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Regional Comparisons of Timber Dependency: The Northwest and the Southeast

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ABSTRACT: We perform a comparison of the timber dependency and socioeconomic characteristics of timber dependent counties for three states in the Northwest region (Idaho, Oregon and Washington) and three states in the Southeast region (Alabama, Georgia and Mississippi) of the United States. The purpose of this research is to examine whether two forested areas of the United States experience timber dependency in similar ways. This research defines timber dependent counties as those with 20 percent or more of the total employment in forest-based industries. Questions related to forest-based employment patterns and socioeconomic correlates of timber dependency are examined. Tests of difference between means are used to determine whether timber dependent counties in the two regions score similarly on measures of community well-being. The results show that there is much variation in the characteristics associated with timber dependency in the timber dependent counties in the Southeast and the Northwest. While timber dependency may be applied to both regions, the phenomena can be quite different.

In the past, studies of timber dependency have focused on the Northwest region of the United States (Kaufman and Kaufman 1990; Machlis and Force 1988; Machlis, Force and Balice 1990). Of course, timber dependency is not limited to the Northwest. In fact, studies have recognized important social and economic patterns related to the concept of timber dependency in the Southeast. Subsequently, social science studies of timber dependency and timber dependent communities in other areas of the United States have begun

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to appear (e.g., Drielsma 1984; Kusel and Fortmann 1991; Kusel 1991; Bliss et al. 1993a, 1993b; Overdevest 1992; Beckley 1993; Zekeri 1993). To varying degrees, these research efforts document the extent and nature of timber dependency and timber dependent communities in other regions of the country.

In the Northwest, the subject of timber dependency has received national attention because of the clash between the timber industry and the environmental movement over the future of old growth forests and the management of forest resources in the Northwest. In the early 1990s, the Clinton Administration convened a conference of opposing interests and issued a new policy that represents a compromise on the issues. Because neither group in the Northwest is happy with the Clinton compromise, one can expect the topic of timber dependency to continue to garner the attention of the press and the American public. The environmentalists argue that the policy falls short of the effort needed to ensure the ecological integrity of the old growth forests while the timber industry asserts that the policy will result in the demise of numerous communities dependent on the forest resources (Howze et al. 1993).

Also in the early 1990s, the Endangered Species Act recognized the Northern Spotted Owl as a threatened species. To aid in the survival of the species, miles of old growth forest were to be left intact to provide a hospitable environment in which the species could live. Less logging in the Pacific Northwest region directly affected communities that were dependent on the resource for economic stability (Dumont 1996).

The major issues addressed by studies of timber dependency in the Northwest are community stability and the sustainability of forest-based industries in the face of dwindling supplies of timber.

In contrast, the entrance of the same timber industry that threatened forest resources in the Northwest posed a threat to the forests of the Southeast. The timber industry entered the Southeast in the early 1900s when through technology innovations it was discovered that Southern pines could be used to make paper products (Bliss et al. 1993b). Unlike much of the timber in the Northwest, Southern pines could be grown faster and began to take on the characteristics of agricultural row cropping. Given the slow growth of hardwood forests in the Northwest, logging began to resemble an extractive industry. Old-growth trees that are harvested in the

Northwest region cannot be replaced in the timeframe that softwoods, like Southern pine, can be. Even the populations of softwoods in the Northwest were not eligible for the forest industry due to the common attitude of environmentalists and others to leave the forests untouched. Thus, researchers believed it is much easier to manage the forests for sustainable yields in the Southeast than in the Northwest (Howze et al. 1993).

Besides technological innovations in the early 1900s, the Southeastern states relied on governmental tax incentive policy in the 1950s and 1960s to draw the timber industry to the area in order to employ the local residents as well as bring new revenue to the local government infrastructure (Howze et al. 1994). While the intention of enticing forest industry was to increase wealth and economic development, the resulting timber dependency issues have locked communities into a boom and bust cycle with limited economic and educational opportunities (Bliss et al. 1993b, Howze et al. 1994, Humphrey 1990, Joshi et al. 2000).

In the Southeastern region of the United States, focus has been primarily on the negative correlates of timber dependency: poverty, lack of economic development and poor community infrastructure. A number of key issues faced in these areas, including out-migration of labor, unsustainable harvesting practices, systemic poverty and racial separation, became apparent.

Although timber dependency is defined in a similar manner in both the Northwestern region of the United States as well as the Southeastern region, the manner in which they suffer from the social and economic pitfalls of the concept is different. In this paper, timber dependent communities in these two regions will be examined for social indicators that tell of the different struggles for communities with similar conflicts.

Measures of Community Well-Being

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 et al. 1993b; Overdevest 1992). Community well-being is typically defined in terms of a set of social indicators: socioeconomic, demographic, health, educational and other such variables. While the

results are far from uniform, a negative relationship between the level of timber dependency and community well-being is shown. Since much of the variation in findings may be due to differences in indicators for timber dependency and community well-being, none of these studies have examined the question of whether the differences in the relationship are due to regional differences.

Some of the differences seen can be evaluated by recognizing the amount of investment in public education in timber dependent areas in the United States. In timber dependent counties in the Southeastern United States, race is an important variable for educational attainment. In her work in timber dependent counties in Alabama, Tamara Walkingstick (1997) noted racial division in the school systems in those counties with high black populations. The white students attended the local private school and the black students attended the local public school. The lack of investment in public education and the consequences of this under-investment can be related to the tax incentive policies of the Southeastern United States that attempt to provide employment opportunities but do not invest in the local education systems (Joshi et al. 2000).

Much of the literature concerning timber dependency and timber dependent communities focuses on community stability (Machlis and Force 1988). For communities dependent on the forest industries, much of this stability is reliant on the availability and sustainability of the forests. This is the major issue facing timber dependent communities in the Northwest but is less of a problem in the Southeast.

When foresting production moved to the Southeast for cheap labor, good transportation resources and water resources, many Northwestern timber dependent communities suffered. Because of the practice of rapid cutting of forest resources over time and the resulting lack of jobs, these Northwestern families were forced to migrate to areas where jobs were available (Galston 1995). Not unique to the Northwest, unemployment is an important issue in timber dependent counties all over the United States.

The political atmosphere of timber dependent areas allows the involvement of local power elites and wealthy outside investors from the timber industry in the future of these communities. Poverty persists where the local power elites fear change in the social

Table 1. Area of Land and Forestland by Owner and Region (a), 1991.

Region	All Land	Forested Lands					
		Forested	Public	Industry	Farmer	Corporate	Individual
Northwest (b) (1,000 acres)	103,976	50,374	23,986	9,956	2,369	4,143	0
Percent		48%	59%	25%	6%	10%	0%
Southeast (1,000 acres)	99,861	63,092	4,725	14,702	13,814	4,290	25,039
Percent		63%	8%	23%	22%	7%	40%

(a) Sources: Donner and Hines 1987; Farrenkopf 1982; Gedney 1982; Kelly and Sims 1989; MacLean, Ohmann and Bassett 1991a & 1991b; MacLean, Ohmann and Yearly 1992; Renewable Resources Evaluation Research Work Unit 1977; Thompson 1989; Vissage and E. Miller 1990.

(b) The data for the Northwest region are for Oregon and Washington. The authors were unable to obtain comparable data for Idaho. The corporate and individual private categories were combined in the Northwest states as 'Other Private'.

structure of their communities, therefore discouraging the entrance of new employment opportunities and monopolizing the local workforce (Sinclair 1994).

Forested Areas and Forest Ownership

There are major regional differences concerning the proportion of the area forested and the ownership patterns for forestlands. These data are presented in Table 1¹. A substantially larger proportion of the area in the Southern states remains forested than in the Northwest, 63 percent compared to 48 percent.

While most of the forests in the Northwest are public lands, forests in the Southeast are largely owned by the private sector. Almost 58 percent of the forest in the Northwest states are public lands including national forests with a few state forests, municipal and county forests. Only 8 percent of the forests in the Southeast states are publicly owned. About one-fourth of the forests in both regions are owned by the forest-products industries, 25 percent in the Northwest and 23 percent in the Southeast. While farmers in the Northwest own only 6 percent of the forests, the Southeast has 22 percent forestland owned by farmers. The largest proportion, 40 percent, of forest individuals who are non-farmers own lands in the Southeast. The figure for the Northwest is combined with corporate together accounting for only 10 percent of the ownership.

Land ownership has consequences for issues related to timber dependency. In the Northwest, where the federal government owns most of the land, controversies pertaining to timber dependency and timber dependent communities often revolve around public policy related to the management of the national forests. It is the environmental activists versus the timber industry, both trying to affect how the government manages national forests. In the Southeast, most forestlands are privately owned and decisions about how the public forests are managed have much less of an impact on timber dependent communities.

¹ The data in Table 1 for the Northwest region are for Oregon and Washington. The authors were unable to obtain comparable data for Idaho.

Sustainable Forests

With the attitudes of the people in the Northwest that discourage logging of the softwood forests in that region as well as the slow growth of hardwood forests, logging takes on some of the characteristics of an extractive industry. Trees, especially old-growth trees that are harvested in the Northwest region are not replaced in the manner of Southern pines. Thus, it is much easier to manage the forests of the Southeast for sustainable yields than those of the Northwest.

Much of the literature concerning timber dependency and timber dependent communities focuses on community stability (Machlis and Force 1988). For communities dependent on forest industries, much of this stability is reliant on the availability and sustainability of the forests. The connection between community well-being and timber dependency has focused attention on problems of sustainable development and the provision of a nurturing and supportive community environment (Beckley and Burkosky 1999). Policy makers have sought to maintain community stability in forest dependent communities by keeping steady flows of timber, which would lead to steady employment (Beckley and Burkosky 1999). If the area is over-harvested, diversity in the surrounding ecosystem is diminished causing long-term effects on future harvesting. Sustainable forest practices are found to be important in keeping continued job placement for local residents (Bliss et al. 1993b).

For the implementation of effective forest policy, sociologists question whether the values of a community must be shared among members, to allow the community to guarantee an outcome that all can agree on. When conservation is left to a community with homogeneous values, natural resources can be managed in a sustainable manner because the members share values of conservation (Gibson and Koontz 1998). Although many people see rural areas as having homogeneous values and beliefs, this is not always the case. Handing over responsibility of natural resources conservation to a community might prove disastrous if members could not agree or if local elites gain control and exploit the resources (Gibson and Koontz 1998). For a timber dependent community to have sustainable forest practices, members must work together for a mutual benefit.

Measure of Timber Dependence

Machlis and Force (1988) note that while timber dependency has been measured in a number of different ways, economic measures dominate the literature. Following this trend, this research utilizes the percent of total employment in forest-based industries. The Bureau of the Census' Standard Industry Codes (SIC) was employed at the smallest geographical unit available for this data, which is the county level. While it can be effectively argued that the typical county is not what most community researchers have in mind when they write about "community", the unit is small enough to provide insights and clues into the phenomenon of timber dependency. For industry data, The Bureau of Census' *County Business Patterns 1996--CD ROM Version* (U.S. Dept. of Commerce 1999a) is the source utilized. There are four SIC codes that are related to forestry: 0800 Forestry, 24-- Lumber and Logging, 25-- Furniture and 26-- Pulp and Paper. Because the sub-category for Furniture contained some industries that were not forest-based, these were eliminated when the measures were calculated.

For purposes of making direct comparisons of timber dependent counties in the two regions, samples of counties with high forest-based employment for the two regions were selected. This research defines timber dependent counties as those with 20 percent or more of the total employment in forest-based industries.

This paper presents a comparison of the timber dependency and socioeconomic characteristics of timber dependent communities for three states in the Northwest region (Idaho, Oregon and Washington) and three states in the Southeast region (Alabama, Georgia and Mississippi) of the United States.

There were 119 counties in the Northwest states and 308 counties in the Southeastern states. There were 17 counties in the Northwest and 46 counties in the Southeast with 20 percent or more of their total employment in forest-based industries. It should be noted that all of these counties are rural, which in this case is defined as being less than half of their populations are classified as urban in the 1990 Census of Population.

In this paper, questions related to forest-based employment patterns and socioeconomic correlates of timber dependency will be examined. The timber dependent areas in the two regions will be

identified and examined for differences in socioeconomic characteristics and community well-being variables.

Comparisons of the Timber Dependent Counties in the Two Regions

The type of analysis in this paper is interregional. Tests of difference between means are used to determine whether timber dependent counties in the two regions score similarly on the measures of community well-being. The measures of community well-being groups into six sub-categories: demographic, economic, health, educational, housing conditions, and government finances. Since the timber dependent counties are rural, a set of agricultural variables has also been included.

The findings for the comparison of the timber dependent counties in the two regions for the measures of community well-being are found in Tables 2 and 3. The general finding is that timber dependent counties in the Southeast have significantly lower scores on the measures of community well-being than timber dependent counties in the Northwest. This will be examined in the rest of this paper.

Demographic Measures

Table 2 contains the findings for the demographic measures. While all of the counties for both regions are rural, the population density for those in the Southeast region is significantly higher than for those in the Northwest, almost 28 persons per square mile compared to 12, respectively. This may be due to the forest ownership patterns seen in the two regions. Since the Northwest region has more government owned forestland, fewer people inhabit the timber dependent areas. The Southeast region is largely private owned causing more people per square mile to inhabit the timber dependent regions studied.

In analyzing change in population, neither the difference in population change nor the difference in percent change in number of households is significant. For both regions, the timber dependent counties, on average, experienced little to no change in population or numbers of households from 1980 to 1986.

Table 2. Regional Comparisons of Selected Community Well-Being Variables for Counties with 20 Percent or Greater Forest-Based Employment (c).

Selected Variables	Northwest		Southeast		t-test
	Mean	s	Mean	s	
Demographic Measures					
Population Density, 1992	12.00	15.96	27.96	13.19	-4.024*
Change in Population, 1980-1992	4.60	11.63	2.78	13.25	0.50
Change in Households 1980-1990	5.45	8.51	10.57	12.22	-1.871
White population, 1990	89.83	7.03	64.39	18.84	5.406***
Sex ratio, 1990	102.33	3.46	91.90	3.99	9.531***
Age Dependent Population, 1990	43.39	1.93	42.92	2.64	0.66
Economic Well-Being Measures					
Per Capita Income, 1990	14,666.24	2,147.22	11,644.61	1,207.14	7.044***
Median Household Income, 1989	23,665.65	2,753.73	18,372.61	3,513.97	5.598***
Persons Below Poverty Level, 1989	14.56	3.96	25.89	8.47	-5.281
Families Below Poverty Level, 1989	10.81	3.22	21.23	7.55	-5.485***
Percent Unemployment, 1990	10.21	3.95	7.92	2.57	2.701**
change Personal Income, 1980-1990	76.37	20.51	97.40	24.17	-3.184**
Educational Attainment Measures, 1990					
Persons 25+ 12 years of education or more	74.83	3.32	55.67	5.23	14.102***
Persons 25+ 16 years of education or more	11.42	1.58	8.40	2.03	5.548***

Sources: (a) U. S. Dept. of Commerce 1994; (b) U.S. Dept. of Commerce 1999b; (c) U.S. Dept. of Commerce 1999a. Note: 17 rural counties in Idaho, Oregon and Washington, 46 rural counties in Alabama, Georgia and Mississippi; Level of significance * p<.05, ** p<.01, *** p<.001.

With regard to race, timber dependent counties in the Southeast, on average, had significantly fewer whites than the counties in the Northwest. The mean percent white for the Southeast was 64, compared with 89 percent for the Northwest counties.

The average sex ratio for timber dependent counties is significantly higher in the Northwest counties than in the counties of the Southeast. While the mean sex ratio for Northwest counties exceeds 100 males per 100 females, there are only 92 males for every hundred females in the Southeast. Generally speaking, a low sex ratio is an indication of a poor economy and high unemployment. Because men are more likely than women to leave an area in order to find employment, areas with high unemployment have more women than men. With the growth of more forestland versus agriculture in the past for the Southeast region, males are not tied to the land and have become more mobile. Women are less mobile due to their responsibilities to raising the children and caring for the aging members of the family. Also in the Southeast region, black men leave the area at a higher proportion than black women believing that the area is not hospitable to them.

Age dependency is considered to be the ages of community members that are either too old or too young to work. This would be the members in the community who are dependent on others for their well-being. In this regional comparison, there was no significant difference between mean rates of age dependency for the two regions. On average, about 42 percent of the populations in the timber dependent counties of the two regions are age dependent.

Economic Measures

Table 2 reports the analysis of the regional differences on economic measures. When timber dependent counties in the two regions are compared on the economic measures, the Northwest counties have significantly higher per capita and median family income and lower percentages of individuals and families below the poverty level. Timber dependent counties in the Northwest are better off economically than those in the Southeast.

Unemployment is slightly higher for timber dependent counties in the Northwest than for timber dependent counties in the Southeast. The mean percent unemployment is 10.2 in the

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Northwest and 7.9 in the Southeast. This may be due to forest management practices in the Northwest versus those in the Southeast. In the Southeast, more sustainable forest practices are adopted that makes forestry jobs more long term. Also, the type of trees grown in the Southeast can be grown faster than the hardwoods in the Northwest.

Health Measures

The data for health measures are presented in Table 3. Of the measured variables, only two were significant - the average rate of births to teen-age mothers and the death rates. The average rate of births to teen-age mothers was 15.28 percent in the Northwest and was considerably higher than that figure in the Southeast at 21.64 percent. The average infant mortality rate and birth rates were not significant. One explanation for differences found for this variable is that more regional hospitals are located in urban areas replacing the local hospitals in rural areas. Since this study looks at rural county-level data, births to rural mothers are included in the statistics for the nearest urban area instead of the rural area because of the inability of the local hospitals to handle routine births.

Educational Attainment

Table 2 shows that on average, timber dependent counties in the Northwest have higher levels of educational attainment at both the high school and college level than timber dependent counties in the Southeast. The average percent of high school and college completion for timber dependent counties in the Northwest are 74.83 percent and 11.42 percent, respectively. The percentages are much lower for timber dependent counties in the Southeast at 55.67 percent and 8.40 percent.

Housing Measures

Only two housing indicators were examined in this data and are shown on Table 3. The mean value of occupied housing units for the Northwest counties was \$48,911. This value is higher than the value of

Table 3. Other Community Well-Being Variables for Counties with 20 Percent or Greater Forest-Based Employment (c).

Selected Variables	Northwest		Southeast		t-test
	Mean	s	Mean	s	
Health Measures					
Births to Mothers under 20, 1988	15.28	4.52	21.64	3.23	-6.195***
Infant Mortality Rate, 1988	11.22	10.98	14.55	12.94	-.942
Births per 1000 Population, 1988	14.05	3.14	14.97	2.29	-1.278
Deaths per 1000 Population, 1988	9.54	1.92	10.93	1.81	-2.662**
Housing Measures					
Change in Number of Housing Units, 1980-1990 (a)	8.11	10.68	11.58	11.40	-1.092
Median Value Owner Occupied Housing Units, 1990 (a)	48,911.76	8,455.61	38,139.13	6,296.05	5.478***
Local Tax Payments					
Per Capita Local Gov't Taxes, 1986-1987 (a)	388.53	178.45	223.67	112.80	4.361***
Per Capita Local Gov't Property Taxes, 1986-1987 (a)	90.92	13.01	71.85	24.03	3.099**
Agricultural Activity Variables					
Farm Earnings 1994 (b)	7,191.76	7,233.88	7,677.67	7,993.17	-.219
Average Size Farm 1992 (b)	1,021.35	1,112.77	303.98	156.07	4.317***
Farms with Sales \$10,000 +, 1992 (b)	45.70	17.57	41.72	17.59	0.80
Farms with Sales \$100,000 +, 1992 (b)	13.87	10.29	14.16	11.72	-.089

Sources: (a) U. S. Dept. of Commerce 1994; (b) U.S. Dept. of Commerce 1999b; (c) U.S. Dept. of Commerce 1999a. Note: 17 rural counties in Idaho, Oregon and Washington 46 rural counties in Alabama, Georgia and Mississippi Level of significance * p<.05, ** p<.01, *** p<.001.

the average occupied unit in the Southeast counties, which was \$38,139. The number of housing units between 1980 and 1990 was not significant.

Local Tax Rates

Table 3 contains the interregional comparison of local and property tax rates. The mean rates for the timber dependent counties of the Northwest are \$388 while the rates for the timber dependent counties of the Southeast are \$223. This is not surprising since income levels for the Northwest counties are much higher than for those in the Southeast. The local government property taxes are significantly higher in the Northwest than in the Southeast for similar reasons, which gives more funding to the schools and other public funding for the area. This may have an affect on the cause for underachievement in the education of Southeastern timber dependent communities.

Agricultural Activity Measures

The interregional comparisons of the agriculture-related statistics for timber dependent counties are found in Table 3. The agricultural operations in the Northwest timber dependent counties are, on average, more than three times larger than those in the Southeast - 1,021 acres compared to 303 acres. Of the agricultural activity variables examined, average farm size is the only variable analyzed that was found to be significant.

Summary and Conclusion

The results show that there is much variation in the characteristics associated with timber dependency in the Southeast and the Northwest. While the term may be applied to both regions, the phenomena of timber dependency can be quite different.

For the Northwest, the major problem associated with timber dependency is the sustainability of timber resources for the wood product industries. When evaluating community well-being variables, timber dependent counties in the Northwest are overall better off than timber dependent counties in the Southeast. The challenge is to devise public policy, forest management strategies and alternative

enterprises that will minimize the negative consequences of mandated environmental policy and that will foster stability in forest dependent communities. Implementation of forest policy relies on consensus of those people affected. Because people do not have homogeneous beliefs on what is best for forest communities, the community must learn to work together for a mutual benefit.

There are certain obstacles to sustainable development in forest communities. Among them is continuous employment for community members, land ownership, timber availability, and uncertainty of timber markets. In rural communities, elites have control over economic development causing complications in local development efforts (Boyle 1999, Logan and Molotch 1987).

In the Southeast, timber dependency problems differ. Timber resources appear to be sustainable, at least for the foreseeable future. Current forest management practices can supply the industry with the raw product needed to sustain the existing forest-based industry jobs. Since forestlands of the Southeastern United States are primarily private owned lands, sustained yield cannot be maintained on all forestlands. Some private landowners abide by Best Management Practices which guide the landowner to keep their land regenerating trees. Other forest management practices, such as sustained yield, are general policies for public lands but cannot be upheld on private owned lands (Drielsma, Miller and Burch 1990). The problem in the Southeast is that timber dependency is associated with negative social and economic indicators. The timber dependent counties are poorer, less educated and more demographically stagnant than other counties that are timber dependent in the United States.

Forest-based industries are important to the region and most certainly will figure prominently in future economic development efforts. Community development options in the region include upgrading the forest products sector so that there is more processing through value-added customs for timber products. This could provide an improvement in the level of rewards for employment in this sector. Public policy should be devoted to improving the socio-economic well-being of timber dependent communities in the Southeast but most importantly the region needs to have a change in social attitude and structure of social system.

In regard to the community well-being variables studied in the paper, the Southeast has seen a pattern of underachievement. In

relation to communities with a high non-white population, the historical neglect of education in these areas creates a pattern of low achievement from which it could be difficult to recover (Sinclair 1994). Tax abatements given to forest-based industries to encourage them to locate in the South have undermined any opportunity to improve funding to public schools (Cobb 1993, Joshi 1997). With the presence of private schools in the Southeast, racial segregation increases causing under-investment from the white members of the communities in the public schools. This affects the other variables in the research in a cyclical manner. Without education, the economic measures of per capita income and median family income are viable because of the low quality of employment available to those without an education. Therefore, local tax rates are low, housing measures are low, and health measures such as births to teen-aged mothers are justified. As a result, improvement in education can lead to improvement in community well-being.

Timber dependency can take more than one form and timber dependent communities are not homogeneous. This paper has documented regional differences related to timber dependency. For research in the future, it would be useful to include other timber dependent regions in the country in order to examine differences in social indicators for relationships in community sustainability around the country.

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