types of movement.

In approaching this set of questions, it is necessary to develop a quantitative measure of the extensiveness of push forces. In order to define such a measure it seems useful to make a digression into the history of Southern agriculture. Hopefully this digression provides not only a picture of the major institutional and technological changes that have occurred, but also important clues for simplifying these factors in an anlytical model. However, those who prefer equations to history might skip directly to the last section of this paper.

THE FLIGHT OF THE FARMER, THE DEMISE OF THE TENANT

The South since 1920 has been extremely hard pressed to expand its agricultural income base. Yet this difficulty has not meant that the nature of Southern agriculture hasn't changed. Indeed, in the short period between 1940 and 1960 alone there was "a 60% decrease in the total number of man-hours of labor used to produce and harvest the cotton crop of the United States, although the number of bales produced declined only 5%."[13] As several observers of Southern agriculture have pointed out, this recent change has been matched by major changes in the tenure relations of the farm labor force and a vast reorientation of the Southern agricultural output toward products other than cotton. While these recent changes have been most striking they have their roots in a long but somewhat more gradual underlying transformation of the system. To trace this course of Southern agriculture it is necessary to consider the earlier history of the system that emerged after the Civil War.

The agrarian South between the Civil War and World War I was an odd mixture of subsistence farming and agrarian capitalism. On the one hand were the large majority of white farmers who held their own land and raised their modest acreage of a cash crop like cotton or tobacco along with substantial quantities of cereal and food crops. At the other extreme were the large plantations based on a variant of the tenant system in which the landlord or manager exerted a great deal of supervision.[14] Indeed Street has suggested that the advantages of this plantation system "stemmed from the powerful means of institutional control which it afforded rather than from the economies of scale such as are now commonly associated with the process of technological innovation and its tendency to require larger productive units and heavier capital investments."[15]

The plantation agriculture was concentrated in the old cotton belt stretching from South Carolina through the Deep South and spilling over into Texas. The only quantitative description of the extent of the plantation system was gathered in the Census of Agriculture for 1910.[16] Defining an area of 325 counties in the old cotton belt, the Census Bureau enumerated some 39,000 plantations with almost 400,000 tenant operators. These plantations accounted for 32% of all the acreage in the 325 counties and 8% of the farm acreage in the South. While the Mississippi Delta (including parts of Mississippi, Arkansas, Louisiana and Tennessee) was the densest area of plantation development, South Carolina, Georgia and Alabama also had substantial concentrations in their black belt counties.

Between the small holder and the plantation were a substantial number of farm operators who had tenant status, but who were not under the direct supervision of their landlord. Thus the 400,000 plantation tenants in 1910

came to somewhat less than a third of the 1.5 million tenants in the South. In all there were about 3 million farm operators in the region including tenants. In general the plantations were the province of black labor, while the small holders were predominantly white. Both blacks and whites formed the large operator-tenant, class, although the latter predominated.[17]

While the small holders might be free of direct supervision, this hardly established their economic independence. Except for an occassional "good year", this group was in constant economic difficulties. Indeed, the period between 1880 and 1910 had seen the general erosion of the relative importance of the small owner, as tenant operators increased as a share of all operators from 36.2% to 49.6%. The bulk of this increase had come during the 1890's and had fueled the populist movement. However, the 1920's would show another upswing in tenancy so that in 1930 tenants would account for 55.5% of all operators. This rise of tenancy was the direct result of the fact that even if the small farmer held some equity in his land, it was unlikely that he was not in serious debt. This debt, which was similar to that of free tenants, took the form over and above any mortgage, of a lien on the cash crop held by a local merchant. The merchants were in turn the debtors of cotton factors and ultimately of larger banks.[18]

This system of credit has long been blamed for reinforcing the already strong specialization in cash crops in the South. Indeed, between 1880 and 1910 cotton acreage in the well settled South Atlantic region increased from 5.2 million acres to 9.0 million acres without increasing the total land in farms.[19] W. J. Cash has described this intensification of the cotton culture as the "calling into use of those lands which in the antebellum South had been adjudged as of no worth for the growing of the fiber; the progressive passage of the culture into the fringes, the contained areas, and the upland borders of the original plantation country; the lands that is, of yeoman farmers and to a large extent, of the poor whites."[20]

At the same time there was significant expansion of Southern agriculture into the western lands of Texas. Between 1880 and 1910 the West South Central region increased its cotton acreage from 4.1 million acres to 15.0 million acres. In the same period the share of operators in the West Central region who were tenants increased from 35.2% to 52.8%. The latter figure was the highest for any area of the country in 1910.[21]

The upshot of this expansion of cotton and tenancy was that by 1910 there existed in the South a dependence on a precarious credit system, strongly tied to a few cash crops. In that year cotton accounted for 43% of the value of all crops grown in the region. Another 7% was bound up in the production of tobacco, sugar and rice. While the high cotton prices brought on by World War I seemed to ratify this expansion, they did little to reverse the basic trend toward tenancy. In 1920 tenants still made up 49.6% of all farm operators. Thus in that year there was a large class of the Southern farm population whose relation to the land was dependent on the graces of the class of land owners. The tenuous nature of this arrangement became clear in the slump that struck early in the 1920's.

The relative helplessness of the tenant class in hard times was highlighted by the events in the South Atlantic region after the price debacle of 1921. In this region where cotton and tenancy had moved into marginal lands, the sharp fall in prices would have normally been difficult on the population, but coupled with this was the devastation of the region's crop by the boll weevil. The weevil had been moving east across the country from Texas and Mexico since 1892, but much of its damage had been offset by rising cotton prices. In the South Atlantic region however, the weevil made its appearance at the

same time as the post war depression, producing economic chaos. Rupert Vance clearly describes the result for the tenant class of the region in the following quote:

"The latter's (tenants') chances of employment then depended on the credit situation. At this juncture the failing banks, bankrupt landlords and supply merchants were powerless to check the general economic disorganization. The lowest level of tenants were forced to migrate. Many white farmers found employment comparatively near home in the booming cotton mill villages of the Piedmont; but Negro tenants, pouring out of the Piedmont, Coastal Plains, and Black Belt areas of Alabama, Georgia and South Carolina were virtual refugees, seeking whatever haven they might find with kin and acquaintance who had gone to southern and northern cities."[22]

While this "push" out of agriculture may not have been the first such occurrence in the South, it is the first for which good statistical data is available. The Department of Agriculture's series on off-farm migration (which begins with 1920) shows a pre-World War II high for the South Atlantic region in 1922 with 5% of the farm population moving elsewhere.[23] Between 1920 and 1925 the number of farm operators in the South Atlantic region dropped by 51 thousand. Of this total decline 49 thousand was accounted for by the reduction of the tenant class from 542 thousand to 493 thousand. Moreover tenant acreage in the period fell by almost 16%.

While Southern agriculture stabilized through the 1920's at relatively low levels of per capita income, the early events of the decade were something of a rehearsal of what was to come in later years. In the 30's there would be a renewed and more permanent incentive to push tenant labor off the land. One source of this push, often mentioned in the descriptive accounts of Southern agriculture during the depression, was the set of new government programs of acreage retirement and crop controls. In addition to the simple fact that these programs reduced the demand for labor, provisions for sharing government payments with tenants gave an added incentive to change the status of the labor force to wage workers. Between 1930 and 1940, largely through the efforts of government programs, cotton acreage in the South fell from 40 million acres to 22 million acres. In the black cropper areas of the cotton belt some changes were bound to ensue. With reference to the programs of the Agricutural Adjustment Act (AAA) Myrdal wrote:

"In summary: Landlords have been made to reduce drastically the acreage for their main labor requiring crops. They have been given a large part of the power over the local administration of this program. They have a strong economic incentive to reduce their tenant labor force, a large part of which consists of politically and legally impotent Negroes. Yet they have been asked not to make any such reductions. It would certainly not be compatible with usual human behavior, if this request generally had been fulfilled. Under the circumstances, there is no reason at all to be surprised about the wholesale decline in tenancy. Indeed, it would be surprising if it had not happened."[24]

Norman Thomas was somewhat less charitable in his interpretation:

"Under the operation of the AAA hundreds of thousands... are either being driven out on the roads without hope of absorption into industry or exist without land to cultivate by grace of the landlord in shacks scarcely fit for pigs."[25]

While comments like those above gave currency in the period to a push off the land, the aggregate statistics on tenancy during the period are some-

what difficult to interpret. Both the number of tenants and the number of owners increased into 1935, with the number of tenants falling sharply between that data and 1940. However, when these figures are broken down by either race or geographic areas the picture become more complicated. Thus the number of black tenants (and black owners) fell throughout the period, despite the fact that there could have been little in the way of employment off the farm in the years between 1930 and 1935. Whites on the other hand show the much discussed return to the farm in the beginning of the period. Until 1935 the increase in white tenancy off-set the decrease in black tenancy by a substantial margin. In geographic terms, South Carolina, Georgia, Alabama, Mississippi and Louisiana which accounted for 40% of all tenant operators in 1930 showed a small decrease in the total number of tenants. The major expansion in this period was thus concentrated in the mountain and border areas of the region. Kentucky, Tennessee and West Virginia all showed major gains. Vance points out that the bulk of the early increase in the number of farms was "localized in the poorest mountain areas or on the sandy flats."[26] He adds that many of these new farms were due to the "return of southern migrants working in northern industries."

It would seem reasonable to distinguish between the push exerted on the tenant class of the cotton belt (which was of course predominantly black) and the apparent ease of obtaining employment in less fertile regions (which were largely white.) The interesting question raised by this expansion of the white tenant class is to what extent it implied an expansion of the acreage controlled by tenants; in other words, to what extent the availability of the increased labor supply led to a different set of organizational decisions by landlords. At first glance it would seem that in fact the acreage farmed by tenants increased in the period 1930-1935. However, a closer examination of the figures indicates that this increase was illusory. Most all of the increase can be attributed to increasing acreage in woodlands held by Southern farmers. It is doubtful that this acreage had much meaning to the tenants who supposedly held it. If one focuses on acreage usable for crops, rather than increase one finds a modest decrease.[27] Thus usable tenant acreage did not seem to be affected much in this period by the labor supply conditions. Rather there was an intensification of the land labor ratio in those marginal areas of the hills and border states.

The movement of lands out of tenant agriculture must be understood in the 30's not as a short run adjustment to market conditions (as in the South Atlantic States in the 20's) but rather as an important long run step toward greater commercialization and efficiency in production. Moreover there is no evidence that this process was spurred by the pressure of rising wages. Clearly in the 30's wage conditions were quite favorable. Indeed, the high availability of cheap agricultural labor favored, as did government programs, the transition to a wage labor system. However, labor always had been plentiful. Hence, the major forces in the transition were exogenous to the regional economy. In this respect it is interesting to note that what government programs accomplished in the old cotton belt the exogenous force of technological change brought about in the western portions of the region.

In the Southwest the collapse of produce markets was exacerbated by natural disaster and more crucially by the emergence of mechanization. The dust bowl, like the boll weevil, hit the lower agricultural classes the hardest, since they get caught in the credit crunch that accompanies the crop failure. However, this traditional problem was made more serious by the relatively rapid rate of mechanization in the area. The Southwestern plains traditionally had been better suited to tractor cultivation. Already by 1930 the West South Central region had 14 tractors per thousand farm population

as compared to 8 and 5 per thousand in the East South Central and South Atlantic regions, respectively. During the 30's the difference widened substantially. In 1940 there were 33 tractors per thousand farm population in the West South Central region and still only 9 per thousand in the other two regions. Oklahoma alone had 45,000 tractors in 1940, more than all the tractors in the East South Central region.[28]

Mechanization in the Southwest gave creditors an incentive to consolidate small holdings and create more efficient units of production. In many ways this process foreshadowed the larger impact of mechanization of the cotton picker. The immediate effect was that between 1930 and 1940 the farm population of Texas and Oklahoma fell by almost 300 thousand or about 9%.

While World War II brought high incomes to the farm population, the temporary labor shortage if anything hastened the trend toward reduced tenancy. However, it was the availability of the new technology that utlimately resulted in the major push out of the cotton belt. The mechanization which had first taken hold in the Southwest moved quickly toward the Mississippi Delta. The widening possibilities offered by the cotton picker and developments in weeding technology gave landlords a way of reducing labor costs and more importantly of increasing production. To achieve these gains, however, it was clearly necessary to reorganize the traditional land tenure relations.

In the Mississippi Delta the impact was direct. The area was well suited for the new mechanized agriculture and indeed had been laggardly to introduce such methods before 1950. This was largely due to the abundance of cheap labor. However, cheap labor savings were increasingly unable to offset the potential productivity gains of full mechanization. As Dick Day has shown in his interesting article, "The Economics of Technological Change and the Demise of the Share-cropper,"[29] profit maximizing farm operators in the Delta would have greatly curtailed their demand for labor in the early 50's. In the one year 1950-51, Day's model predicts a fall in the demand for labor of almost 50%. As Day points out the first impact of this shift in techniques was somewhat softened by remaining seasonal peak needs for labor in weeding and harvesting. However the full movement to mechanized picking virtually eliminated the need for unskilled labor. The result was a steady movement toward wage labor, corporate farming and mechanization in the Delta.

The implications of mechanization for the Southeast were somewhat less direct. Here the prospects of mechanized cotton agriculture were far from bright. Acreage restrictions and the basic unsuitability of the terrain mitigated against a continued specialization in cotton. Of all the Southern states only Mississippi, Louisiana and Texas were able to increase their cotton output between 1940 and 1960. Georgia, South Carolina and North Carolina each decreased their production by more than 50%.[30] In these areas the shift to less labor intensive crops was more important than the mechanization of cotton. Again such a shift worked to the disadvantage of tenant labor by favoring larger operator-owned enterprises. In particular this area became increasingly oriented toward the emerging urban markets for food products. This is shown in the sharply increased importance of livestock and poultry as a source of farm income. Thus in 1940 livestock products accounted for 28% of the value of all agricultural products in the South Atlantic region. By 1960 they accounted for 42%. At the same time field crops fell from 56% of the value of all products to 37%. In the latter year cotton accounted for only 6.5% of the value of all products in the South Atlantic area.[31]

A SIMPLE MODEL OF SOUTHERN OFF-FARM MIGRATION

A consideration of the historical record of tenant agriculture in the South suggests that the size of the tenant class has been influenced by the entire range of factors at work on the agriculture in the region. Given this situation, it might be reasonable to dispair of constructing any simple quantitative measure of the push forces at work on the tenant population. Ideally one would like to have information on the full range of technological and organizational possibilities open to landlords and on the changing supply curve of tenant labor as influenced by changes in the non-farm economy.[32] However, for the time period considered here the data for such a model is clearly unavailable.

Given these problems, any measure of the push force chosen will have to involve some compromise. One extreme assumption would be that the entire decline in the size of the tenant class was due to the actions of landlords. Somewhat more defensible would be to compare the rate of decline of tenant and operator-owner farms, ascribing the differences to push forces at work on tenants. This latter approach, however, assumes that in the absence of a push tenants would behave in the same manner as non-tenants. Because of racial and educational differences in the composition of the two classes, this assumption would be difficult to defend. Moreover, any variable which foruses directly on the change in the number of tenants smacks of tautology since the disappearance of a tenant farm is almost by definition equivalent to the net migration of a tenant family.

In an effort to avoid these pitfalls, it is important to focus on the basic behavioral parameters of the Southern agricultural system. Primary among these are the decisions of landlords concerning the organization of their holdings. In particular, landlords have historically had a great deal of freedom in determining the extent of acreage farmed by tenants. Moreover, it has been suggested above that these decisions were at most times independent of the sypply of tenants available. Not only has the "effective wage" of tenants remained extremely low throughout the period under consideration, but also the return to landlords from tenant agriculture has been largely independent of the number of tenants working their land. This latter condition follows from the fact that the share system which dominated most of tenant agriculture, and particularly that segment in the most populous cotton belt areas linked the landlord's return to the net output of the land in a fixed relation. Since agriculture in the region has always been labor intensive, it is likely that the marginal productivity of labor was close to zero at most times in the period. Indeed, the historical record indicates that productivity gains have been generally associated with labor saving innovations of a mechanical nature. Thus it seems reasonable to assert that in most of the period the decisions of landlords concerning tenant acreage have been government by the exogenous changes in technology, government programs and market conditions among the various crops.

On the other side of the market for tenant labor it is important to note that the changes in tenant acreage could only with difficulty be countered by an increase in the number of tenants per acre. In many ways the aggregate acreage in tenant farming cannot be considered a fungible resource from the tenants point of view. In particular, the areas of the cotton belt were geographically separated from those of the rest of the South and most importantly the racial composition of their tenant class was very different from those other areas. While the rate of turnover among tenants in any area had always been high, this exchange had historically been limited in its geographical extent. Moreover, landlords had little interest in dividing their tenant holdings into smaller parcels. Once it became clear that landlords had a

long run interest in reducing their tenant population this aversion must have become even stronger.

Before going on to formalize the above argument, it is important to note some exceptions. Thus in the period between 1930 and 1935 it has already been mentioned that some marginal lands were drawn into tenant agriculture largely as the result of the increased supply of white tenants. More significantly during World War II it is likely that the reduction in tenant acreage was spurred by the labor shortage. In what follows the first of these problems is met by focusing on the extent of "usable" acreage allotted to tenants, while the second is disposed of by the exclusion of the war years from the sample. This latter expedient is further justified by the unusual forces at work on the farm population as a whole.

To operationalize this concept of a push force on the tenant class the variable constructed has the following definition: the yearly change in the usable tenant acreage times the tenant/acreage ratio at the beginning of the year divided by the total farm population for the South. The tenant acreage ratio is included to give some feeling for the number of tenants who would hypothetically be displaced by the withdrawal of an acre of tenant land. This is important since in the later portion of the period the tenant acreage ratio begins to decrease rapidly with the voluntary movement of tenants off the land. To exclude this parameter would be to overstate the importance of acreage reductions in this latter period. However, it should be noted that since this parameter is an average for the entire region it may understate the full impact of tenant acreage reduction in densely populated areas such as the Mississippi Delta. Finally it should be noted that the variable is based on the five year Census of Agriculture reports on tenant operators and tenant acreage. Thus the yearly estimates are in fact five year averages of the variable, which takes the form, then, of a step function.

To summarize, the variable described above has the advantage of representing the effects of both technological and other exogenous changes as they affected tenant agriculture through landlord decisions. Unfortunately, it is unable to distinguish clearly between these sources of change. Moreover, in some isolated periods it probably confuses tenant acreage reductions which were spurred by temporary labor shortages. On the other hand it clearly excludes those changes in marginal acreage that have been more closely linked to labor supply factors. The extent to which such lands have been available is more reasonably viewed as the result of the slackening of voluntary migration, especially in the hill and piney woods areas, and not as an underlying factor affecting the level of off-farm migration. Table I presents the number of tenants for census years and the usable acreage which

TABLE I. NUMBER OF TENANTS, "USABLE" TENANT ACREAGE AND FIVE YEAR CHANGES IN "USABLE" TENANT ACREAGE TIMES THE TENANT/ACREAGE RATIO OF THE BASE YEAR--

Year	Tenants (thousand)	"Usable Acreage" (thousand)	Five Year Change In "Usable" Acreage X Tenants/Acre (thousand of tenants)
1920	1,591	64,030	
1925	1,601	68,670	+115
1930	1,791	76,440	+181
1935	1,831	74,690	- 41
1940	1,449	68,130	-161

TABLE I. NUMBER OF TENANTS, "USABLE" TENANT ACREAGE AND FIVE YEAR CHANGES IN "USABLE" TENANT ACREAGE TIMES THE TENANT/ACREAGE RATIO OF THE BASE YEAR--

Year	Tenants (thousand)	"Usable Acreage" (thousand)	Five Year Change In "Usable Acreage X Tenants/Acre (thousand of tenants)
1945	1,165	49,060	-406
1950	905	42,490	-156
1955	681	33,410	-193
1960	366	23,560	-201
1965	254	18,400	- 80

Source: U.S. Censuses of Agriculture, 1920-1964.

they farmed. Also included in the table are the five year changes in tenant acreage times the tenant/acreage ratio.

The problem posed by an empirical analysis of off-farm migration in the South is one of synthesizing the historical record in a way that does not distort that process beyond recognition. Up to this point emphasis has been focused on developing a measure of the push force exerted largely on the tenant population. However the most often mentioned influence on off-farm migration has been the level of business activity. As discussed above much of the argument for pull models is based on the cyclical sensitivity of off-farm movement.

The importance of these factors in the South should not be underestimated. Thus the simple correlation of Southern off-farm migration rates and the national unemployment rate for the period 1920-63 was 0.60.[33]

Taking this observation as a starting point, leads to a straight forward analysis of off-farm migration similar in nature to the work of Larry Sjaastad and C. E. Bishop in their articles in Labor Mobility and Population in Agriculture.[34] The technique used by them and followed below is simply to regress off-farm net migration rates on the unemployment rate. Thus in Equation 1, net off-farm migration for the South (M) is regressed on the employment rate (E) for the years 1920-1940, 1947-1963, with a dummy variable for the Korean War years 1950-1953, (K).[35]

$$1) \quad M = -7.03 + 0.12E + 3.54K \qquad R^2 = 0.50$$
$$\qquad\qquad\quad (3.96) \quad (3.51) \qquad \text{D. W.} = 1.14$$

The pull theory outlined above clearly suggests that off-farm movements should also be responsive to changes in relative levels of income. In line with Sjaastad's work, the ratio of per capita farm income to non-farm income in the South (Y) was added to the above equation. However the result of this addition is that (Y) enters the equation with the unexpected positive sign, implying that the net off-farm migration rate in the South actually rises when farm incomes increase relative to non-farm incomes in the region. Moreover, as Sjaastad also points out, the simple correlation between (M) and (Y) is quite significantly positive. In efforts to include this variable in the model, several alternative formulations were tried. While these attempts do not appreciably affect the explanatory power of the model, they do allow the retention of classical equilibrium concepts in the analysis of off-farm migration. A full description of these somewhat "forced" models is available from the author. The problem with such efforts is that relative income measures are generally very sensitive to the business cycle themselves. In periods of

high unemployment agricultural incomes are likely to fall much faster than non-agricultural incomes because of the relative "pureness" of the competition in agricultural commodities and the low price elasticities of these products. The non-farm economy on the other hand is characterized by stickyness of wages and prices. This suggests that in general any influence of changes in the relative income level have been washed out by changes in the availability of off-farm employment. Such a formulation is in keeping with the view that a labor surplus has existed perennially in Southern agriculture. The absolute magnitude of the relative income differential should be expected to have little effect if the major process under consideration is the rate at which the non-farm sector can absorb the farm labor force.

While relative income levels fail to affect substantially the flow of off-farm migrants, the push variable described above is quite significant. In Equation 2 the push variable (A) is added to the above formulation.

$$2) \quad M = -8.57 + 0.13E - 4.33A + 2.61K \qquad R^2 = 0.66$$
$$(5.13) \quad (4.06) \quad (3.01) \qquad D.W. = 1.83$$

The results suggest that for every tenant operator displaced by this mechanism 4.33 persons migrated out of agriculture. On average, these figures translate into almost a 1% increase in off-farm migration per year. In 1935 this would correspond to about 160 thousand off-farm migrants, while in 1960 it would correspond to a little over 70 thousand off-farm migrants. In other words, at the point of means, Equation 2 ascribes almost a fourth of all Southern off-farm migration to the push forces involved in the (A) variable.

The above analysis in no way implies that the economy of the South and the per capita incomes of the individuals involved have not benefitted from the reallocation of labor from tenant agriculture to non-agricultural labor. However, for those tenants pushed off their land, the welfare implications of the transformation have to be calculated with the stresses of the move from rural tenant to urban dweller (or ghetto dweller) in mind. Rather than producing the comfortable picture of the yeoman farmer seeking his fortunes in the urban world, such a calculation may be more reminiscent of Marx's description of the plight of the lower English agricultural classes after the enclosure movement. It would seem that a nation as rich as this one could manage a more human mechanism for improving its resource allocation.

FOOTNOTES

[1]This article is essentially Chapter 2 of my thesis, Industrialization and Urban Growth in the Southern United States. Thus it owes a debt of thanks to John F. Kain who served as my thesis supervisor and the Economic Development Administration project No. OER215-G-67-6 of the National Bureau of Economic Research which financed it.

[2]Thomas D. Clark, The Emerging South (2nd edition), (1968).

[3]For example see Harvey Perloff et. al., Regions, Resources and Economic Growth, (1960).

[4]Thus in comparison to black-white income relatives or the shape of the income distribution as a whole, the South-North income convergence is quite impressive.

[5]Again check the tone of Perloff et. al. For a more sceptical view, still couched in terms of "classical" theory, see George H. Borts, "The Equalization of Returns and Regional Economic Growth," American Economic Review, Vol. 50, No. 3 (June, 1960).

[6]This emphasis on the "larger" efficiency of the system has been motvated largely by the work of Baran and other Marxist writers. For a discussion of the difference between efficiency in the small and efficiency in the large, see Baran's essay "Economics of Two Worlds," in The Longer View, (1969).

[7]Of particular interest to the work in this chapter are the essays by Larry Sjaastad and C.E. Bishop in Labor Mobility and Population in Agriculture, (1961). Dale Hathaway in his volume Government and Agriculture, (1963) also uses a pull formulation, while almost all of the cross-sectional studies discussed below are implicitly based on this type of theory.

[8]Sjaastad, (1961), p. 18.

[9]T. W. Schultz, Agriculture in an Unstable Economy (1945); Michael P. Todaro, "A Model of Labor Migration and Urban Unemployment in Less Developed Countries," American Economic Review, Vol. LIX, No. 1, (March, 1969).

[10]For an example see Arthur Lewis, "Economic Development with Unlimited Supplies of Labor" reprinted in A.N. Agarwala and S.P. Singh, The Economics of Underdevelopment, (1963). Also see the more recent work of John Fei and Gustav Ranis, "Agriculture in the Open Economy," in Erik Thorbecke, The Role of Agriculture in Economic Development, (1969).

[11]T.S. Ashton, An Economic History of England: The 18th Century, (1955), Ch. 2, p. 147.

[12]Joseph Persky, "Economic Change and Migration from the State of Mississippi," (unpublished), (1966), p. 17-26.

[13]Maddox, et. al., (1967) p. 66.

[14]See the discussion of the relation of tenant and landlord on the plantation in the Thirteenth Census of the U.S., 1910, Vol. V, Agriculture, (1913), U.S. Bureau of the Census, Ch. XII, "Plantations in the South." This discussion concludes that "beyond question, However, in most instances the plantations for which statistics are hereafter presented are those on which very considerable supervision is exercised over the tenants and on which the position of the tenants is in many respects not far different from that of hired laborers," p. 879. For a more sociological study of the Southern plantation in this and subsequent years see Arthur F. Raper, Preface to Peasantry: A Tale of Two Black Belt Countries (1936) and T. J. Woofter, Jr., et. al., Landlord and Tenant on the Cotton Plantation (1936).

[15]Street, (1957) p. 11.

[16]Thirteenth Census, Vol. V, Ch. XII.

[17]This pattern was not immediately adopted after the Civil War, but followed a period of some experimentation with white plantation labor.

[18]C. Vann Woodward, Origins in the New South, (1951), p. 184.

[19]Thirteenth Census, Vol. V, Ch. IX, "Individual Crops."

[20]W. J. Cash, (1941), p. 151.

[21]Thirteenth Census, Vol. V, Ch. IX.

[22]Rupert Vance, "The Old Cotton Belt," in Carter Goodrich et. al., Migration and Economic Opportunity, (1936), p. 137.

[23]These statistics are presented in "Farm Population Estimates for 1910-1962," ERS-130 Economic Research Service, U.S. Department of Agriculture, (October, 1963) and later issues of this series. The estimates are based on questionnaire responses which are used in conjunction with the various Censuses of Population. In 1962 a major revision of the series attempted to gain a consistent operational definition of farm population for the period since 1920. The publication carries the warning that "In view of the relatively high sampling error associated with national farm population figures and the even larger degree of approximation inherent in the regional, divisional and state figures and in some of the revision procedures, it is stressed that year-to-year changes in farm population and its components cannot be interpreted literally," p. 2. The figures quoted throughout this section represent weighted moving averages of two years in an attempt to reconcile the Department's April to April year with the calendar year used in measuring income and unemployment.

[24]Myrdal, et. al., (1959), p. 258.

[25]As quoted by Tindall, (1967), p. 414.

[26]Vance, (1936), p. 147.

[27]As defined here "usable acreage" consists of all acreage either in crops or in pasture land which is usable for crops. In constructing this series there was substantial difficulty in reconciling the various definitional discrepencies if the Censuses of Agriculture. It might well have been preferable to include pasture lands which were not usable for crops in the definition since they are

obviously important to farm income, and especially so in the western portions of the region. However, the data on all pasture land is extremely difficult to standardize over time and this attempt was given up. As implied in the text the major correction to be made to the "all land in farms" series was to adjust for changes in woodlands. From the crude calculations made for a series which included all pasture land (not just that usable for crops) there did not seem to be much difference in the direction of changes from that series finally adopted here. For an idea of the problems involved in creating consistent series see the Census of Agriculture, 1959, Vol. II, U.S. Bureau of the Census, (1962), p. 25.

[28]Sixteenth Census of the U.S., 1940, Agriculture, Vol. III, U.S. Bureau of the Census, (1943), p. 513. In line with these statistics it is not surprising that in 1939 42% of Oklahoma and Texas cotton acreage was planted by tractors and 40% of the cultivation was done with tractors as opposed to 2% for each of these operations in the Southeast and only slightly higher percentages in the states of the Middle South. Another aspect of the mechanization of cotton production in Oklahoma and Texas was the custom of harvesting cotton by "hand snapping" as opposed to "hand picking." In the former process much less care is taken to separate the cotton fiber from the plant and thus allows a less labor intensive collection of the crop and implies higher ginning costs. In 1946, 49% of the crop in Oklahoma and Texas was harvested in this manner as opposed to 0.6% in the Southeast and 9.1% in the Mid-South. See Farm Production Practices, Costs and Returns, Bureau of Agricultural Economics, U.S. Department of Agriculture, (October, 1949), p. 60.

[29]Dick Day, "The Economics of Technological Change and the Demise of the Sharecropper," American Economic Review, Vol. LVII, No. 3 (June, 1967).

[30]Maddox, et. al. (1967), p. 66.

[31]These figures are computed for Sixteenth Census, Agriculture, Vol. III, (1943) and U.S. Census of Agriculture, 1959, U.S. Bureau of the Census (1961).

[32]Such a study for the entire South might well take the linear programming approach of Day and apply it to landlords in areas outside the Delta.

[33]Unemployment rates refer to the nation as a whole and are based on the non-agricultural labor force. The rates are taken from Stanley Lebergott.

[34]Iowa State University Center for Agricultural and Economic Adjustment, Labor Mobility and Population in Agriculture, (1961).

[35]In what follows the dummy variable, K, while substantially increasing the R^2 does not seriously alter any of the equations. The variable (E) is simply equal to (100 - U) where U is the unemployment rate of the non-farm sector. It should be noted that Sjaastad points out the advantages of disagregating the data by region and reports to have done so, but does not give his equation.