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Historical Analysis of Timber Dependency in Alabama

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ABSTRACT Almost every part of Alabama is heavily forested and by most standards the forest products industry is the state's leading industry. A significant portion of the total employment and the majority of the manufacturing employment of these counties are in forest product enterprises, criteria used here to define timber dependent counties. This paper will use the historical demographic, economic and agricultural census data to trace the development of timber dependency in rural counties in Alabama. Understanding the social and land use history is critical in examining timber dependency in Alabama today. Conclusions will be drawn between rural and timber dependent and non-timber dependent counties.

The forest products industry is, by most standards, Alabama's leading economic enterprise. Virtually the entire state is forested and is involved in the forest products sector of the economy, and the economies of a number of rural counties are dominated by the industry. A large proportion of the total employment and almost all of the manufacturing employment of these counties are in forest product enterprises. Using the conventional definition, these counties are timber dependent. Furthermore, these counties, as a group, are the most economically disadvantaged counties in the state.

This paper employs historical population, economic and agricultural census data to document the development of timber dependency in Alabama. The major finding is that timber dependency, which is concentrated in the rural "Black Belt"
counties of Alabama, evolved from the cotton plantation economy and social structure of the 19th century. The plantation economy, with its slavery, gave way to tenant farming. As tenant farming and cotton became unprofitable, the land was returned to forests and the forest products industry grew, coming to dominate in the economies of the "Black Belt." Understanding the social and land use history of these counties is critical to explaining current conditions and relationships.

The forest products industry is, by most standards, Alabama's leading industry. It is the state's largest industrial sector as measured by number of businesses, payrolls, value added, and value of shipped goods, and is second only to the textile industry in the number of workers it employs. Jobs in the woods, the mill, or in related businesses are the mainstay for many communities, providing not only employment, but also the income necessary to drive local economies (Bliss and Muehlenfield 1991). Without the forest products industry, many Alabama communities would not survive economically.

While virtually every part of the state is heavily forested, containing the resource base necessary for forests product industries, only about one third of the counties are presently timber dependent, i.e., economically dependent on these industries. This paper employs historical population and agricultural census data to shed light on the development of timber dependency in Alabama. It compares historical data for timber dependent counties with data for non-timber dependent counties in Alabama. Looking at historical statistical data, what were the similarities and differences in historical development between the timber dependent areas of the state and the non-timber dependent areas?

The Growth of the Forest Products Industries in Alabama

The current leading role of the forest products industry in the state is a recent development, occurring principally during the last few decades. The resource base, the current forests of Alabama and the South are referred to as the "Second Forests." This acknowledges the fact that there was an earlier period in Alabama history when the current forest industries played a key role in the economy.
Figure 1. Cotton Production for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1919-1997.

Figure 2. Area of Cotton Harvested and Area in Forest, Alabama 1860-2000.

In the nineteenth century, when the virgin forests of the North were cut, much of the lumbering industry relocated in the South where there was a large supply of uncut timber. In the last half of the century, sawmilling was the South's major industry (USDA Forest Service 1988:35). The regional timber industry was dominated by lumber and naval stores--turpentine and rosin. Like the agricultural plantation system, the forest industry of the first half of the nineteenth century used slave labor. Later poor rural whites and blacks were employed, frequently under conditions of peonage (Jensen 1945; Daniel 1972). More often than not, whites held supervisory and skilled positions (Flynt 1989:151). Lumber company mill towns were built (Flynt 1989; Walker 1991).

The forest industry of the nineteenth century was predicated on the availability of the region's large old-growth timber. As this resource was depleted, the mills moved on to new sources of supply, including the Pacific Northwest. Many of the lumber mill towns of the state and region were deserted (USDA Forest Service 1988:35). The cleared forestlands became agricultural lands.

In the latter part of the nineteenth century, as the supply of virgin timber was being depleted, cotton production increased rapidly. Figure 1 shows the number of acres in cotton more than doubling in the latter half of the nineteenth century. Cotton replaced timber as the dominant industry of the state. The supremacy of cotton continued until the 1920s when the region was infested with the boll weevil. This insect dramatically reduced the importance of cotton to the economy of the state, and may well have set the stage for the reemergence of the primacy of the timber industry.

Figure 2 contains limited data for both area in cotton and area in forest. The chart is certainly consistent with the argument that forests replaced cotton fields. Between 1940 and 1990, approximately one million acres of the state were taken out of cotton and the forests of the state increased by about the same area. It should be noted that most of the "new" forested areas were not the result of intentional "tree farming." Rather, they were the result of natural regeneration of abandoned fields.

In addition to the increasing supply of forests in the region, technological developments in recent years made it possible to use southern pine in the manufacture of an array of wood products,
including plywood, waferboard, oriented strand board and other reconstituted wood products (USDA Forest Service 1988:75).

In this century, the pulp and paper industry has grown to dominate the forest products industry in the South, which in turn is the largest manufacturing industry in the region (USDA Forest Service 1988:27-29). The paper industry started moving south in the 1920s in response to four primary factors (Flick 1985 and Oden 1973):

1. Technological developments in paper making that showed southern pines could be used to make brown papers and newsprint;
2. A U.S. Forest Service forest survey in the early 1930s showing an enormous supply of pine;
3. Changes in packaging leading to rapid growth in demand for paper packaging;
4. Existing abundant water, cheap labor, and transportation systems throughout the South.

Twenty-two of the 31 pulp and paper mills in Alabama were built after 1960 (Alabama Development Office 1994). Furthermore, the trend in southern forest utilization has been away from a reliance on large, old-growth timber to utilization of small diameter trees, both hardwood and softwood. On the whole, sawmills have been replaced by a relatively few, high volume, more technologically complex manufacturing facilities, requiring much less labor than previous technology.

Accompanying each technological change have been changes in requirements for raw materials, capital, and the amount and type of labor. The development of secondary manufacturing capacity in the southern forest products sector lags that found elsewhere in the United States (Teeter, Alward and Flick 1989). Recent technological developments in timber harvesting, loading, and transporting equipment have fueled a trend toward capital intensive, high volume, mechanized harvesting operations. Unmechanized labor intensive enterprises are on the decline in the forest industry of the region (Bliss and Flick 1991). This "new" forest products industry, with the highly-automated pulp and paper industry at its core, has produced limited employment opportunities.
Timber Dependent and Non-Timber Dependent Areas of Alabama

Machlis and Force (1988:225) note that while timber dependency has been measured in a number of different ways, economic measures dominate the literature. This research effort uses the proportion of employment in timber-based industries as an indicator of timber dependency. Areas (counties) that had high levels of forest-based employment were characterized as timber dependent and those with relatively low levels of forest-based employment were characterized as non-timber dependent. The Bureau of the Census' Standard Industry Codes (SIC) was employed. The smallest geographical unit for which these data are available is the county. While it can effectively be argued that the typical county is not what most community researchers have in mind when they write about "community," the unit is small enough that it can provide insights and clues into the phenomenon of timber dependency or other resource-based dependency at that level. The Bureau of Census' County Business Patterns 1995 & 1996--CD ROM Version (U.S. Dept. of Commerce, Bureau of the Census 1995 & 1996) is the source of data. This data set reports business employment and is the most comprehensive employment data set for U.S. counties. It does not report non-business employment.

There are four SIC codes that are related to forestry: 0800 Forestry, 24-- Lumber and Logging, 25-- Furniture and 26-- Pulp and Paper.

Since the employment patterns in urban areas are more complex than in rural areas, only rural areas were considered, counties with more than 50 percent rural population. Few urban areas are actually timber dependent. Counties with 25 percent or more of their manufacturing employment in forest-based industries were defined as timber dependent and those with less than 7.5 percent of manufacturing employment in forest-based industries were considered non-timber dependent.

Table 1 presents a summary of these data for the two areas in Alabama using 1996 County Business Patterns data (U.S. Dept. of Commerce, Bureau of the Census 1995 & 1996). In 1996, in the timber dependent counties, 23 percent of total business employment and 54 percent of manufacturing employment were in forest-based
Figure 3a. Alabama Timber Dependent and Non-Timber Dependent Counties, 1990.
Figure 3b. Alabama Timber Dependent and Non-Timber Dependent Counties, 1996.
counties. However, this difference does not appear to explain why the pulp and paper industry located where it did. The authors computed a correlation between the percent of the county forested and the percent of business and manufacturing employment in the forest based industries. The $R^2$ was only .05, indicating that only five percent of the variation in forest-based employment can be explained by variation in proportion of the county that is forested. Availability of trees may be a necessary condition for the location of forest-products industry, but it is not sufficient to explain its location.

Socioeconomic Characteristics of Timber Dependent Communities

A major theme in the research dealing with timber dependency has been the relationship between timber dependency and community well-being (e.g., Kusel and Fortmann 1991; Kusel 1991; Bliss, Howze, Teeter and Bailey 1993; Overdevest 1992). Community well-being is typically defined in terms of a set of social indicators--socioeconomic, demographic, health, educational, etc. variables. While the results are far from uniform, they have, in general, shown a negative relationship between the level of timber dependency and community well-being. The relationship certainly holds for Alabama, where non-timber dependent rural counties have higher scores on indicators of community well-being than timber dependent counties. Table 2 contains a summary comparison of the timber dependent areas and non-timber dependent areas on several important measures of community well-being using the timber dependent and non-timber dependent counties from the 1996 County Business Patterns Data (U. S. Dept.of Commerce, Bureau of the Census 1995 & 1996).

Alabama's timber dependent counties exhibit the social problems common to the most impoverished rural areas elsewhere in the United States—unemployment and under-employment, high levels of poverty, declining populations and poor health care. The majority of the timber dependent counties are located in the “Black Belt.” These counties are slow growth, stagnating, or declining industries with low wages and little upward occupational mobility, especially for women and blacks (Marshall 1988:x). In addition,
Table 2. Measures of Socioeconomic Well-Being: 24 High Forest-Based Employment Rural Counties Compared with 5 Low Forest-Based Employment Rural Counties in Alabama.

<table>
<thead>
<tr>
<th>DEMOGRAPHIC VARIABLES</th>
<th>Low Forest-Based Employment</th>
<th>High Forest-Based Employment</th>
<th>t-test</th>
<th>1-tail Level of Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Change in Population, 1990-2000 (1)</td>
<td>11.38</td>
<td>3.96</td>
<td>-2.466</td>
<td>0.010</td>
</tr>
<tr>
<td>Net Migration Estimate, 1990-1998 (1)</td>
<td>7.00</td>
<td>0.79</td>
<td>-2.471</td>
<td>0.010</td>
</tr>
<tr>
<td>Percent African American, 1998 (1)</td>
<td>18.92</td>
<td>35.27</td>
<td>1.384</td>
<td>0.100</td>
</tr>
<tr>
<td>Sex Ratio, 1994 (5)</td>
<td>94.32</td>
<td>91.46</td>
<td>-1.686</td>
<td>0.050</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOCIOECONOMIC VARIABLES</th>
<th>Low Forest-Based Employment</th>
<th>High Forest-Based Employment</th>
<th>t-test</th>
<th>1-tail Level of Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Population &lt; 18 and &gt; 65 Years, 1998 (1)</td>
<td>39.22</td>
<td>41.25</td>
<td>1.736</td>
<td>0.050</td>
</tr>
<tr>
<td>Per Capita Personal Income, 1997 (1)</td>
<td>$17,184</td>
<td>$16,618</td>
<td>-0.679</td>
<td>NS</td>
</tr>
<tr>
<td>Median Household Income, 1995 (1)</td>
<td>$25,608</td>
<td>$23,745</td>
<td>1.025</td>
<td>NS</td>
</tr>
<tr>
<td>Percent Persons Below Poverty Level, 1995 (1)</td>
<td>19.62</td>
<td>23.55</td>
<td>0.979</td>
<td>NS</td>
</tr>
<tr>
<td>Average Unemployment Rate, 1998 (1)</td>
<td>5.40</td>
<td>7.53</td>
<td>1.606</td>
<td>0.050</td>
</tr>
<tr>
<td>Percent Persons Receiving Food Stamps, 1998 (2)</td>
<td>10.80</td>
<td>15.76</td>
<td>1.383</td>
<td>0.100</td>
</tr>
<tr>
<td>Percent High School Graduates, 1990 (3)</td>
<td>53.54</td>
<td>54.45</td>
<td>0.5</td>
<td>NS</td>
</tr>
<tr>
<td>Percent College Graduates, 1990 (3)</td>
<td>7.48</td>
<td>8.17</td>
<td>0.72</td>
<td>NS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HEALTH VARIABLES</th>
<th>Low Forest-Based Employment</th>
<th>High Forest-Based Employment</th>
<th>t-test</th>
<th>1-tail Level of Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Mortality Rate, Total Population, 1996-1998 (1)</td>
<td>7.42</td>
<td>9.30</td>
<td>1.187</td>
<td>0.050</td>
</tr>
<tr>
<td>Crude Death Rate, 1998 (1)</td>
<td>12.22</td>
<td>12.04</td>
<td>-0.282</td>
<td>NS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FINANCE VARIABLES</th>
<th>Low Forest-Based Employment</th>
<th>High Forest-Based Employment</th>
<th>t-test</th>
<th>1-tail Level of Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>State and Local Per Pupil Expenditures, FY 1997-1998 (4)</td>
<td>$3,893</td>
<td>$4,149</td>
<td>3.277</td>
<td>0.001</td>
</tr>
<tr>
<td>Per Capital Local Taxes, 1994 (5)</td>
<td>$160</td>
<td>$162</td>
<td>0.065</td>
<td>NS</td>
</tr>
</tbody>
</table>

Sources:
these counties, as Marshall states, have “suffered from grossly inadequate attention to human resource development and the fact that out migration of younger, better educated people has left them with residual populations” (1988:x).

The results presented in Table 2 provide evidence that timber dependent areas differ in important ways from other areas in the state. Mean scores for a number of socioeconomic measures are used in the comparison. Scores for counties with high levels of forest-based employment (greater than 25 percent of manufacturing employment in forest-based industries) are compared with counties with low levels of forest-based employment (less than 7.5 percent of manufacturing employment in forest-based industries).

The data show that timber dependency is related to declining population. While non-timber dependent counties experienced an increase in population of over 60 percent since 1950, the populations in timber dependent counties have declined by an average of 2 percent. The net migration for low timber dependent counties was 7.0, the high timber dependent counties and less than 1.0. The sex ratio (number of males per 100 females) is lower for timber dependent counties, indicating that males are leaving the counties at higher rates than females, suggesting a lack of employment opportunities. African American populations are substantially larger in timber dependent counties than in those with low rates of timber dependency. Population change by race is dealt with in a later section of the paper.

Socioeconomic indicators for the two groups of counties show that timber dependent counties are more economically depressed than non-timber dependent counties. Timber dependent counties have higher proportions of their population below and above the labor force age of 18 to 65, higher unemployment rates, a higher proportion of persons receiving food stamps and lower levels of education than counties with less dependence on the forest industry. The lower levels of education are a result of under-investment in human capital, which puts the area at a future disadvantage in wooing job-creating industries to the area.

Timber dependent counties have higher rates of infant mortality than areas that are less timber dependent, as shown in the table. These findings suggest that the quality of health care in timber dependent communities is lower than in other areas of the state.
Two indicators of public finance are shown. The per student expenditure for public education is almost $250 higher in non-timber dependent counties. Although not significant, the per capital local taxes are only $2 more in timber dependent areas.

In summary, Alabama's timber dependent counties are among her poorest, and suffer from many of the social ills, which attend poverty. This does not necessarily imply that timber dependence causes poverty. Indeed, forest-based economic development may offer the greatest opportunities to improve the economic well-being of Alabama's chronically-poor counties. The poverty existed prior to the recent round of development of forest-based industries. The point can be made that the development of the forest-based economies has done little to improve the overall economic condition of timber dependent areas.

The Development of Timber Dependent Communities

The focus of this paper is an examination of relevant historical data from the Bureau of the Census and other statistical data that might shed light on why some of the rural Alabama counties became timber dependent and others with the natural resource base did not. Specifically, the paper examines demographic changes, changes in agriculture, and employment patterns.

This section of the paper looks at the 18 timber dependent and 13 non-timber dependent counties that were identified using the 1989 County Business Patterns data (U.S. Dept of Commerce, Bureau of the Census 1991). The facts and figures have been updated, but were compiled using the 1989 identified counties.

Demographic Changes

In the United States, rates of population growth are usually good indicators of the economic health of an area. If the economy is bad, residents will emigrate in search of jobs and better economic conditions. If the economy is relative healthy, those seeking a better life will immigrate into the area. An examination of the historical population trends for timber dependent areas and non-timber dependent areas in Alabama show that they have experienced radically different growth patterns. Figure 4 is a chart showing that while...
non-timber dependent areas of the state have experienced sustained population growth at an annual rate of 1.2 percent over the last 130 years, the timber dependent areas have shown very little population growth over the time period and actual loss in recent years.

From 1860 to 1940, the total population of timber dependent counties increased from 304,233 to 470,041. Since that time, there has been a decrease in total population in these counties to a low of 385,351 in 1970. Between 1970 and 1996 the total population increased to 426,122. There are fewer people in the area than there were at the turn of the century.

Interestingly, the trends have been quite different for the white and black populations in the timber dependent areas of Alabama, and this difference is of consequence when discussing the move of these counties toward resource dependency (See Figure 5). In 1860, African Americans were a majority of the population, 170,669 (56 percent) African Americans compared with 133,564 (44 percent) whites. Worth noting is that with the exception of a few hundred residents classified as free, the African American population was slave. The majority of the current timber dependent counties are part of the Alabama Black Belt, which was the center of the state's plantation economy.

After minor decreases between 1860 and 1870, both the African American and white populations increased until 1910. After that date, while the white population continued to increase, there was a steady decline in the black population. By 1996, there were 144,206 (33.8 percent) African Americans in the timber dependent counties of Alabama and 277,888 (65.2 percent) whites. Over the 130-year period, the African American population actually decreased by 15 percent and the white population more than doubled, increasing by 109 percent. It is clear that the timber dependent areas of the state have been less hospitable to African Americans. Unable to make a living in the area, large numbers of blacks have left the area. The migration of rural blacks out of the Black Belt of the South has been well documented in the literature.

Over the last 130 years, the changes in population have been much different for the rural non-timber dependent counties in Alabama. (See Figure 6.) At the beginning of the period, the total population of the non-timber dependent areas was less than half of the total population for the rural timber dependent areas in Alabama,
Figure 4. Population of Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1860-1996.

Figure 5. Population of Timber Dependent Rural Counties in Alabama by Race, 1860-1996.

Figure 6. Population of Non-Timber Dependent Rural Counties in Alabama by Race, 1860-1996.

147,033 compared to 304,233. By 1996, the total population of the rural non-timber dependent area was more than 70 percent higher than for the rural timber dependent areas, 736,950 compared to 426,122.

The total population for the rural non-timber dependent areas more than quadrupled over the last 130 years, from a total population of 147,033 to 736,950. The annual growth rate is about 1.2 percent. This is slightly greater than the rate for the entire state over that period. While this is not high when compared to urban areas, it does indicate that the economies in these counties were strong enough to support sustained population growth.

Unlike the situation in the timber dependent areas, both the African American and white population increased in the non-timber dependent rural counties of Alabama. Over the time period, the African American population more than doubled from 41,066 to 92,297. The white population grew from 106,116 in 1860 to 639,622 in 1996, an increase of more than 500 percent. Obviously, the economies of the area appear to have been much more advantageous to the white population than to the African American population. At the same time, the growth patterns support the conclusion that the economic opportunities for African Americans were relatively better in the non-timber dependent areas than in the timber dependent counties.

Figures 7 and 8 compare African American and white demographic changes for the two areas. While the growth was greater for the non-timber dependent area, the white population in both areas increased. For African Americans, there was a dramatic loss of population in the timber dependent area while the African American population in the non-timber dependent area grew modestly.

The importance of this comparison of the demographic changes between timber dependent and non-timber dependent counties is that the findings provide evidence of the relative changes in the economic well-being of the two areas of the state. At the middle of the last century, the current timber dependent areas of the state had a much larger population than the non-timber dependent areas. This is an indicator of its relative economic importance and economic well-being. Over the 130 year period, the non-timber dependent counties grew at a much faster rate and currently have a
population that is 70 percent higher than the timber dependent counties.

A review of the demographic changes for the two groups of counties provides clear evidence that race and racial policies have been important to the economic development or lack of development of the area. The same policies instituted to maintain segregation—employment practices, housing patterns, school policies, etc—also worked to stifle economic development.

The Demise of Agriculture

Historically Alabama, like most of the United States, has been a rural agricultural state. For most of its history, the majority of its residents have earned their livings from agriculture. In 1860, the vast majority of the residents were employed in agriculture. However, this century has seen the demise of agriculture in the state. By 1996, only about one-third of the state's population was rural and only a fraction of that was involved in agriculture.

As the importance of agriculture has decreased in recent decades, the role of the forest products industry has increased. Figure 2 shows the relationship between the demise of cotton, historically the state's most important crop, and the growth in forested areas. While the data set is not complete, there is strong evidence that there is a direct relationship between the decrease in the role of agriculture in the state and the increase in the forest resources.

A comparison of the historical data related to agriculture for the two areas of Alabama yield some interesting results. Figure 9 shows the number of acres in farms for the timber dependent and non-timber dependent areas of the state for 1860, 1900, 1950, 1987, and 1992. In 1860, the currently high timber dependent counties had 2,450,170 acres in farms compared to half that amount (1,240,920 acres) for non-timber dependent counties. Agriculture was certainly much more extensive in the current timber dependent counties. Forty years later in 1900, both areas had virtually increased by threefold the areas in farms. Between 1900 and 1950, there was a decline in number of acres in farms for the current timber dependent counties while the acres in cultivation in the non-timber dependent counties increased slightly. Since that time, both
Figure 7. White Population of Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1860-1996.

Figure 8. African American Population of Timber Dependent and Non-Timber Dependent Counties in Alabama, 1860-1996.

areas have experienced a decline in the number of acres in farms. In 1987, the non-timber dependent area had about 500,000 more acres in farms than the timber dependent counties. In 1992, the non-timber dependent counties had about 400,000 less acres in farms than the timber dependent counties. Over the 130-year period, the acres in agriculture had actually decreased for the timber dependent counties and has increased by 30 percent for the non-timber dependent counties.

Figure 10 provides data on the number of farms for the two groups of rural counties for the five time periods. In 1860, there were 13,504 farms in the current timber dependent counties compared with 9,887 in the current non-timber dependent counties. By 1900, the number of farms had more than quadrupled for each of the two groups of counties, 61,200 for the timber dependent counties and 41,394 for the non-timber dependent counties. Between 1900 and 1950 the number of farms in the timber dependent counties decreased by about 20 percent to 49,744. At the time, the number of farms in the non-timber dependent area continued to increase. After 1950, there was a rapid decrease in the number of farms in both areas. In 1987, there were 8,443 farms in the rural timber dependent counties of Alabama and 11,974 in the non-timber dependent counties. In 1992, there were 7,125 farms in the rural timber dependent counties of Alabama and 10,748 in the non-timber dependent counties. There were more than six thousand fewer farms in the rural timber dependent counties of Alabama in 1992 than there were in 1860. During the same time period, the number of farms in the rural non-timber dependent areas have increased by more than eight hundred. There are over three thousand more farms in the non-timber dependent counties than in the timber dependent counties.

A final set of historical data related to agriculture concerns the average size of farms. These data are reported in Figure 11. During the entire 130-year period, farms in the current timber dependent counties have on the average been larger than the farms in the non-timber dependent counties. The average farms size for current timber dependent counties in 1860 was 181 acres, and for current non-timber dependent counties 126 acres. Between 1860 and 1900 the average size of farms decreased to 105 acres for current timber dependent counties and 91 acres for non-timber
dependent counties. There was very little change in farm size for the current timber dependent counties between 1900 and 1950. For the non-timber dependent counties the average size decreased to 80 acres during that 50-year period. Between 1950 and 1987, the average size of size of farms in the timber dependent areas increased more than 2.5 times to 267 acres. In the non-timber dependent areas the average size of farms increased about 75 percent to 140 acres during the same time period. Between 1950 and 1992, the average size of size of farms in the timber dependent areas increased more 200 percent to 320 acres. In the non-timber dependent areas the average size of farms increased by 130 percent to 187 acres during the same time period.

The major finding from the historical agricultural data for the two sets of counties is that over the 130-year period, agriculture has become much less important to the current timber dependent counties. The land area in farms has decreased and the number of acres in crops has decreased. At the present time, there are more acres in crops and more farms in the non-timber dependent counties than in the timber dependent counties.

Figure 12 provide data from the last three Censuses of Agriculture on the value of farm sales for the two groups of rural counties (U.S. Dept. of Commerce, Bureau of the Census 1980, 1984, 1990). Interestingly, the value of agricultural products sold is almost twice as high for the non-timber dependent counties than for the group of timber dependent counties for 1978 and 1987, and about 75 percent higher in 1982.

Figure 13 provides sales information for forest products and agricultural products for 1992. Those data indicate that agricultural sales are close to $1 billion for the non-timber dependent rural areas of the state and only $398 million for the timber dependent areas. As would be expected since they are timber dependent counties, the sale of forest products is more than four times higher in the timber dependent area than in the non-timber dependent area. When the two sales figures are combined, the total sales, agricultural and forest products, for the timber dependent portion of the state are only about 70 percent of the sales figures for the rural non-timber dependent area. The agricultural activity which has become dominant in the non-timber rural counties is poultry production.
Figure 10. Number of Farms for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1860, 1900, 1987, 1992.

Thousands of Farms

<table>
<thead>
<tr>
<th>Year</th>
<th>Timber Dependent</th>
<th>Non-Timber Dependent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td>13.5</td>
<td>9.9</td>
</tr>
<tr>
<td>1900</td>
<td>61.2</td>
<td>41.4</td>
</tr>
<tr>
<td>1987</td>
<td>8.4</td>
<td>12.0</td>
</tr>
<tr>
<td>1992</td>
<td>7.1</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Figure 11. Average Size of Farms for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1860, 1900, 1950, 1987, 1992.

Figure 12. Farm Sales for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1977, 1982, 1987

Figure 13. Forest Product and Agricultural Sales for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1992

Employment Patterns

Figure 14 shows business employment patterns by major industry category for the timber dependent and non-timber dependent counties for the current data using 24 timber dependent counties and 5 non-timber dependent counties. The overall employment patterns are not radically different for the two groups of counties. Forty percent of the business employment in timber dependent counties is in manufacturing compared to 50 percent for non-timber dependent counties. Employment in services is 18 percent in timber dependent counties compared to 15 percent in non-timber dependent areas.

The real difference in business employment patterns can be seen when looking at major sub-categories of the manufacturing category. (See Figure 15.) In timber dependent counties, over half (53 percent) of the manufacturing employment is in forest-based industries compared to only 3.4 percent for the non-timber dependent counties. Of the remaining employment in timber dependent counties, 18 percent is in the apparel industries and 22 percent of the business labor force are employed in other industries. In timber dependent counties, there are extremely limited employment opportunities. Often, there are only one or two major employers in the county.

The employment situation is dramatically different in non-timber dependent counties. There appears to be a much wider choice of employment. While textiles and apparel industries are the most important employers, no single industry dominates the job market as in the timber dependent counties.

The point was made earlier that the pulp and paper industry is highly mechanized and automated. While it may have a huge appetite for forest resources, it does not necessarily hire large numbers of workers. It is not a labor-intensive industry. Furthermore, many of the jobs that do exist are highly skilled and personnel from outside the area are often recruited to fill them because of the lack of locally-trained workers. This is a reflection on the low level of human capital investment in education. Employment levels in the non-timber dependent areas are higher and local government makes a greater investment in education.
Figure 15. Manufacturing Employment by Industry for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1996

Figure 16. Ownership of Forest Lands for Timber Dependent and Non-Timber Dependent Rural Counties in Alabama, 1990

Forest Ownership

The final data to be presented is in Figure 16 and is concerned with the differences forest ownership patterns for the two groups of counties. There are two major differences. The forest industry owns 35 percent of the land in the timber dependent counties compared to only 18 percent in the non-timber dependent counties. The reverse is that only 35 percent of the forest lands are owned by individuals in the timber dependent counties compared to almost half (47 percent) in the non-timber dependent counties. This means that a large portion of the land is owned by large absentee industrial concerns. These same concerns often have management agreements with individuals in the counties owning large tracts of land. In Alabama, lobbying efforts have been successful in keeping tax rates on forestlands at a very low rate. This, coupled with tax laws designed to promote industrial development in the state, has resulted in under-funded social services for the counties.

One of the major theories used to explain persistent poverty in resource dependent areas is the existence of alliances of the resource extraction firms and the local elite in the area (Rural Sociological Society, Task Force on Persistent Poverty in America 1992: Chapter 5). They work together to maximize their economic benefits. Because of the economic power of the alliances, these interests often control local government. This results in the under-investment in human capital. The county is operated for the benefit of the resource industry and the local elite.

Conclusion

The timber dependent counties of Alabama have had a long history of demographic and economic decline. At the middle of the century they were among the most populated areas of the state and played a dominant role in the state's agriculture. While other rural areas in the state have prospered, these counties have remained the poorest. While other areas of the state have attracted a variety of industries and new agricultural enterprises, the economies of these counties have remained dormant. Race and racial politics have been important contributors to this situation. For the most part, the forest-based industries have been sited in the old plantation counties of the Black Belt. The absentee forestry industry has joined with
the local elite in control of the economy and politics. This results in the under-funding of investments in education and other human capital investments.

References


Table 1. Percent Forest Based Employment for 24 Timber Dependent and 5 Non-Timber Dependent Rural Counties in Alabama, 1996

<table>
<thead>
<tr>
<th></th>
<th>Timber Dependent Counties</th>
<th>Non-Timber Dependent Counties</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev.</td>
</tr>
<tr>
<td>Forest-Based Employment/Total</td>
<td>23%</td>
<td>0.13</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest-Based Employment/Manufacturing Employment</td>
<td>54%</td>
<td>0.19</td>
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</table>


industries. This is a large proportion of the work force by any definition. In non-timber dependent counties, only 2 percent of the total business employment and 5 percent of the manufacturing employment were in forest-based industries. This subject will be discussed again in a later section of the paper.

Figure 3a is a map of Alabama highlighting the timber dependent and non-timber dependent counties in the state for 1990. Eighteen rural Alabama counties meet the definition of timber dependency and 13 rural counties are non-timber dependent. The timber dependent counties are concentrated in the west central section of the state, the Black Belt of Alabama. The non-timber dependent counties are concentrated in the north eastern section of the state.

Figure 3b is a map of Alabama highlighting the timber dependent and non-timber dependent counties in the state for 1996. Twenty-four rural Alabama counties meet the definition of timber dependency and 5 rural counties are non-timber dependent. The timber dependent counties are concentrated in the west central section of the state, the Black Belt of Alabama.

The question might be raised as to whether the forest products industries are located where they are because that is where the timber resources are located. It should be noted that almost every county in Alabama, especially rural counties, are heavily forested. About 70 percent of the area of timber dependent counties is forested, compared to about 60 percent for non-timber dependent


-----. 1992. USA Counties on CD-ROM: Data Service Division.


-----. 1998. USA Counties on CD-ROM: Data Service Division.


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