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THE IMPACT OF NONFARM LABOR MARKETS ON OFF-FARM INCOME

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off-farm employment

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THE IMPACT OF NONFARM LABOR MARKETS ON OFF-FARM INCOME

Facts: Most farm households in the U.S. are highly dependent on off-farm income.

Most off-farm income (65 %) is obtained from working at nonfarm jobs.

Issues: How does the nonfarm labor market affect the incomes of farmers?

How responsive are farm households in allocating their labor between farm and nonfarm uses?

Approach: Estimate the responsiveness of off-farm income to changes in nonfarm labor market variables; including wages and unemployment rates

- Variables:
- Y = Off-farm income
 - w = nonfarm market wage rate
 - N = supply of farm people seeking off-farm jobs
 - p = probability of finding an off-farm job
 - u = unemployment rate
 - n = number of farm people actually working off-farm
 - I = non-labor income, e.g. transfer or rental payments
 - h = average hours worked at an off-farm job

- Equations:
- $Y = wnh + I$
 - $n = p(u)N(w)$
 - $h = h(w)$
 - w determined by factors exogenous to farm sector

substituting, we obtain:

$$Y = w p(u) N(w) h(w) + I$$

differentiate with respect to w, the wage:

$$\frac{dY}{dw} = hpN + wpN \frac{dh}{dw} + whp \frac{dN}{dw}$$

Write the elasticity as:

$$\epsilon_{Yw} = [whn/Y][1 + \epsilon_{hw} + \epsilon_{Nw}]$$

The elasticity of off-farm income with respect to wages is 1 plus the elasticity of hours with respect to wages plus the elasticity of number of labor market participants, weighted by the share of off-farm income obtained from off-farm work.

The elasticity with respect to unemployment is:

$$\epsilon_{Yu} = (whn/Y)\epsilon_{Nu}$$

the elasticity of off-farm income with respect to unemployment is the elasticity of the number working off-farm with respect to unemployment weighted by the share of off-farm income obtained from off-farm work.

Table 1. Sources of off-farm income*

Source	Amount (millions)	Percent * of Total
Cash Wages, Salaries, Commissions, Tips		
Nonfarm Jobs or Professions	\$21,212	65
Farm Work	1,089	3
Nonfarm Business or Professional Practice	2,874	9
Interest	2,608	8
Dividends	917	3
Retirement, Disability Payments	2,870	9
Estates, Trusts, Nonfarm Rent, Payments for Mineral Rights	915	3
Annuities, Alimony	192	0.6
Public Assistance Payments	76	0.2
Total	\$32,754	100

* Percentages do not add to 100 due to rounding.
Source: 1979 Farm Finance Survey, U.S. Department of Commerce, Bureau of the Census

Table 2. Data sources

Variable

Total Off-Farm Income	USDA, ERS.
Average Hourly Earnings of Production Workers on Manufacturing	US Dept. Labor, Bureau of Labor Statistics (b).
Total Unemployment Rate: Annual Average	US Dept. Labor (1970); US Dept. Labor, BLS (a).
Total Net Farm Income	USDA, ERS.
Number of Farms	USDA (1973,1977,1989)

All variables are state-level, annual for years 1960-1987.

Table 3. Off-farm income regressions, by region

Region	Variable			R ²
	WAGE	UNEMP	FINC	
New England	2626* (602)	-380* (84)	.022 (.016)	.26
Mid-Atlantic	5089* (802)	-502* (94)	.064* (.026)	.42
Lake States	3919* (424)	-324* (106)	.065* (.025)	.53
Corn Belt	3306* (652)	-497* (103)	-.005 (.021)	.26
Appalachian	3164* (437)	-428* (59)	.012 (.031)	.46
Southeast	6513* (528)	-299* (79)	.087* (.023)	.68
Delta	3205* (526)	-409* (102)	.029 (.025)	.39
South Plains	3452* (931)	-565* (230)	.068 (.063)	.26
Northern Plains	1936* (499)	-126 (165)	.069* (.013)	.27
Mountain ^{1/}	2502* (554)	-133 (120)	.092* (.015)	.33
Pacific	2368* (673)	-395* (117)	.130* (.029)	.39

Regression coefficients estimated by Parks method from pooled state-level data over years 1960-87 are shown with standard errors in parentheses, intercepts not shown.

* denotes coefficient significantly different from zero at .05 level.

^{1/} Utah, Nevada, and New Mexico were excluded from the Mountain region sample (see note 5).

Table 4. Estimated Nonfarm Wage and Unemployment Elasticities, by Region

Region	<u>wage</u>		<u>unemployment</u>	
	ϵ_{Yw}	$\epsilon_{Hw} + \epsilon_{Nw}$	ϵ_{Yu}	ϵ_{Tu}
New England	1.07	.70	-.13	-.20
Mid-Atlantic	2.31	2.25	-.17	-.24
Lake States	2.76	2.82	-.15	-.21
Corn Belt	2.00	1.78	-.18	-.26
Appalachian	1.69	1.42	-.20	-.26
Southeast	2.56	2.72	-.11	-.16
Delta	1.53	1.19	-.20	-.29
South Plains	1.47	1.27	-.16	-.24
Northern Plains	1.42	1.22	ns	ns
Mountain	1.29	1.08	ns	ns
Pacific	1.08	.80	-.14	-.23

Definitions of elasticities (dependent variable / independent variable):

ϵ_{Yw} : total off-farm income / nonfarm wage.

ϵ_{Hw} : average hours worked off-farm / nonfarm wage.

ϵ_{Nw} : number of farmers working off-farm / nonfarm-wage.

ϵ_{Yu} : total off-farm income / unemployment rate.

ϵ_{Tu} : number of farmers working off-farm / unemployment rate.

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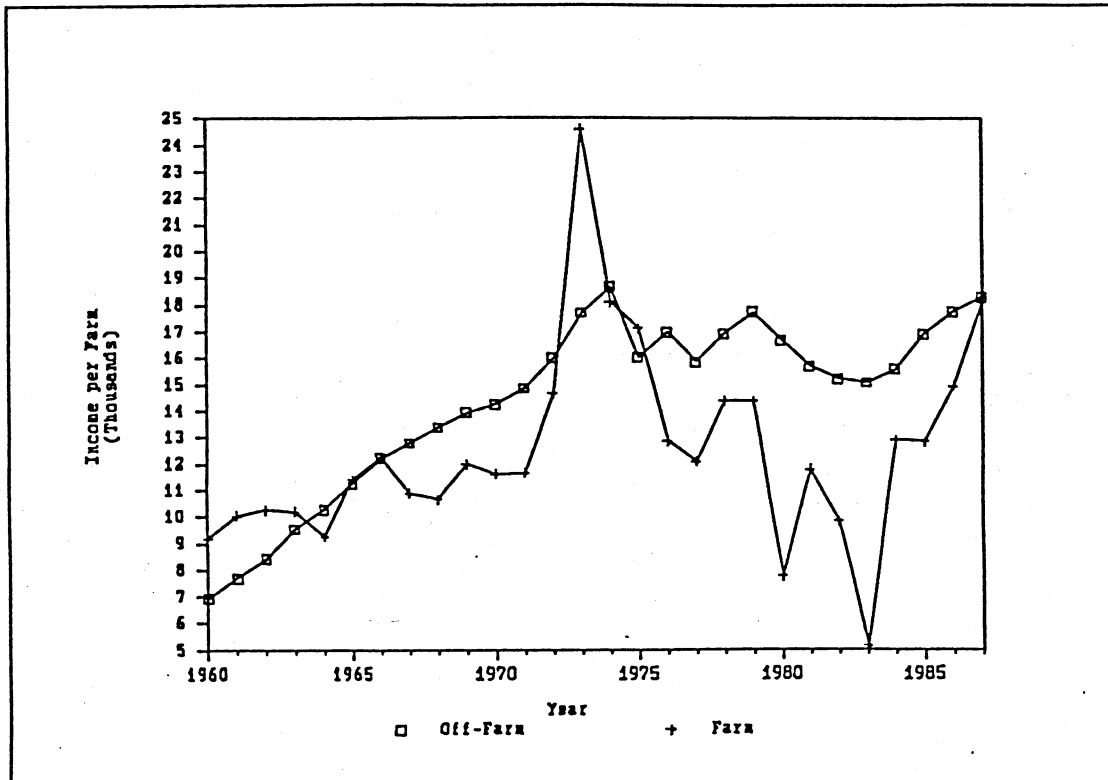


Figure 1. Off-farm and farm income, United States

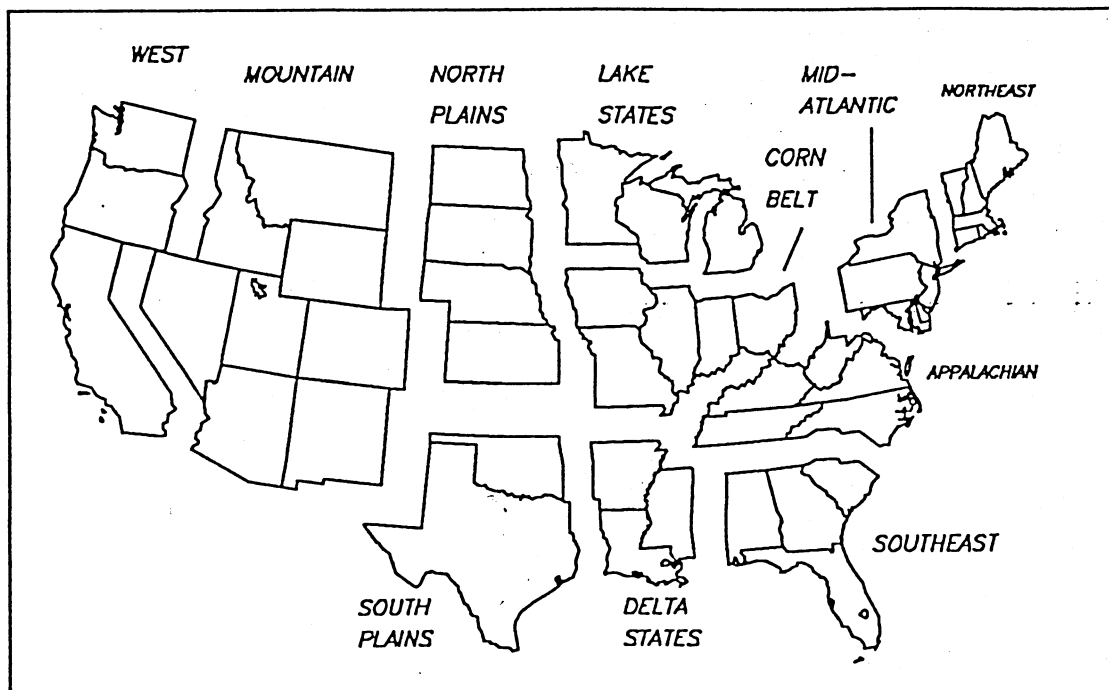


Figure 2. Eleven U.S. regions