EMPLOYER SIZE, HUMAN CAPITAL, AND RURAL WAGES: IMPLICATIONS FOR SOUTHERN RURAL DEVELOPMENT

David S. Kraybill, Michael J. Yoder, and Kevin T. McNamara

Abstract

A recent trend in rural development policy emphasizes small business development in place of industrial recruitment. To analyze some of the likely effects of expanding the proportion of small firms in local economies, an empirical wage rate model incorporating employer size was developed, and parameters were estimated using household data from rural Putnam County, Georgia. The estimates indicated that large employers offered higher wages than small employers and that the wage premium they offered was greater for blacks than for whites. These results support Thomas Till's argument that southern rural counties with relatively large black populations should not abandon efforts to attract large employers. Other factors associated with higher wages included level of education, previous labor force experience, and employment in certain occupations and industries.

Key words: employer size, human capital, wage determination

State and local economic development strategies to promote locally owned, small businesses have gained popularity in recent years in the United States (Eisinger). In the South, several widely-circulated reports on economic development have recommended small business development programs in place of programs of industrial recruitment (Southern Growth Policies Board; MDC). These recommendations focus attention on creation of business establishments of smaller scale rather than the branch plants attracted in the past by industrial recruitment programs. Unfortunately, little research is available for evaluating the wisdom of small business development as a primary strategy for every type of community.

To aid in the evaluation of business development strategies, this paper analyzes the impact of employer size on rural wage rates. The importance of wage-related income in the economic well-being of workers and their households is indicated by its relatively large share in total personal income. For the United States, wages (broadly defined to include salaries and other labor income) represented 63.8 percent of total personal income in 1990 (U.S. Department of Commerce, 1991). Theory-based hypotheses developed and tested in this article suggest that employer size may affect average wage levels, as well as the distribution of wages across groups of workers.

Recently, researchers have found a strong positive relationship between employer size and wage rates, though none of the studies focused on rural areas (Brown and Medoff; Barron, Black, and Loewenstein). At the county level, Till found that industrial recruitment, generally associated with relatively large firms, brought substantial employment gains to southern rural counties with large black populations during the 1960s and 1970s. Till's results suggest that "smokestack chasing" still remains a viable economic development strategy for some southern counties.

Previous rural wage studies focused on workers' human capital characteristics, rather than employer size, as wage determinants (Smith et al.; Scott, Smith, and Rungeling). The present analysis includes both workers' characteristics and employer size in an extended human capital model of wage determination. By using survey data from a single county, the study focuses on the effects of characteristics of workers and business establishments, apart from variations in the structure of local economies and the quality of education.

The paper is organized in the following manner. The next section describes the human capital approach to wage determination. The third section presents an empirical human capital wage model incorporating employer size. The fourth section describes the study area and the household-level data gathered for this analysis. The fifth section presents regression results of the wage model. Conclusions

David Kraybill is an Assistant Professor and Michael Yoder is a former Research Assistant in the Department of Agricultural Economics at the University of Georgia, Athens. Kevin McNamara is an Assistant Professor in the Department of Agricultural Economics, Purdue University. Funding for this research was provided by the Southern Rural Development Center. The authors wish to thank members of Southern Regional Information Exchange Group—53 for helpful comments on an earlier draft of this manuscript.

and implications for rural development research and policy are discussed in the sixth section.

CONCEPTUAL BACKGROUND

Measurement of the wage impact of employer size requires a theoretical explanation of the wage determination process. Numerous factors affect wage rates, and when each of these factors is identified conceptually and accounted for statistically, it is possible to isolate the effects of a single factor such as employer size. This section presents an overview of neoclassical and human capital approaches to wage determination as a conceptual foundation for an extended human capital model that is developed in the following section.

The neoclassical approach to wage rate determination is based on the theory of marginal productivity and on the theory of competitive markets. Firms are assumed to be price takers in labor markets and labor is paid according to its marginal product. In its simplest form, neoclassical theory assumes that labor is a homogeneous input. While these assumptions are unrealistic in many circumstances, Chamberlain, Cullen, and Lewin argued that the neoclassical approach has proven useful in predicting central tendencies of labor markets.

Human capital theory extends the neoclassical wage determination model by recognizing productivity differences among labor inputs (Becker, 1975). Workers invest in education, training, health care, or migration in expectation of increasing their productivity. Firms, motivated by a desire to maximize profits, reward productivity according to the human capital of each worker.

The fundamental hypothesis of the human capital theory of wage determination states that

$$(1) \quad W_i = f(S_i), \quad \frac{dW_i}{dS_i} > 0$$

where W_i is the wage of the ith individual and S_i is years of education beyond the minimum standard set by law (Joll et al.). An individual educated to the legal minimum receives a base wage (W_{i0}). While investing in noncompulsory education, the individual forfeits the base wage and thereby incurs personal costs. After being educated, the individual receives a compensatory wage premium that represents a return (r_i) on his investment (Mincer). The amount of education chosen is assumed to depend upon the net benefits which are captured in the rate of return. Because education is a cumulative process, wages (W_{iS}) of the ith individual vary by years of education (S = 1,...,N):

After one year of education: $W_{i1} = W_{io} + r_i W_{io} = W_{io}(1+r_i)$

After two years of education: $W_{i2} = W_{i1} + riW_{i1} = W_{io}(1+r_i)^2$

After three years of education: $W_{i3} = W_{i2} + r_i W_{i2} = W_{io}(1+r_i)^3$.

In general, the wage of the ith individual with S years of education is given by

$$(2) \quad W_{is} = W_{io}(1 + r_i)^{S_i}.$$

In practice, individuals are not able to evaluate their hypothetical wages from unrealized educational and job opportunities, and thus actual rates of return cannot be calculated directly for the ith worker; however, rates of return can be estimated cross-sectionally, using observed wages for workers with various levels of education. Mincer developed an empirical schooling model by expressing equation (2) in continuous terms, transforming it by logarithms, and adding an error term:

$$(3) \quad \ln W_i = \beta_0 + \beta_s S_i + e_i,$$

where the intercept term β_0 is the natural log of the base wage rate (W_0) for unskilled labor, and the regression coefficient β_s is an estimate of the annual rate of return to education.[1] The error term e_i is distributed lognormal. Using equation (3), estimated rates of return for male workers in the United States have ranged from 6 to 20 percent (Fleisher and Knieser; Mincer).

On-the-job training (OJT) also represents investment in human capital (Mincer; Joll et al.). Wage models incorporating OJT are referred to in the human capital literature as post-schooling models.[2] These models are of the following form:

$$(4) \quad \ln W_i = \beta_0 + \beta_s S_i + \beta_J J_i - \beta_{JJ} J_i^2 + e_i,$$

where J is the number of years of OJT during a training period of n years and β_j is a regression coefficient representing the rate of return. To allow for diminishing marginal returns to OJT over the training period, the square of J is included, and β_{jj} is

[1] The logarithmic transformation of equation (2) is given by $\ln W_i = \ln W_0 + S_i \ln(1+r_i) + \ln\mu_i$. The subscript i on the base wage (W_{io}) is dropped because the base wage is now a cross-sectional average rather than a unique value for each individual. For econometric estimation, the logged intercept term is replaced by B_0. Mathematically, it can be shown that a logarithmic approximation of the term, $S_i \ln(1+r_i)$, is given by $r_i S_i$. Because the rate of return (r_i) is now a parameter to be estimated, it is represented in equation (3) by B_s, where the subscript (S) denotes education. The term, $\ln\mu_i$, is represented in equation (3) by the lognormal error term, e_i.

[2] Derivation of the post-schooling model is presented in Joll et al.

a regression coefficient used to adjust the rate of return.

A HUMAN CAPITAL WAGE MODEL INCORPORATING EMPLOYER SIZE

Critics have identified numerous limitations of the human capital approach to labor markets (Fischer and Nijkamp). A central focus of these criticisms is the lack of attention to institutional factors and market imperfections in the basic neoclassical approach. In response to these criticisms, empirical studies of wage rates often incorporate race and gender variables to allow for possible discrimination in labor markets (Joll et al.). For example, human capital theory has been extended to explain the wage effects of race and gender as the expression of employers' taste for discrimination (Becker 1957). If such tastes exist, employers may systematically offer certain worker groups, such as women and blacks, wages that are lower than the value of the marginal product of labor (VMP_L).

In the empirical literature, wage determination models often adjust for industry and occupation effects (Brown and Medoff). Industry and occupation may capture differences in working conditions that are difficult to measure directly. If capital-labor ratios differ by industry and occupation on average, application of marginal productivity theory indicates that wages will vary across industry and occupational categories.

Recent studies have emphasized the effect of employer size on wage rates (Brown and Medoff; Barron, Black, and Loewenstein). Neoclassical explanations of this effect focus on labor quality differences or working conditions across firms of different sizes. Under the assumption that there are diseconomies of size in the monitoring of employees, Stigler and Oi argue that large firms place a premium on workers who are willing to be trained and conform to rigid job requirements and hence "monitor themselves." To fill their ranks with highly disciplined workers, large firms are willing to pay higher wages than small firms (Idson and Feaster). Figure 1 illustrates the effects of monitoring costs on the marginal resource cost of labor (MRC_L) for a firm in a competitive labor market. At a wage rate equal to C_1, the firm would hire L_1 labor units if there were no monitoring costs. If there are monitoring costs (MOC_L) associated with each unit of labor, the marginal resource cost of labor is given by

$$MRC_L = W_L + MOC_L.$$

As the firm hires more labor, MOC_L rises at an increasing rate, raising MRC_L and reducing the quantity of labor demanded. The firm facing monitoring costs is in equilibrium when it hires L_2 units of labor at a marginal resource cost equal to C_2.

Other explanations of a positive relationship between employer size and wages focus on institutional factors, particularly the desire of employers to avoid unionization of workers. It is argued that large employers attempt to sweeten labor relations by offering higher wages to minimize their workers' interest in unionization (Freeman and Medoff).

A potentially important feature of small businesses is self-employment. On conceptual grounds, Solomon suggests that business owners may receive psychic income (nonpecuniary rewards) from the independence associated with self-employment and may therefore be willing to accept wages lower than they would accept when working for someone else. In sparse rural economies with few employment opportunities, business owners may accept relatively low wages from self-employment because of the costs incurred in commuting to higher paying employment.

An extended human capital wage model incorporating employer size and other wage determinants discussed above is given by

$$\begin{aligned}(5)\quad \ln W_i = {} & \beta_0 + \beta_1 ED_i + \beta_2 PEX_i + \beta_3 PEXSQ_i \\ & + \beta_4 TEN_i + \beta_5 TENSQ_i + \beta_6 \ln SIZ_i \\ & + \sum_{j=7}^{11} \beta_j OCC_{ji} + \sum_{k=12}^{16} \beta_k IND_{ki} + \beta_{17} GEN_i \\ & + \beta_{18} RAC_i + \beta_{19} SEMP_i + e_i\end{aligned}$$

where ED_i is the ith individual's years of schooling, PEX_i is years of previous work experience; $PEXSQ_i$ is the square of previous experience; TEN_i is years of tenure at the current job; $TENSQ_i$ is the square of tenure; SIZ_i is establishment size, expressed in terms of number of employees; the remaining symbols represent dummy variables: OCC_i is occupation, IND_i is industry, GEN_i is gender, RAC_i is race, and $SEMP_i$ is self-employment.[3] Definitions of the variables are given in Table 1.

[3] Equation (5) is of log-log form, though most of the terms on the right-hand side do not explicitly contain the log expression. The intercept is an implicit log. In the human capital variables, ED_i, PEX_i, TEN_i, $PEXSQ_i$, and $TENSQ_i$, the explicit log expression drops out in the manner shown for education in footnote 1 (the log also drops out in the squared terms, as shown in Joll et al.). As is customary in log-log models, the dummy variables OCC_i, IND_i, GEN_i, RAC_i, and $SEMP_i$) are not logged since the log does not exist when the variable is equal to zero. Employer size (SIZ_i) is the only right-hand side variable in which the log appears explicitly.

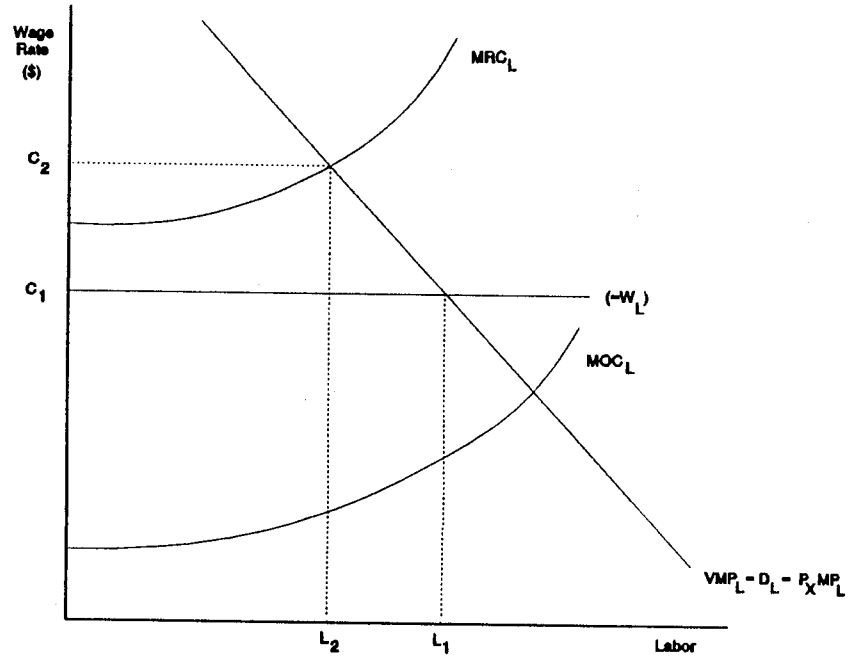

Figure 1. The Effect of Monitoring Costs (MOC_L) on the Firm's Optimal Labor Input Decision.

Work experience, a proxy for on-the-job training, is segmented into two categories in equation (5) to allow for differing rates of return, following an approach used in previous studies (Mellow; Idson and Feaster; Smith et al.). The first category, years of tenure in the worker's current job (TEN_i), is intended to measure the effects of training specific to the current job and is obtained directly from the household survey described in the next section. The second variable, previous experience (PEX_i), is intended to measure all other productivity-enhancing skills that the worker has acquired in the work place. As in many other wage studies, a synthetic experience variable is constructed since detailed information on work history was not available. PEX_i is thus calculated by subtracting years of formal education, job tenure, and six pre-school years from the worker's age.

The conceptual discussion above provides a basis for formulating hypotheses concerning the effects of the dependent variables in equation (5). The three human capital variables, years of education (ED_i), experience previous to current job (PEX_i), and tenure in current job (TEN_i), are hypothesized to have a positive effect on the wage rate. A negative relationship is anticipated between wages and the squared terms for previous work experience ($PEXSQ_i$) and job tenure ($TENSQ_i$). A positive relationship is expected between employer size (SIZ_i) and wages. For variables related to occupation (OCC_i) and industry (IND_i), it is hypothesized that wage rates differ across categories. Whites (RAC_i) and males (GEN_i) are expected to have higher wages on average than nonwhites and females. Lower wages from self-employment ($SEMP_i$) are anticipated in comparison with wages for outside employment.

CHARACTERISTICS OF THE REGION AND SAMPLE

Putnam County, Georgia, is a rural community located 50 miles southwest of Atlanta in the north-central part of the state. The county was chosen for this study because of its rural location, its relatively low per capita income, its relatively high proportion of blacks in total population, and the rapidly declining relative importance of agriculture as a source of employment and income in the local economy.

Putnam County had an estimated population of 12,800 in 1988. Eatonton, the county seat and largest city, had a population of 7,370. Income in Putnam County remains well below state and national averages, though the gap has narrowed in recent years. In 1988, per capita income was 69.5 percent of the U.S. average and 75.1 percent of the Georgia average (Bachtel). Blacks represented 41.7 percent of Putnam's total population in 1988.

Major changes have occurred in the industrial structure of Putnam County over the past two decades. As shown in Table 2, the relative importance of agriculture, forestry, and manufacturing has declined, while the relative importance of service and government sectors has grown. Between 1969 and 1988, the share of agriculture and forestry in total earnings fell from 14.6 percent to 4.3 percent. Manu-

Table 1. Definitions, Means, and Standard Deviations of Wage Model Variables

Variable[a]	Definition	Mean	Std. Dev.
$\ln W_i$	Average hourly earnings of heads of households	2.21	0.61
ED_i	Years of schooling	12.71	3.07
PEX_i	Years of work experience before current job. Calculated as AGEi-EDi-TENi-6, where AGEi is worker's age.	24.20	11.60
TEN_i	Years at current job	10.20	8.29
SIZ_i	Number of employees at establishment of employment	239.69	305.65
RAC_i	Race of respondent (0 = white, 1 = nonwhite)	0.39	0.49
GEN_i	Gender of respondent (0 = male, 1 = female)	0.18	0.39
$SEMP_i$	Ownership of establishment (0 = not self-employed, 1 = self-employed)	0.17	0.38
OCC_i[b]	Technical, sales, admin. (TSA)	0.08	0.28
	Service (SVC)	0.12	0.33
	Precision prod., craft, repair (PCR)	0.11	0.32
	Oper., fabricators, laborers (OFL)	0.27	0.44
	Farming and forestry (FF)	0.02	0.14
IND_i[c]	Ag., forestry, construction (AFC)	0.09	0.29
	Transp. and public utilities (TPU)	0.16	0.37
	Wholesale and retail trade (WRT)	0.10	0.30
	Fin., ins., and real estate (FIR)	0.02	0.14
	Services and government (SVG)	0.29	0.45

[a]The subscript i on the variables denotes head of household, where i = 1,...,98.

[b] Occupations are dummy variables. The managerial and professional category equals zero and the categories listed above are ones.

[c] Industries are dummy variables. The manufacturing industry equals zero and the categories above are ones.

facturing income, as a share of total earnings, declined from 46.9 percent to 30.0 percent. In contrast, the earnings share of the service sector increased from 27.4 percent in 1969 to 51.0 percent in 1988. The government sector increased from 11.1 percent of earnings in 1969 to 14.7 percent in 1988.

The data used for this study were collected in telephone interviews in Putnam County with 98 actively employed heads of households who reported current income from employment. This represents a 2.4 percent sampling of the 1985 estimated number of households in the county (U.S. Department of Commerce 1985). Thirty-nine of the 98 heads of households were black and 59 were white. This is approximately the current ratio of blacks to whites in the county. Characteristics of heads of households in the sample are presented by race in Table 3. The relatively large gap in wages of blacks and whites is of particular interest in this study, because evaluation of the Till hypothesis requires adjusting the racial wage gap for employer size and other wage determinants. Without such adjustment, the average wage of blacks is 61.4 percent of the average wage of whites in the sample. This estimate is nearly identical to one of 61.0 percent obtained by Smith et al. in a study of wage differentials in the rural South during the 1970s.

Variables for estimating the wage model in equation (5) were derived from the household survey. Mean values and standard deviations of these variables are presented in Table 1.

MODEL RESULTS

Ordinary least squares (OLS) was used to estimate the parameters of three wage equations. First, the simple human capital wage model in equation (3) was estimated to compare returns to education in Putnam County with national level estimates by Mincer. Second, the extended human capital wage model in equation (5) was used to obtain estimates of the wage rate effects of employer size and other conceptually justified wage determinants. Third, interaction terms were introduced into equation (5) to test hypotheses concerning race and gender differences in the effects of employer size.

Regression results of the wage models, shown in Table 4, generally conformed to expectations. Significance of the estimated coefficients was evaluated using a two-tailed t-test. The estimated base wage for a worker with no optional education in Putnam

Table 2. Earnings by Sector as a Share of Total Personal Income, Putnam County, Georgia

Sector	1969	1988
	Percent	
Agriculture and Forestry	14.6	4.3
Manufacturing	46.9	30.0
Services	27.4	51.0
Government	11.1	14.7

Source: Georgia County Data Base, Silig Center for Economic Growth, University of Georgia

County in 1990 was $4.82, the antilog of the estimated intercept. The average rate of return to education in Model One was 5.04 percent (100 times the estimated coefficient). The R-squared value of the estimated model was 0.065. For white, nonfarm males in the United States in 1959, Mincer's annual rate of return to education was 7.0 percent and the R-squared value of his model was 0.067. Both in Mincer's study and in the present study, Model One explained less than 7 percent in total variation of wages.

A much greater proportion of the variation in the log of wages was explained by Model Two. The model appeared to fit the data well, as indicated by an adjusted R-squared value of 0.76. The antilog of the intercept, the base wage rate (β_o in equation 3) for workers who were white, male, employed in a managerial or professional job in manufacturing, and not self-employed, was $4.44. Education had a positive and significant effect on wages with an estimated rate of return of 2.62 percent. This estimate lies between Mellow's 4.27 estimated rate of return for U.S. workers in all industries and Gunter's 2.6 percent for hired farm labor in Georgia.

The positive coefficient on experience (PEX_i) and the negative coefficient on experience squared ($PEXSQ_i$) were each significant at the 1 percent level. The estimated rate of return of 2.9 percent for a year of work experience is greater than the rate of return of 2.6 for an additional year of education. This comparison suggests that workers who were already employed and wished to remain in Putnam County had relatively little monetary incentive to leave their jobs and invest in additional education. An F-test revealed that PEX_i and $PEXSQ_i$ were jointly significant at the 1 percent level, indicating that the wage benefits for additional years of previous experience were positive but diminishing in magnitude.

Current-job tenure (TEN_i) and its square ($TENSQ_i$) were not significantly related to the log of wages. The significance of previous experience and the lack of significance of tenure in the current job suggest that workers in Putnam County acquired primarily general skills on the job. Work experience acquired in the current job apparently added little to the worker's productivity as perceived by employers. Average job tenure was 10.2 years, a period long enough for workers to acquire job-specific training and for it to yield returns if such investment occurs. The absence of additional wage benefits for years of current-job tenure suggest that little investment in job-specific training occurred in Putnam County. In contrast, Mellow's analysis of a sample drawn from all U.S. workers indicated that the rate of return for an additional year at the current job was three times higher than for a year of previous experience.

The coefficient of employer size (SIZ_i) was positive, as anticipated, and significant at the 1 percent level. Because employer size entered the model as a log and the dependent variable was a log, the regression coefficient indicates the proportionate impact that employer size had on wages. The estimated value of the employer size coefficient in Model Two indicated that, in a cross-employer comparison, doubling employer size was associated with a 12 percent wage increase. *Ceteris paribus*, the predicted wage of a worker earning $8.00 per hour in an establishment employing 50 workers would have risen to $8.96 per hour in an establishment employing 100 workers.

The coefficients of all five occupational categories (OCC_i) were negative and three were significant. The base occupation, the managerial and professional category, had a higher wage than the other categories. Three of the five industry categories

Table 3. Characteristics of Heads of Households, Putnam County, Georgia, 1990

Race	Male	Female	Married	Single	Mean Years Educ.	Mean Wage
	(Numbers of Household Heads)				(Years)	(Dollars)
Black	24 (30%)	15 (83%)	21 (30%)	18 (67%)	12.1	$7.74
White	56 (70%)	3 (17%)	50 (70%)	9 (33%)	13.4	$12.60
Total	80 (100%)	18 (100%)	71 (100%)	27 (100%)	12.7	$9.14

Source: Survey of 98 households, conducted by University of Georgia, March, 1990.

Table 4. Regression Estimates of Effects of Wage Determinants on Log Wages of Heads of Households, Putnam County, Georgia, 1990

Variable[a]	Model 1		Model 2		Model 3	
	Coeff.	t-stat.[b]	Coeff.	t-stat[b]	Coeff.	t-stat[b]
INTERCEPT	1.5718	6.15***	1.4900	5.56***	1.5063	5.60***
ED	0.0504	2.58**	0.0263	2.23**	0.0309	2.54**
PEX			0.0288	2.66***	0.0272	2.50**
PEXSQ			-0.0007	3.45***	-0.0006	3.18***
TEN			-0.0087	0.62	-0.0016	0.11
TENSQ			0.0004	0.93	0.0003	0.59
1n SIZ			0.1200	5.01***	0.0911	3.32***
OCC[b]						
TSA			-0.2245	1.80*	-0.2305	1.87*
SVC			-0.1571	1.27	-0.0993	0.79
PCR			-0.1642	1.52	-0.1398	1.30
OFL			-0.3016	2.83***	-0.2821	2.67***
FFF			-0.6876	2.66***	-0.5900	2.28**
IND[b]						
AFC			-0.1073	0.70	-0.1489	0.99
TPU			0.2833	2.74***	0.2751	2.69***
WRT			0.3890	2.74***	0.3610	2.57**
FIR			0.6614	2.75***	0.5955	2.49**
SVG			-0.0319	0.27	-0.0387	0.34
RAC[b]			-0.1559	2.01**	-0.4161	2.73***
GEN[b]			-0.6119	5.87***	-0.6546	3.81***
SEMP[b]			-0.1448	1.30	-0.1716	1.55
RAC x 1n SIZ					0.0618	1.85*
GEN x 1n SIZ					0.0118	0.29
R^2	0.065		0.808		0.819	
Adjusted R^2	0.055		0.761		0.769	
F Value	6.639		17.295		16.344	
N	98		98		98	

[a] Variables are defined in Table 1.

[b] Two tailed test. Reported t-statistics are absolute values. Single asterisk indicates significance at the 0.10 alpha level; double asterisk indicates significance at the 0.05 alpha level; triple asterisk indicates significance at the 0.01 alpha level.

(IND_i) had wages that were significantly higher than manufacturing, the base industry in the model.

The coefficient of race (RAC_i) was negative and significant at the 5 percent level. The value of the coefficient indicated that, on average, blacks received wages that were 14.4 percent lower than wages of whites.[4] The coefficient of gender (GEN) was also negative and significant. When calculated as a proportionate impact, average wages of women were 45.8 percent less than average wages of men. Because this study focused on the employer size-wage relationship, no attempt was made to explain the race and gender-related differentials. It is possible that a portion of these differentials was related to labor market discrimination. Testing for discrimination requires more detailed specification of productivity differences among workers than permitted by the data in this study.[5] For example, previous

[4] The proportionate effect of a dummy variable in a log-log model, such as equation (5), is calculated by taking the antilog of the estimated coefficient and subtracting one.

[5] A survey of the literature on wage discrimination is found in Marshall.

studies suggest that time spent out of the labor force for family duties explains part of the gender wage differential, but information for this variable was not available in the present study (Fuchs).

Contrary to expectations, self-employment status was not significantly related to the log of wages. Thus, there is no evidence that self-employed workers in Putnam County accepted wages that were systematically lower than wages of hired workers.

Results of Model Three are also reported in Table 4. All variables that were significant in Model Two remained significant in Model Three. Except for variables included in interaction terms in Model Three, the estimated coefficients changed little in magnitude. At the 1 percent level, an F-test revealed joint significance of the estimated coefficients of employer (SIZE) and the employer size-race interaction term (SIZ x RAC). As shown in Table 5, the proportionate wage impact of employer size was considerably larger for blacks than for whites. In a cross-employer comparison, a doubling of employer size was associated with a 21.9 percent wage increase for blacks and a 9.50 percent increase for whites.[6] In fact, the racial wage gap disappeared in firms with 30 or more employees.

An F-test indicated that the estimated coefficients of employer size (SIZE) and the employer size-gender interaction term (GEN x SIZ) were also jointly significant at the 1 percent level. The proportionate wage impact of employer size was slightly larger for females than for males. Table 5 shows that, on average, a doubling of employer size was associated with a wage increase of 16.4 percent for women and 14.0 percent for men. Because the rate of increase in wages with respect to employer size was only slightly higher for women than for men, the gender wage gap did not disappear as firm size increased.

Table 5. Wage Impact of Employer Size by Race and Gender, Putnam County, Georgia, 1990

	Proportionate Wage Impact[a]		
	Females	Males	Average
Blacks	0.238	0.215	0.219
Whites	0.115	0.091	0.095
Average	0.164	0.140	

[a] Indicates percent change in wages associated with a 1 percent increase in employer size, measured by number of employees.

CONCLUSIONS AND IMPLICATIONS

This study analyzed the effects of employer size and worker characteristics on rural wages in Putnam County, Georgia. Regression estimates indicate that employer size was positively related to average wage rates of workers after adjustment for other wage determinants. In addition to employer size, level of education and previous work experience were positively associated with wage rate. Industry, gender, and race also explained part of the variation in wages. Of particular interest in this study was the wage gap between blacks and whites. In a comparison of simple averages, the average wage rate for blacks was 61.4 percent of the average for whites. After accounting for productivity differences, firm size, and industry and occupation effects, the average wage rate of blacks was 14.4 percent less than the average for whites. The results suggest that this remaining wage gap between whites and blacks was related to employer size. A separate regression incorporating interaction between employer size and race indicates that the wage differential associated with race disappeared as employer size increased.

Southern rural economic development strategies, previously focused almost exclusively on industrial recruitment of large employers, have now shifted toward small business creation and expansion, based partly on the recommendation of several recent, widely-read reports (Southern Growth Policies Board; MDC). The results of this study support Till's argument that industrial recruitment may remain a viable rural development strategy for at least some southern counties, particularly counties with a proportionately large black population. In the case of Putnam County, expanding the share of small establishments, at least those with less than 30 employees, may increase the nonproductivity wage differential between blacks and whites. On the other hand, expanding the share of establishments with 30 or more employees appears to offer wage advantages to all workers regardless of race, gender, and levels of human capital.

While the geographic sample frame of this study is limited to Putnam County, previous research unanimously supports the conclusion that average wage rates increase with employer size. Other studies have not focused on the employer size-race

[6]Calculation of the proportionate impact of employer size must take account of the effects of race and gender due to the interaction terms. Since the regression is log-linear in form, the proportionate impact is given by the total partial derivative of the log of wages with respect to the log employer size:

$$\frac{d(\ln W)}{d(\ln X_{SIZ})} = \beta_{SIZ} + 2(\beta_{SIZxRAC} X_{RAC}) + 2(\beta_{SIZxGEN} X_{GEN}).$$

interaction, found to be significant in Putnam County, and further research is required to determine whether this interaction occurs in other geographic areas. For policy purposes, it would also be valuable to compare the effects of employer size across rural and urban areas.

In interpreting the results of this study, it should be recognized that the wage rate is an important criterion for evaluating economic development strategies but that other criteria are also valid. A complete evaluation of employer size-specific strategies for economic development should examine flows of capital income and backward linkages. Small establishments compared to large establishments may offer non-wage advantages, such as greater local retention of business profits and more local purchase of intermediate inputs.

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