Landownership, Development, and Poverty in Southern Appalachia

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Many Appalachian scholars have argued that the poorly developed social services, lack of economic opportunities, and high rates of poverty in the region can be explained in part by the "colonial" nature of the local economy, and the attendant, highly concentrated control of the region's resources by absentee interests.[1] This paper examines the relationship between landownership patterns and Appalachian economic and social development. Other authors have stressed institutional impediments to both public and private investment associated with absentee and concentrated landownership. I consider, in addition, the impact of landownership on the structure and power of county government and the strength of the local business class, both important features of the economic development process elsewhere in the southern United States. Empirical analysis provides support for the claim that absentee ownership is inversely associated with measures of economic and social well-being; however, concentration of ownership is found to relate positively to these same measures.

Southern Appalachia (fig. 1) is in many respects a unique region in the American southeast. Most notable to local observers is the dominant position of extractive industry in the local economy, primarily coal mining and timbering. Moreover, even allowing for the presence of the mining industry, rural Appalachia has experienced an economic development pattern markedly different from the rest of the rural South. Data generated by the Southern Growth Policies Board (SGPB) reveal that the level of traditional, nondurable manufacturing—until recently, the backbone of twentieth-century southern economic growth—is barely half the average for the rural south.[2] Finally, of course, southern Appalachia remains a poor region of America. The number of families below the poverty level is high, and the availability of social services and the levels of educational attainment remain substantially below the southern (and

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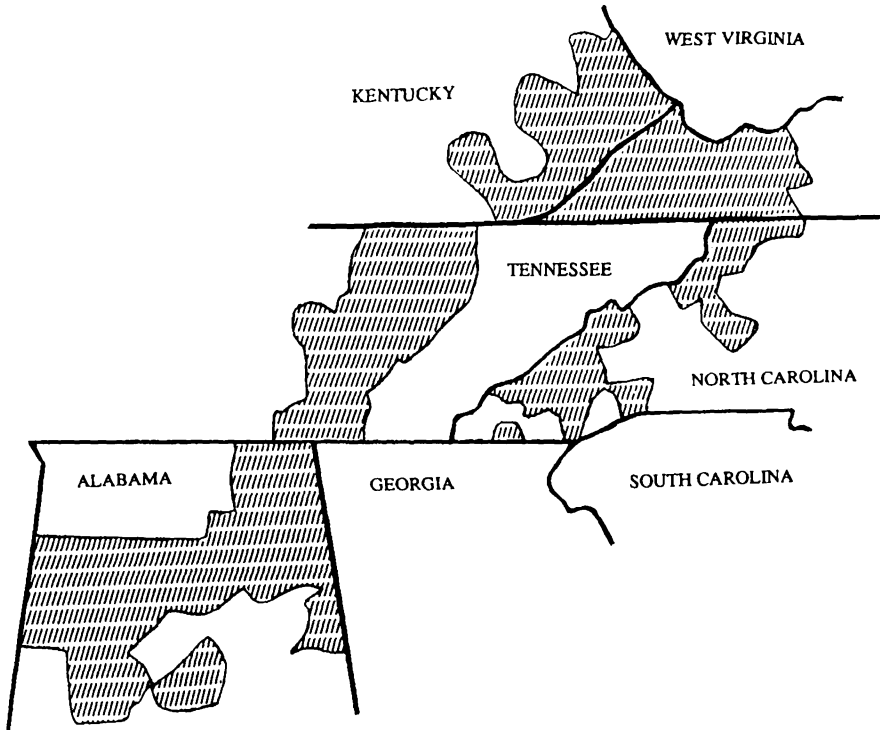
Fig. 1. Southern Appalachia.

SOURCE: Appalachian Land Ownership Task Force, *Who Owns Appalachia?* (Lexington: University Press of Kentucky, 1983).
NOTE: Data set includes shaded area.

national) average.[3] In important respects, Appalachia deviates from the pattern of capitalist social and economic development experienced in much of the rest of the South.

Conventional observers tend to characterize Appalachia as a region "lagging behind" the rest of the nation in what is understood as a homogeneous growth and "modernization" process.[4] Two explanations are offered, often in combination, for the persistence of Appalachia's underdevelopment. The first is a "subculture of poverty" argument, first articulated by Weller, which blames the mountain culture for reproducing a poorly motivated and "fatalistic" people.[5] The second springs from development economics, focuses on the region's isolation and rugged terrain, and emphasizes (without explaining) the relative underdevelopment of Appalachia's physical and social infrastructure. Bowman, in association with various coauthors, has presented this position.[6] In partial response to the inadequacy of these models, and out of their own organizing experience, Appalachian activists and scholars developed a third paradigm. The "internal colony" model argues that, rather than having been passed by in the course of national development, the Appalachian region has instead been intimately connected with that process, serving as a source

of cheap raw materials—primarily coal and timber—for the industrial development of the rest of the nation. It is this particular pattern of development, and the attendant control of Appalachian resources by outside interests, that has left the region impoverished and with a poorly developed network of social services.[7]

The most complete presentation of the internal colony model is the work of the Appalachian Land Ownership Task Force (ALOTF).[8] Extraordinarily high degrees of absentee and concentrated landownership—absenteeism as high as 94 percent and control by the top ten owners of as much as 86 percent of a given county—are argued to comprise an important determinant of Appalachia's development pattern.[9] Landownership helps explain, first, the noted underdevelopment of Appalachia's physical and social infrastructure directly through low rates of taxation. Second, concentrated and absentee ownership, by limiting private investment opportunities, also provides partial explanations for the failure of the economy to diversify and provide income opportunities commensurate with the rest of the South.

The ALOTF argument focuses primarily on institutional impediments to public and private investment caused by the pattern of landownership. I extend the model by considering the impact of absentee and concentrated ownership on the development and strength of county government and a local business class.

In the empirical section of the paper, I cast this argument into a series of linear regression models to see whether the data support such an interpretation.[10] To anticipate the conclusion, my analysis provides support for the claim that absentee ownership is inversely associated with measures of economic and social well-being; however, concentration of ownership is found to relate positively to these same measures.

Landownership and Appalachian Development

The model that follows is a schematic representation of some historical processes by which patterns of landownership have partially determined social and economic conditions in Appalachia. History, of course, is much messier when fully fleshed out; nevertheless, the bare-bones argument is that concentrated and absentee ownership of resources has (1) reduced public investment in human capital and physical infrastructure, and (2) inhibited diversification and growth of the local economy. The flow chart in figure 2 illustrates the argument.

Absentee and concentrated ownership reduces county expenditures on social services and physical infrastructure in two ways. First, tax revenues remain low. Large absentee tracts held for timber or mineral development are undervalued since they are seldom sold. Organized political power—primarily at the state level—is utilized to defend low property rates on certain types of land. Large federal tracts are untaxable, and often pay rates in lieu of taxes that are lower than county taxes.[11]

Second, in the case of a high rate of absenteeism, the political leadership for higher county expenditures on development projects—roads, sewers, education—that one would associate with a locally based business class may be missing. Only local capital, dependent on the local economy, benefits from the spillover effects of public investment. Cobb

OWNERSHIP:
CONCENTRATED
ABSENTEE

Low Tax   Lack of   Weak   Lack of   Monopsony
Rates   Leadership   Local   Land
                                Capital

Manufacturing
Discouraged

Low Rates   Low Rates
of Public   of Private
Investment   Investment

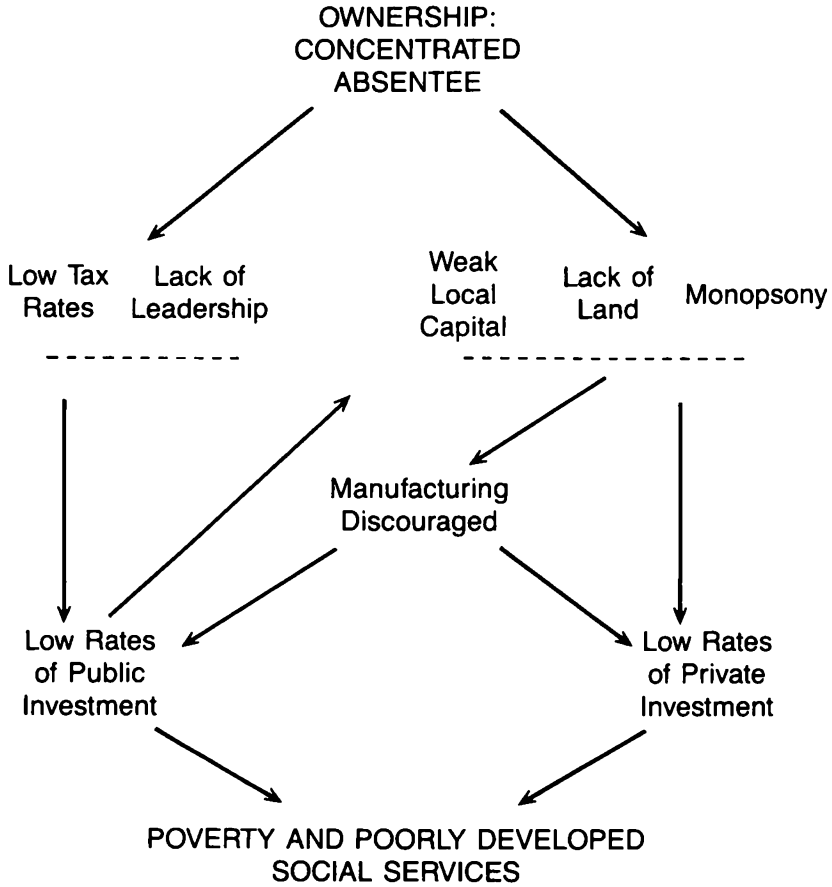POVERTY AND POORLY DEVELOPED
SOCIAL SERVICES

Fig. 2. Landownership and Appalachian Development.

has shown how important such a class was in the rest of the South not only in orchestrating the attraction of manufacturing capital by booster-ism, but also through the support of public investment.[12]

Weinstein has illustrated how progressive business leaders throughout the country gained control over and rationalized the provision of public services in the early twentieth century.[13] A second wave of business-backed reform occurred in the South in the immediate post-World War II period.[14] In contrast, public investment and the provision of services in Appalachia has remained, until recently, the object of patronage and cronyism.[15] This governmental structure, in fact, developed from com-pany domination of county politics in the coal camp days,[16] but Gaventa details how governmental favoritism still works to the advantage of absentee capital and the local elite by maintaining "quiescence" through a struc-ture of dependency and control.[17] Absenteeism—and more generally the dominant position of extractive industry—generates a situation in which the key actors in the local economy have little motivation to take a

leadership role in rationalizing and promoting public investment, and in fact often benefit from its arbitrary provision.[18]

The net result of low taxes and a lack of leadership from the business community is a poorly developed physical and social infrastructure, cited as a contributing factor to Appalachian poverty by all observers, but explained by this model as arising out of absentee and concentrated control of the region's resources.[19]

With respect to private development, two processes are at work. Looked at very simply, economic growth in a capitalist society occurs as investment opportunities are seized by entrepreneurs. If growth occurs haltingly, this may be owing to either a lack of investment opportunities, or to the weak position of local capital. Both sides of this equation have been affected by the pattern of resource control.

In Appalachia, private investment opportunities have been limited, primarily as a result of the lack of investment in human capital and physical infrastructure already considered. Moreover, landownership may directly influence diversification. High degrees of concentration may mean that suitable land for a manufacturing plant is simply unavailable as large landholders are reluctant to break up tracts. Monopsony considerations may also influence large coal landowners.[20]

The dominant ownership position of outside interests has also helped shape the growth of only a weak local capitalist class. Historically, the coal companies monopolized all forms of economic activity in the coal camps, severely limiting the early growth of local service or retail capital. This situation might be expected to persist, as a study of successful southern businessmen in the 1950s found that many were sons of professionals or managers.[21] Second, concentration of ownership in many counties led to the emergence of a small local establishment controlling access to capital in a distinctly noncompetitive fashion.[22] Third, the importance of education to mountain entrepreneurs has been documented by Bowman and Plunkett.[23] The link between absentee control and underinvestment in education has been argued earlier.

Finally, local capital must compete at a disadvantage in many instances for resources, labor, and governmental assistance with powerful outside interests. For example, the "unsavory reputation"—and relatively high wages—the UMW attained through its battles with the coal companies is reputed to have discouraged low-wage investment in eastern Kentucky in the 1940s.[24] The depth of the conflict between local and absentee capital is supported by survey data in which a surprising 50 percent of a sample of local eastern Kentucky bankers, managers, and manufacturers agreed with the statement that "Eastern Kentucky has been exploited by outside capitalists."[25] The authors of the study attribute this response to xenophobia. They provide no evidence, however, to suggest that the respondents are not simply reflecting their own business experience.[26] By these processes, it is argued that absentee and concentrated landownership shaped the development of a relatively weak local business class. Combined with the negative impact of these landownership patterns on investment opportunities, the result has been the creation and maintenance of an economy dependent upon extractive industry.[27]

The Linear Model Interpretation

The argument diagramed in the first section can be collapsed into a series of three recursive equations:

> public investment = f (tax revenue, concentration, absenteeism)
> private investment = g (public investment, concentration, absenteeism)
> poverty = h (private investment, concentration, absenteeism)

As concentration and absenteeism increase, one would expect a decrease in public investment, while tax revenue and public investment should be positively correlated. Private investment is expected to be a positive function of the degree of public investment, but negatively correlated with concentration and absenteeism. Finally, the model suggests that poverty measures should be inversely related to private investment and directly related to concentration and absenteeism.

Assuming a linear form for equations 1 through 3, including other explanatory variables, and substituting proxy variables, the model takes on the following estimable form:

$$HSED = A_1 TAX + A_2 TOP10 + A_3 ABSENT + A_4 EMP$$
$$+ A_5 COAL + \sum_{i=1}^{3} A_i LOCATION + E \tag{1}$$

$$MAN = B_1 HSED + B_2 TOP10 + B_3 ABSENT + B_5 COAL$$
$$+ \sum_{i=1}^{3} B_i LOCATION + U \tag{2}$$

$$POV = C_1 MAN + C_2 TOP10 + C_3 ABSENT + C_5 COAL$$
$$+ \sum_{i=1}^{3} C_i LOCATION + G \tag{3}$$

A short definition of each variable follows. (For more detailed information, see Appendix.) *HSED* is the percentage of adults over 25 with a high school diploma in 1980; it is one measure of the social infrastructure. *TAX* is the ratio of the percentage of total property taxes paid by the top 10 owners in a county relative to the land they control, including federal payments in lieu of taxes in 1977. *TOP10* is a measure of concentration: the percentage of the county controlled by the top 10 owners.[28] *ABSENT* is the percentage of the county owned by out-of-county residents. (All landownership data are from 1980.) *EMP* is the employment rate in 1980, used in equation 1 as a proxy for economic opportunity. *COAL* is the percentage of the employed labor force engaged in mining in 1977; it is used to reflect economic and cultural differences between coal and noncoal counties, and may also reflect differences in geographic terrain. *MAN* is the percentage of noncoal employed workers engaged in traditional nondurable manufacturing in 1977. *POV* is the percentage of families below the poverty rate in 1980. Finally, the three

LOCATION dummy variables reflect distance from metropolitan areas and interstate exits.

E, U, and *G* are disturbance terms, distributed with mean 0 and covariance matrices $\sigma_j^2 \ V_j$, $j = e, u, g$.

The structure of the model is such that ownership patterns are postulated to affect Appalachian development in an identical fashion throughout the region, but the strength of these relationships will vary with the degree of isolation. Thus the slope coefficients on the continuous explanatory variables are determined by the whole sample, while the coefficients on the location dummy variables are interpreted as a shifting intercept term.

Estimation. Because of the recursive nature of equations 1 through 3, simultaneity problems are avoided in their estimation by least squares, provided the error processes in the three equations are uncorrelated.[29] An argument can be made that this is the case.[30]

The employment of cross-sectional county data would still lead us to expect correlation between the error terms within equations. A simple error process was specified in which contiguous counties in the same state were hypothesized to have a covariance equal to *P*, while other error terms were uncorrelated. This process generates a variance-covariance matrix which is positive definite for all values of $P < .39$. Estimation of the equations by Generalized Least Squares (GLS) for specified values of *P* indicated that a value of $P = .38$ maximized the likelihood function for equations 1 and 3, while a value of $P = 0$ maximized the likelihood function for equation 2. A likelihood ratio test indicated that these values of *P* were highly significant.

The Sample. The sample consisted of 60 Appalachian counties in Alabama, Kentucky, North Carolina, Tennessee, and Virginia for which landownership data had been gathered by ALOTF.[31] The results of GLS estimation are presented in table 1, with standard errors in parentheses below the coefficients.

Analysis

The estimation results provide qualified support for the model in the first section, but present some problems as well. With regard to equation 1 there is, as expected, a highly significant negative relationship between absentee ownership and the level of education. There is a very weak rejection of the model's hypothesis of a negative linear relationship between the percentage of taxes paid by the top ten owners and education.[32] A more serious puzzle for the model is the significant positive sign on the concentration variable. (This ownership/social development pattern persisted when a health variable was substituted for education.)[33] Economic opportunity reflected by employment rates generated a significant positive effect on education, while the *COAL* variable, used to control for coal-specific economic and cultural variables, had a significant negative impact. The location variables revealed a plausible relationship—higher education levels in the metro areas—but the differences were not significant.

As an explanation for manufacturing development, the landownership variables fare poorly (except through their impact on *HSED*). Concentration

TABLE 1
ESTIMATION OF EQUATIONS 1–3

EXPLANATORY VARIABLE	EQUATION/DEPENDENT VARIABLE		
	Eq. 1/HSED	Eq. 2/MAN	Eq. 3/POV
TAX	−.022*	—	—
	(.013)		
EMP	.953***	—	—
	(.337)		
HSED	—	−.764***	—
		(.291)	
MAN	—	—	−.003
			(.031)
TOP10	.218**	−.147	−.119*
	(.098)	(.261)	(.079)
ABSENT	−.299***	.195	.152**
	(.083)	(.252)	(.067)
COAL	−.127***	−.626***	.021
	(.052)	(.128)	(.038)
LOCATION			
Metro	−35.5 + 5.9***	71.7 − 15.7***	13.7 − 1.0
	(1.9)	(5.6)	(1.7)
Intermediate	−35.5	71.7***	13.7***
	(31.1)	(14.9)	(2.0)
Remote	−35.5 + 1.5	71.7 − 8.5*	13.7 + 0.1
	(2.1)	(5.0)	(1.7)
P value	.38	0	.38
R^2	.56	.54	.17
Adjusted R^2	.50	.49	.08

NOTE: Standard errors are in parentheses.

*significant at the 10 percent level.
**significant at the 5 percent level.
***significant at the 1 percent level.

and absentee ownership in the linear model generate no significant impact on levels of noncoal manufacturing employment. The level of education has a surprisingly significant negative impact on manufacturing, as does the level of mining employment. Finally, metro areas exhibit a significantly lower level of manufacturing relative to intermediate counties, but the downward shift on the intercept term for the remote areas relative to the intermediate is not significant.

Finally, landownership appears to have a significant impact on the levels of poverty in Appalachia, but again the results are mixed. While poverty rates rise significantly with levels of absentee ownership, concentration levels show a weakly significant negative relationship with poverty rates. Manufacturing, one link stressed in the argument, shows no influence on poverty rates. However, traditional explanations—rugged terrain (the COAL variable) and isolation—also have no significant explanatory power.

The low R^2 value for equation 3 is not surprising considering the complex determinants of poverty. A full explanation for Appalachian poverty, however, is not the task here. The point is to determine whether a systematic linear relationship between ownership patterns and poverty rates can be demonstrated when other explanatory factors are considered explicitly. The data confirm such a relationship.

Overall, the results provide support for one of the hypotheses argued earlier. There is strong support for the position that high rates of absentee ownership are associated with low rates of education and high rates of poverty. Moreover, the significant negative impact of the coal variable on high school education indicates that the dominant position of extractive industry is important independent of landownership patterns in reducing public investment.

Adoption of the linear framework, however, also generates problems for the model presented in the first section of the paper. First, as noted previously, the tax argument is very weakly rejected. Second, there is no direct relationship between ownership and manufacturing employment; and the indirect relation is the opposite of what was predicted—lower education is actually associated with higher levels of manufacturing. (This may be due to the impact on wage rates of increasing education levels. A physical infrastructure variable would perhaps have been more appropriate here.) Further, manufacturing employment shows no significant impact on poverty levels. The manufacturing link, however, is not vital to the model. As a look at the flow chart in figure 2 reveals, the link can be chopped out and the theoretical relationship between landownership, economic underdevelopment, and poverty remains.

The more puzzling problem for the model is the positive relationship between land concentration and education and health measures, and the (weak) negative relationship between concentration and poverty rates. An explanation that "saves" the model would be that the relationship between concentration and underdevelopment is nonlinear; one might expect a threshold of concentration before monopsony interest or collusive political activity could become effective. The fact that poverty rates in the top one-fifth most-concentrated counties are higher than the sample average, and education levels lower than the average, provides some support for this interpretation.[34]

A second tentative explanation would be that, on the one hand, high concentration rates may be associated with more valuable economic resources—implying a higher level of economic activity. One Kentucky study has shown that "in many cases it is the counties that are heavily unionized with large operators [who are] absentee owners, which generally have a higher level of public services, community development, educational attainment, per capita income than counties where . . . [there are] smaller, marginal, non-union operators."[35] These counties probably have high levels of concentration as well, while in almost all coal counties—both those with large and small operators—there are high levels of absentee ownership. On the other hand, the negative impacts already sketched out—lack of development-minded county leadership, conflict between local and absentee capital, shortage of land for local investment, withholding of land for future development—may be more closely associated with absentee rather than concentrated ownership.[36] This question could be resolved through more detailed empirical analysis.

In summary, adoption of a linear model provides corroborative evidence to suggest that absentee ownership has been influential in partially determining Appalachia's underdevelopment. The positive association of concentrated landownership with development measures, however,

suggests, at the very least, either that the linear specification of the model is incorrect, or that the connections between concentration and under-development sketched out earlier are overwhelmed by other factors.

Conclusion

The analysis in this paper suggests that Appalachia's problems do not stem from "underdevelopment," but rather are in part the result of a very deliberate pattern of development over the last century of the region's natural resources. Part of the process of this development was the cre-ation and maintenance of an inactive, patronage county government, the weak growth of a local business class, and the erection of various insti-tutional impediments to private investment associated with absentee ownership of land. The outcome has been that many of Appalachia's peo-ple remain poor and suffer from inadequate housing, health care, and schooling as well as from occupational diseases and pollution.[37]

The focus on landownership, and, in view of the empirical results, absentee ownership in particular, does not suggest that some kind of land reform would be the only or best solution to the region's problems, or that Appalachia would have been substantially better off if local rather than international capital had developed the region's resources. Rather, absenteeism is symptomatic of the role that Appalachia has served in the nation's economy—a source of raw materials. The region experienced a process of development quite different from the rest of the South, and this analysis points to the power relations and institutional impediments established by absentee control that have generated unusually inade-quate levels of both public and private investment.

Appendix

Socioeconomic Data. The socioeconomic data—with the exception of poverty rates—was obtained from the County Level Data File for the entire South of the Southern Growth Policies Board (SGPB). The data set is described in Jonathan Rosenfeld, Edward Bergman, and Sarah Rubin, *After the Factories: Changing Employment Patterns in the Rural South* (Research Triangle Park, NC: SGPB, 1985). Descriptions of the variables employed in this study follow, with their original sources as listed in SGPB, "User's Manual for County Level Data File" (SGPB, Research Triangle Park, NC, 1986, Xerox).

HSED—Persons 25 years old and over who have completed 4 years of high school or more in 1980, divided by the population 25 and over. Source: *1980 Census of Population*, Summary Tape File 3C.

HEALTH—Physicians per 100,000 population, 1980, divided by the median for the Appalachian sample. Source: AMA, *Physician Character-istics and Distribution in the U.S.*, 1981 edition.

EMP—Employed persons divided by the civilian labor force in 1980. Same source as *HSED.*

MAN—Employment in traditional nondurable manufacturing divided by total noncoal employment in 1977. The distinction was made at the two-digit SIC level. Traditional nondurables include food and kindred products, tobacco manufactures, textile mill products, apparel and other textile products, lumber and wood products, paper and allied products,

and leather and leather products. Source: National Planning Data Corporation's "Employment by Industry Enhanced County Business Patterns File."

COAL—Employment in metal, anthracite, bituminous, or lignite coal mining; oil and gas extraction; and nonmetallic minerals mining in 1977. Same source as MAN.

POV—Percentage of familes below the poverty level in 1979. Same source as HSED.

LOCATION—Metro: County lies within a Standard Metropolitan Statistical Area (SMSA), as defined by the USDA Research Service, in "Economic Metro/Nonmetro Status," 1984; Intermediate: These are nonmetro, nonremote counties; Remote: County is nonadjacent to a metro county, and does not touch an interstate highway, and the geographic or apparent population center of the county is farther than 20 miles from the nearest interstate interchange.

Landownership Data. Landownership data was gathered in 80 Appalachian counties from 1979 to 1981 by the Appalachian Land Ownership Task Force (ALOTF), a group of citizens and scholars in the Appalachian region. While some methodological criticisms have been leveled at the study, they deal with the distinctions drawn between corporate and individual ownership, rather than the issues of concentration and absenteeism dealt with here. West Virginia counties were omitted from the study owing to a lack of socioeconomic data, and three other counties were dropped owing to incomplete landownership data. The entire remaining population of 60 counties in Alabama, Kentucky, North Carolina, Tennessee, and Virginia was employed. The data are drawn from the "Addendum to Land Ownership Patterns and Their Impacts on Appalachian Communities" for the preceding states, as submitted in February 1981 by ALOTF to the Appalachian Regional Commission (a governmental development authority, now dismantled). Relevant tables for each county are cited.

TOP10—Percentage of county owned by top ten landowners. Source: ALOTF, "Addendum," table 12.

ABSENT—Percentage of county owned by out-of-county residents. Source: ALOTF, "Addendum," table 8.

TAX—Percentage of property taxes paid by the top ten owners—including an adjustment for payments in lieu of taxes of $0.75 per acre by federal owners divided by percent of county owned by the top ten. Source: "Addendum," tables 11 and 12. (See also ALOTF, Who Owns Appalachia? [Lexington: University Press of Kentucky, 1983], p. 56.)

NOTES

[1]The major works are Harry Caudill, Night Comes to the Cumberlands: A Biography of a Depressed Area (Boston, MA: Atlantic Monthly Press, 1962); Helen Lewis, Linda Johnson, and Don Askins, eds., Colonialism in Modern America: The Appalachian Case (Boone, NC: Appalachian Consortium Press, 1978); and Appalachian Land Ownership Task Force (hereafter ALOTF), Who Owns Appalachia? (Lexington: University Press of Kentucky, 1983).

[2]For an analysis of southern growth stressing the importance of manufacturing see James Cobb, Industrialization and Southern Society: 1877–1984 (Lexington: University Press of

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Kentucky, 1984); or Jonathan Rosenfeld, Edward Bergman, and Sarah Rubin, *After the Factories: Changing Employment Patterns in the Rural South* (Research Triangle Park, NC: Southern Growth Policies Board (SGPB), 1985). The table that follows illustrates the distribution of nonmining employment in 23 remote Appalachian counties, as compared with the rest of the remote South.

NONMINING EMPLOYMENT IN
REMOTE APPALACHIA AND REMOTE SOUTH, 1977
(Percentages)

Employment Category	Remote Appalachia	Remote South
Agriculture	0	1
Construction	3	4
Traditional durables	3	3
Traditional nondurables	17	33
Emerging durables	6	7
Emerging nondurables	1	2
Urban services	13	10
Producer services	13	11
Consumer services	43	31

SOURCE: SGPB, County Level Data File (SGPB, Research Triangle Park, NC, 1986).

NOTE: Employment categories are defined in Appendix. "Remote" is defined in relation to metro areas and interstate exits; for more detail, see Appendix.

In nonremote Appalachia, development patterns are not dissimilar from the South as a whole and, in fact, show slightly higher levels of manufacturing employment. Finally, Rosenfeld et al. show that consumer services have been the leading growth sector in the past decade—a conclusion not boding well for remote Appalachia, with its already relatively overdeveloped consumer service sector.

[3]The following table compares some recent development measures in a sample of Appalachian counties with those in the South as a whole, and in the nation.

DEVELOPMENT MEASURES
(County Averages)

	Appalachia	South	United States
Persistent poverty	27%	18%	—
High school education	44%	60%	67%

SOURCE: SGPB, County Level Data File.

NOTE: A persistent poverty county is one whose per capita income placed it in the nation's lowest quintile in 1949, 1959, 1969, and 1979. High school education is the percentage of graduates relative to the over-25 population in 1980.

[4]Mary Jean Bowman and H. Dudley Plunkett, *Elites and Change in the Kentucky Mountains* (Lexington: University Press of Kentucky, 1973), p. xi.

[5]The classic statement of this position is found in Jack Weller's *Yesterday's People* (Lexington: University Press of Kentucky, 1965).

[6]See for example, Mary Jean Bowman and W. Warren Haynes, *Resources and People in East Kentucky* (Baltimore, MD: Johns Hopkins University Press, 1963).

[7]For a review, and a theoretical refinement of the colonial model to that of an "internal periphery," see David S. Walls, "Internal Colony or Internal Periphery: A Critique of Current Models and an Alternative Formulation," in *Colonialism in Modern America: The Appalachian Case,* eds. Helen Lewis et al. (Boone, NC: Appalachian Consortium Press, 1978).

[8]ALOTF, *Who Owns Appalachia.*

[9]Swain County, NC, is an example. Ibid., p. 32.

[10]ALOTF backs up its original argument with pairwise correlation analysis. The advantage of the regression model, of course, is that many explanatory variables—including rugged terrain and isolation—can be considered simultaneously. The value of this type of exercise is always negative; if the data are inconsistent with this linear specification, then it is only the linear model of the thesis that is suspect. However, if the data do not reject the model, then the pairwise correlations noted by the ALOTF retain their significance (in a linear framework) when other explanations are considered explicitly.

[11]ALOTF, *Who Owns Appalachia,* pp. 41–52.

[12]Cobb, *Industrialization and Southern Society,* pp. 99–109. A "weak bourgeoisie" has been a theme in the dependency literature since Lenin. For a review see Gabriel Palma, "Dependency: A Formal Theory of Underdevelopment or a Methodology for the Analysis of Concrete Situations of Underdevelopment?" *World Development* 6 (July/August 1978); ALOTF, *Who Owns Appalachia,* p. 68, refers to "a lack of civic pride" on the part of the coal companies.

[13]James Weinstein, *The Corporate Ideal in the Liberal State* (Boston, MA: Beacon Press, 1968), pp. 92–116.

[14]Cobb, *Industrialization and Southern Society,* p. 103.

[15]See Peter Schrag, "The School and Politics," in *Appalachia in the Sixties,* ed. David Walls (Lexington: University Press of Kentucky, 1972); or Bowman and Plunkett, *Elites and Change,* p. 87.

[16]K. W. Lee, "Fair Elections in West Virginia," in *Appalachia in the Sixties,* ed. Walls, p. 166.

[17]John Gaventa, *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley* (Oxford: Clarendon Press, 1980), pp. 137–64.

[18]Recently pressed into paying higher severance taxes, several coal executives have argued that the most severe handicap facing mountain education is the politicized nature of its provision. In language strikingly resonant with Weinstein's thesis, a liberal CEO argued: "Our job is not to pay more money, but to see that things get straightened out there, so that the education system in Martin County can be efficient, expert, and progressive." On the importance of community leadership another argued: "I very seldom found that the political leaders in the county were the leaders that made the county have a good school system, a good industrial development program, or a good public sewer system. It was generally [other] individuals that were genuinely interested in a better county. It wasn't the [coal] industry, although you very seldom found industry opposed to it." See Mountain Association for Economic Development (MACED), *Industry Perspectives on Development: Transcripts of Interviews with Coal Industry Leaders* (Berea, KY: MACED, 1986), pp. 76, 157 respectively.

[19]ALOTF, *Who Owns Appalachia,* p. 62, demonstrates a correlation between land concentration and median years of schooling.

[20]Ibid., pp. 64–79. ALOTF finds that out-of-state ownership is correlated with lower levels of manufacturing employment. It is worth noting that the boom-and-bust nature of the dependent coal economy creates high fluctuations in demand for items like housing, where it has been suggested that entrepreneurial opportunities have gone begging. See Katherine Peden and Associates, *An Enterprise Development Program for Appalachia* (Washington, DC: Appalachian Regional Commission, 1974), p. 73.

[21]Clarence Danhof, "Characteristics of Southern Business Leaders in the 1950's," in *Business in the New South,* ed. Fred Bateman (Sewanee, TN: University of the South Press, 1982), p. 152.

[22]Mary Jean Bowman and H. Dudley Plunkett, *Communication and Mountain Development* (Washington, DC: U.S. Department of Commerce, 1969), pp. 99, 160.

[23]Ibid., p. 95.

[24]Bowman and Haynes, *Resources and People,* p. 149.

[25]Bowman and Plunkett, *Elites and Change,* p. 131.

[26]ALOTF, *Who Owns Appalachia,* p. 75, notes a positive correlation of out-migration rates with absentee ownership, a fact that may reflect a relative lack of economic opportunity in absentee counties.

[27]In lumbering counties it is often federal control that has helped to limit investment opportunities and frustrated the development of a vigorous local business class. Additionally, the growing tourism industry creates a part-time, low-wage work force facing inflated prices for land and food (ALOTF, *Who Owns Appalachia,* pp. 76–79).

[28]Ibid. ALOTF employs a measure of relative concentration: the ratio of ownership of the top quintile to that of the bottom. This may be a preferred measure of political power; unfortunately it was unavailable for use in this study. It may, however, account for differences in the correlations ALOTF generates and the empirical findings presented here.

[29]Jan Kmenta, *Elements of Econometrics* (New York: MacMillan, 1971), pp. 585–86.

[30]First, the model is strictly recursive since economic influences on individual *HSED* decisions are captured by the *EMP* variable. *MAN* is assumed to have no causal influence on *HSED*. With regard to possible correlation, for all equations the source of the error term is assumed to be omitted variables. In equation 1, the omitted variables reflect cultural attitudes and non-property-tax influences on education quality. In equation 2, a variable for physical infrastructure is omitted. In equation 3, omitted economic variables are generating the error process. Since the principal omitted variables in the different equations are also different, the assumption of their independence is plausible.

[31]ALOTF, "Addendum to Land Ownership Patterns and Their Impacts on Appalachian Communities," for Alabama, Kentucky, North Carolina, Tennessee, and Virginia, as submitted to the Appalachian Regional Commission, February, 1981. This is a mimeograph available at the Highlander Resource Center, New Market, TN.

[32]Again, note we reject only the hypothesis that the relationship between taxation of the top ten owners and investment is linear and negative.

[33]The variable was the number of doctors per hundred thousand as a ratio of the median value for the sample. For a significant value of $P = 0$, the estimation generated:

$$HEALTH = - .004*TAX + .257*TOP10 - .321*ABSENT + .276*EMP - .024*COAL$$
$$ (.019) \qquad (.097) \qquad (.092) \qquad (.301) \qquad (.044)$$

$$- (17.8 - 5.4)*METRO - 17.8*INTER - (17.8 + 1.9)*REMOTE$$
$$ (1.9) \qquad\qquad (27.8) \qquad\qquad (1.9)$$

[34]Of the top one-fifth most-concentrated counties, the average poverty rate is 18.4 percent, as opposed to a 17 percent average for the entire sample. This average jumps to 20.3 percent when the 5 counties in the top 12 with coal employment of less than 10 percent are excluded. For high school education, the top one-fifth most-concentrated have an average of 42.9 percent as opposed to the sample average of 43.8 percent. Again excluding the 5 noncoal counties lowers the 42.9 percent figure to 38.2 percent.

[35]Cited in MACED, *Industry Perspectives on Development,* p. 68.

[36]For example, one would expect concentrated ownership to generate more support for public investment, *ceteris paribus,* since large landholders would have more to gain.

[37] People in the region have also wrestled with the onslaught of an advancing capitalist culture and its values. This process was intensified during the 1960s, as "Appalachia's poverty" was reflected back to the mountains and the value of the traditional lifestyle further denigrated through the national policy initiatives and media attention of the 1960s. Salvaging and strengthening aspects of mountain culture is an important part of the Appalachian struggle. See, for example, Thomas Plaut, "Extending the Internal Periphery Model: The Impact of Culture and Consequent Strategy," in *Colonialism in Modern America: The Appalachian Case*, eds. Helen Lewis et al. (Boone, NC: Appalachian Consortium Press, 1977).