Why Do New Englanders Work So Much?

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Back in the not so distant past of 1987, the New England unemployment rate was only 3 percent. Concerns about labor shortages were widespread among employers: workers were hard to find at any reasonable wage and even if employers did find them, workers frequently moved on to another job in short order. The subsequent softening of the New England economy has caused a loosening of the regional labor market and the availability of labor has become a less pressing issue for New England businesses. However, projections of slower growth in the working-age population in the 1990s, attributable to changes in the age structure, hold out the possibility of tight labor markets and difficulties finding suitable workers in the future.

Increased in-migration may augment population growth. In addition, increases in the fraction of the working-age population that chooses to work can increase the supply of workers without any change in the size of the population. This article focuses on the fraction of the working age population that chooses to work, called the participation rate, and its responsiveness to economic conditions. If participation in the labor force increases in response to higher wages and rising employment opportunities, labor shortages are less likely. Increased labor demand would, in effect, generate its own supply.

Part I of this article defines participation and briefly examines the changes in regional participation rates since the mid-1970s. Part II discusses the theoretical links between participation rates and economic conditions. In part III an attempt is made to explain the variation in regional participation rates over the period 1974 to 1988 using pooled cross-section time series regressions. Part IV focuses on the implications of the regressions for individual regions, with emphasis on the New England experience. Conclusions are presented in part V. Participation rates tend to respond positively to favorable economic conditions; to

some extent at least, a strong demand for labor creates its own supply. However, while participation rates respond to economic conditions, regional variations in participation have been remarkably persistent and are unlikely to be eliminated by the normal workings of the economy.

I. What Is the Participation Rate? How Has It Changed?

The participation rate is the proportion of the noninstitutional population 16 years of age and over that is in the labor force. The labor force, in turn, consists of all persons who are employed or unemployed. A person is considered to be employed if he does any work for pay or works at least 15 hours without pay in a family business during the week in which the data are gathered. The unemployed are not simply those without jobs. To be considered unemployed one must have made some effort to find work in the previous four weeks. Thus, the labor force consists of those who are employed or seeking employment and the participation rate is the fraction of the population old enough to work that is actually at work or looking for work. Those who are not in the labor force consist of those who do not want to work, those who cannot work, and also those who may want to work but have not recently looked for work.

The civilian participation rate excludes members of the armed forces from both the labor force and the noninstitutional population. (The effect of the exclusion is small: in 1988 the civilian participation rate for the country as a whole was 65.9 percent, the participation rate including the armed forces was 66.2 percent.) Because state and regional participation rates refer to civilian participation, all subsequent discussion is in terms of civilian participation rates.

In 1988 New England had the second highest participation rates of any region for both men and women. Only the West North Central region had higher participation rates. As can be seen in table 1, regions with relatively high participation rates for one sex generally have high participation rates for the other. Traditionally, however, female rates in New England have been higher relative to those elsewhere than male rates. New England had the highest or second highest female participation rate in every year since 1974 (chart 1). The male rate through much of the 1970s, although above the national average, was exceeded by rates in three or four other regions; but in the 1980s New England advanced in the rankings as male participation levelled off in New England while declining in regions with higher rates.

The female participation rate in New England is still higher relative to that elsewhere than is the male rate. For example, the difference between New England's female participation rate of 60 percent and the neighboring Mid Atlantic region's rate of 52 percent was substantially greater than the gap between male participation rates in the two regions (78 and 74 percent respectively.)

All regions have experienced the same trends since the mid-1970s of rising female participation, declining male participation, and increasing participation overall. Given the magnitude of these changes over time, particularly the sharp rise in female participation, it is striking that regional differentials in participation rates have been so persistent. There has certainly been no convergence. Participation in the Mid Atlantic and East South Central regions has remained well below that in other regions; New England and the West North Central region have consistently ranked at or near the top.

This is not to say that no shifts have occurred at all. As noted, male participation held up better in New England than in most of the country during the 1980s. The East North Central region, on the other hand, experienced a sharp decrease in male participation. In 1974 male participation was higher in the East North Central states than in any other part of the country; in 1988 five regions had higher male participation rates. In 1974 female participation in the West

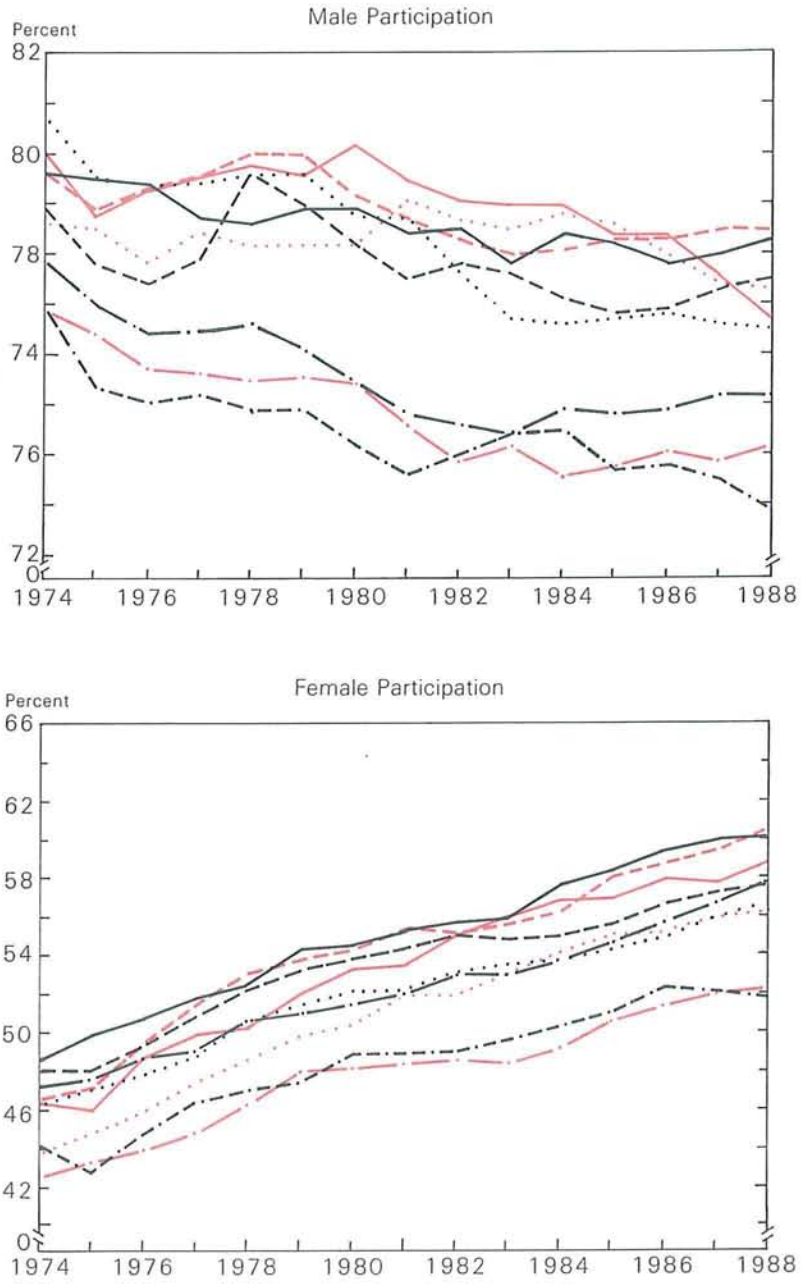
Table 1
Participation Rates in 1988

	Total	Male	Female
New England	68.8	78.3	60.2
Mid Atlantic	62.6	74.2	52.4
East North Central	66.1	76.5	56.7
West North Central	69.1	78.5	60.6
South Atlantic	66.0	75.2	57.8
East South Central	61.7	72.9	51.8
West South Central	66.4	77.3	56.4
Mountain	67.5	76.7	58.9
Pacific	67.3	77.5	57.6
United States	65.9	76.2	56.6

Census regions are defined in the appendix.
Source: U.S. Bureau of Labor Statistics, *Geographic Profile of Employment and Unemployment*, 1988.

Chart 1

Regional Participation Rates for Men and Women, 1974-88



Source: U.S. Bureau of Labor Statistics, *Geographic Profile of Employment and Unemployment*, 1974-88.

North Central states was roughly the national average; by 1978 the West North Central region had the highest female participation rate of any region. New England reclaimed that position during most of the 1980s, but in 1988 the West North Central states once again were at the top.

What accounts for these different rates of change and what explains the persistence of high and low participation rates? Why did participation rise more rapidly in New England than the nation in the 1980s, more slowly in the East North Central states? What, if anything, does industrial New England have in common with the more rural West North Central states that explains both regions' high participation rates?

II. A Little Theory

Analyses of labor force participation generally focus on the influence of wages and the unemployment rate. Wages and unemployment rates are seen as potentially important determinants of participation, but in both cases, the direction of their effect is theoretically ambiguous. The starting point in analyzing participation is the trade-off between work and leisure. People desire both leisure and consumption goods. However, income is required in order to purchase goods; and to earn income, people must forgo leisure and devote time to work. In this trade-off, the wage rate can be seen as the price of leisure. Enjoying an extra hour of leisure requires that the individual forgo the wage that could have been earned by working that hour and the goods those earnings could have purchased.

The starting point in analyzing labor force participation is the trade-off between work and leisure.

While the wage can be considered the price of leisure, the relationship between the wage and the quantity of leisure demanded is ambiguous. An increase in the wage means that an extra hour of leisure involves a greater sacrifice of income and goods than before; the higher price of leisure, therefore, creates an incentive to substitute work (and the resulting goods) for leisure. At the same time, the higher wage means the same or even less time devoted to work yields more income and more goods than before. The individual might choose to enjoy more of both goods and leisure. If this income effect dominates the incentive to substitute work for leisure, higher wages will cause an increase in the demand for leisure and a reduction in the quantity of labor supplied; if the substitution effect is dominant, higher wages cause an increase in the quantity of labor supplied.

The analysis has been extended to take into account time devoted to child care, home maintenance and other activities that are neither market work nor leisure. As in the case of leisure, an increase in the wage rate would have a substitution effect favoring market work and reducing the time spent in these activities. The direction of the income effect is less clear and depends upon whether devoting more time to these "home work" activities increases the individual's well-being. Higher wages might cause one to work less and devote more time to one's children, for example. If, however, home work is a necessary evil, higher wages would not cause any more time to be spent in these activities, although time devoted to market work might still be reduced in favor of leisure.

Increased productivity in home work amounts to a price reduction for such activities; while this would have a substitution effect favoring home work, it also means that one can achieve the same or higher production at home while devoting more time to either work or leisure. It has been suggested and seems plausible that such productivity gains have been major contributors to the long-term rise in female participation in the labor force.

The participation rate is the fraction of the population that is working or looking for work rather than the number of labor hours supplied. Can the line of reasoning outlined above be applied to the participation rate? If one sees work schedules as very rigid and the participation rate as the result of one-time decisions to work or not, individuals do not have the option of enjoying a higher wage and doing less work, and higher wages can only encourage more people to substitute work for leisure (Cain and Dooley 1976 and Ben-Porath 1973). Most analysts do not see the participation rate in this light, however. Even if individuals have limited flexibility in how many hours they work in a day, they have some control over how many days they work in a week, or weeks in a year, or years in a lifetime. The participation rate, then,

reflects not simply one-time decisions to work or not but also decisions to work (or not) this week, or month, or year rather than some other week, or month, or year. Thus, participation may respond either positively or negatively to changes in the wage.

While one cannot say on theoretical grounds how changes in the wage rate affect the quantity of labor supplied, increased income from sources other than the individual's own labor would permit more enjoyment of both leisure and goods and thus would be expected to reduce the quantity of labor supplied. Conversely, reduced income from other sources would cause one to curtail one's consumption of leisure, as well as goods, and increase the quantity of labor supplied. This is the basis for the "additional worker" hypothesis which holds that higher unemployment rates will lead to higher participation rates. If a spouse or family member loses his job, the loss of this income source will cause the individual to cut back on leisure and increase the quantity of labor supplied—by working more hours or choosing to work if not already doing so.

The "discouraged worker" hypothesis, in contrast, argues that higher unemployment rates are associated with lower participation rates. Persons not in the labor force think they will have difficulty finding a job and do not look; persons in the labor force but unemployed become discouraged in their job search and cease to look. Put in terms of the trade-off between work and leisure, the higher the unemployment rate the more time a job seeker is likely to spend in job search and, thus, the lower the earnings that can be expected from a decision to seek work. The price of leisure is therefore lower. Additionally, the higher unemployment rate means more people without jobs, more people for whom the decision to substitute leisure for work implies the sacrifice of expected rather than actual earnings. Thus, plausible arguments exist in favor of either a positive or negative relationship between participation rates and unemployment rates as well as between participation and wages.

The foregoing discussion suggests additional factors that might affect participation. If income from sources other than the individual's own labor has a negative effect on participation, one would think that expectations of future income would also have an effect, with positive income prospects discouraging current participation and negative or uncertain prospects encouraging participation.

One important source of uncertainty about future income is the cost of living; fear that higher prices will reduce real income levels could encourage people to work. Uncertainty with respect to future employment opportunities, on the other hand, might function more like the unemployment rate; while some people may be encouraged to work (and build up savings) in order to protect future standards of living, others may be discouraged because the possibility of future job loss reduces the expected return from work. (The latter effect seems more likely in the case of persons who do not currently hold jobs and for whom job search would entail some cost.)

Different population groups face different wage and employment opportunities; they have different levels of non-wage income; their productivity in home work may differ. Accordingly, their participation rates may differ. For example, lower participation rates for black than for white males may be attributable to less attractive wage prospects and greater likelihood of unemployment. Lower participation rates for women than for men may be explained by lower market wages and higher productivity in the home. Of course, cultural factors may also play an important role; low female participation rates may reflect tradition and differing "tastes" for home and market work.

III. Regional Participation Rates over Time

Can the changes in regional participation rates since the mid-1970s be explained in terms of wages, unemployment rates and some of the other factors suggested by the preceding discussion? The answer is that changes in employment opportunities have had some effect but regional variations in participation are durable.

Pooled cross-section time series regressions were used to identify the factors affecting participation rates in the nine census regions during the period 1974 to 1988. Separate regressions were run for male and female participation rates because these have exhibited such divergent patterns over time. Representative results are shown in table 2.

In equations 1 and 4, an attempt was made to explain participation rates using wages, unemployment rates and a simple time trend. Reasons for including wages and unemployment rates as explanatory variables have been discussed in the preceding section. A "male" wage was used in the equations explaining male participation rates and a "female" wage in the equations for female participation rates. Industry wages (total earnings divided by total em-

Table 2
Regression Results
Dependent Variable = Participation Rate (Labor Force Relative to Working Age Population)

	Male					
	1	2	3	1b	2b	3b
Constant	83.9*	90.0*	115.2*	81.7*	95.6*	90.3*
	(24.5)	(7.8)	(15.1)	(37.8)	(22.7)	(17.0)
Real annual earnings[a] (−1)	.22*	.28*	.01	.27*	.30*	.24*
	(2.9)	(2.4)	(.1)	(3.4)	(3.8)	(3.0)
Unemployment rate (−1)	−.32*	−.39*	.14	−.06	−.06	−.02
	(−4.0)	(−3.4)	(1.6)	(−1.7)	(−1.5)	(−.6)
Time	−.11*	−.25*	−.25*	−.13*	−.04	.07
	(−3.1)	(−2.6)	(−4.2)	(−10.5)	(−1.3)	(1.2)
Employment growth		.12*	.05		.05*	.04
		(2.1)	(1.3)		(2.3)	(1.8)
Volatility of employment changes		.78*	.40*		.02	.02
		(2.8)	(2.2)		(.2)	(.2)
Growth in prices		−.05	.01		−.01	−.009
		(−1.9)	(.7)		(−1.3)	(−1.2)
Volatility of price changes		.13*	−.04		.03*	.02
		(2.8)	(−1.2)		(2.0)	(1.3)
Growth in working age population		−.15	−.17*		−.09*	−.05
		(−1.6)	(−2.8)		(−2.2)	(−1.4)
% Adults over 65		−.18	−.60*		−1.45*	−1.27*
		(−.7)	(−3.4)		(−8.6)	(−7.2)
Small children/young adults		.25*	−.05		.13*	.13*
		(2.3)	(−.6)		(2.2)	(2.0)
Real property income per adult			.41*			−.06
			(11.8)			(−1.2)
Real transfers per adult			−.73*			−.18*
			(−10.9)			(−3.0)
New England				2.5*	2.9*	3.8*
				(10.4)	(10.1)	(8.3)
Mid Atlantic				−1.8*	−1.3*	.2
				(−4.5)	(−2.9)	(.3)
East North Central				1.4*	−.3	.4
				(3.3)	(−.6)	(.7)
West North Central				3.0*	4.8*	4.7*
				(14.7)	(14.2)	(14.0)
East South Central				−1.0*	−1.5*	−2.3*
				(−4.8)	(−6.9)	(−4.2)
West South Central				2.1*	−.6	−.9
				(8.5)	(−1.5)	(−2.0)
Mountain				3.0*	−1.1*	−1.0
				(13.4)	(−2.2)	(−1.9)
Pacific				1.1*	−2.2*	−.8
				(2.7)	(−4.5)	(−1.2)
$\bar{R}^2$	.24	.38	.75	.92	.95	.96

[a]"Male" earnings for equations explaining male participation rates; "female" earnings for the female equations.
*Significantly different from zero at the 5% level.
Notes: Regressions are pooled time series and cross section using data on 9 regions over 15 years.
The set of regional dummies omits South Atlantic, hence all coefficients on regional dummies are differences from South Atlantic.
See Appendix for definitions of variables and sources.

	Female					
	4	5	6	4b	5b	6b
Constant	−8.9	25.6	52.4*	−11.6*	3.5	−2.7
	(−1.9)	(1.6)	(5.4)	(−4.0)	(.5)	(−.3)
Real annual earnings[a] (−1)	−.13	−.35	−1.08*	.03	.09	.11
	(−1.0)	(−1.7)	(−7.0)	(.2)	(.6)	(.7)
Unemployment rate (−1)	−.38*	−.59	.14	−.03	−.11*	−.12
	(−3.3)	(−3.6)	(1.2)	(−.6)	(−2.0)	(−1.9)
Time	.81*	.63*	.61*	.78*	.89*	.97*
	(16.5)	(4.8)	(7.9)	(44.4)	(17.9)	(10.9)
Employment growth		.15	−.002		.06	.06
		(1.9)	(−.1)		(1.9)	(1.9)
Volatility of employment changes		1.31*	.66*		.41*	.42*
		(3.2)	(2.7)		(2.9)	(2.9)
Growth in prices		−.04	.08*		.03*	.03*
		(−1.2)	(3.3)		(2.6)	(2.2)
Volatility of price changes		.12	−.20*		.003	.01
		(1.8)	(−4.4)		(.1)	(.4)
Growth in working age population		−.15	−.07		−.20*	−.20*
		(−1.2)	(−1.0)		(−3.4)	(−3.2)
% Adults over 65		−.59	−1.08*		−1.43	−1.33*
		(−1.7)	(−5.0)		(−5.4)	(−4.7)
Small children/young adults		−.51*	−.78*		−.09	−.03
		(−2.9)	(−7.0)		(−1.0)	(−.3)
Real property income per adult			.66*			−.09
			(15.1)			(−1.1)
Real transfers per adult			−.70*			−.06
			(−7.8)			(−.6)
New England				2.8*	2.1*	2.7*
				(8.0)	(4.8)	(3.9)
Mid Atlantic				−4.2*	−4.8*	−4.1*
				(−7.5)	(−6.6)	(−4.0)
East North Central				−.3	−2.7*	−2.5*
				(−.6)	(−4.5)	(−3.9)
West North Central				2.3*	3.7*	3.7*
				(7.1)	(7.6)	(7.3)
East South Central				−3.7*	−4.1*	−4.9*
				(−11.2)	(−11.8)	(−5.8)
West South Central				−1.1*	−2.8*	−3.3*
				(−3.5)	(−5.4)	(−5.0)
Mountain				1.2*	−1.6*	−1.7*
				(4.0)	(−2.0)	(−2.1)
Pacific				1.2*	−1.9*	−1.2
				(2.3)	(−2.8)	(−1.3)
$\bar{R}^2$	.68	.75	.91	.96	.98	.98

ployment) were calculated for each region for each year. These were then weighted according to the distribution of male (female) employment in each region, according to the 1980 Census, to obtain the male (female) wages. Thus, the male wages are more sensitive to developments in industries in which men account for a disproportionate share of employment, while the female wages are more reflective of changes in female-oriented industries. The time trend approximates the influence of unspecified cultural, demographic and economic factors that change steadily with time.

In equations 2 and 5, the list of explanatory variables was substantially expanded. The rationales for including these variables can be briefly summarized as follows. The growth rate and standard deviation of changes in the consumer price index are intended to capture concerns about the effect of inflation on future purchasing power; the growth rate and standard deviation of changes in employment represent expectations about future employment opportunities, as well as tendencies for labor force patterns to persist. The growth in the working-age population provides a measure of the potential competition for jobs. The fraction of the adult population that is over 65 is included because the elderly have much lower participation rates. The ratio of children under 5 to the population aged 18 to 44 is intended to capture links between the presence of young children and participation.

Possible sources of regional variations include differences in educational levels, marital status, racial composition, urbanization and cultural attitudes.

Transfer income and dividends, interest and rent (property income) were added to the list of explanatory variables in equations 3 and 6. These are forms of non-wage income and would be expected to discourage participation. As discussed in the appendix, however, they are not independent of past earnings and they have cyclical patterns as well as strong upward trends, which make any association with participation difficult to interpret. Because of these ambiguities, equations 2 and 5, which exclude transfer and property income, were judged superior to equations 3 and 6, despite the former's lower explanatory power.

Finally, the three sets of equations are shown with the addition of regional dummy variables. The regional dummy variables are intended to capture the collective effects of unspecified, long-standing sources of regional variations in participation rates. Possible sources include differences in educational levels, marital status, racial composition, urbanization and cultural attitudes. The influence of these factors, which do not change much over time, cannot readily be sorted out with only nine regions. Ideally, the dummy variables would represent only factors not already included in the equations. However, if some of the included variables also exhibit persistent regional differences, the dummy variables may pick up their influence. (The South Atlantic region was arbitrarily chosen as the base region and each dummy variable shows how much higher or lower participation would be in a particular region than in the South Atlantic for the same values of the other explanatory variables.) A more complete discussion of the explanatory variables appears in the appendix.

Male Participation Rates

Regional variations in male participation rates are very durable. The variations in male participation rates over time are smaller than the variations across regions. A comparison of the regressions with and without regional dummies indicates that unspecified, long-standing variations in participation, represented by the regional dummies, account for most of the overall variation.

With that qualification, male participation rates respond positively to the real wage and negatively to unemployment rates. In other words, higher real wages encourage men to seek work, while high unemployment rates discourage labor force participation.

The unemployment rate seems to play a greater role in explaining variations in participation from one region to another than in explaining variations from year to year. Comparing the equations with and without regional dummies, one finds that the contribution of the unemployment rate is much smaller—and statistically insignificant—when the regional dummy is included. The likely explanation is that there are persistent differences in regional unemployment rates that are associated with regional variations

in male participation; however, the effect of such differences is subsumed in the regional dummies.

Male participation rates are positively related to the five-year rate of growth in employment and negatively related to the growth in the working-age population. Although the latter relationship is not always statistically significant, it would appear that male labor force participation is encouraged by a growing demand for labor and discouraged by growing competition for jobs. Male participation may also be related positively to past volatility in employment. Such a positive link to volatility suggests a precautionary motive for labor force activity. As in the case of the unemployment rate, when regional dummies are introduced, the variation in employment changes no longer makes a contribution.

Male participation rates do not appear to be related to the growth in consumer prices. Some equations suggest that price volatility encourages participation but this is not a consistent result. Male participation does not seem to be motivated by fears of inflation.

Male participation rates have fallen over time. In some versions of the equation, time alone has a significant influence; but other versions suggest that time may only be a proxy for other variables, such as the increasing fraction of the population in the older age groups or decreases in the number of young children.

Increases in the fraction of the adult population that is over 65 are associated with lower rates of participation in the equations including regional dummy variables. Those over 65 are much less likely to work than those between 16 and 65; accordingly one would expect that the more elderly people, the lower participation. The presence of young children is positively linked to male participation.

Dividends, interest, and rent and transfers per adult are strongly associated with participation when regional dummies are not included in the equation—dividends, interest, and rent positively and transfers negatively. Both have much less influence when the regional dummies are included and behave more as expected. How should one interpret these results?

Theory says that non-wage income should encourage the consumption of leisure and reduce participation. However, dividends, interest, and rent and transfer income are not independent of wages or even of participation rates. High wages and high participation and employment levels permit the accumulation of assets that generate dividends, interest, and rent. Thus, high income from dividends, interest, and rent may reflect the existence of high wages and participation rates in the past; and this association with past earnings may dominate any tendency for non-wage income to discourage participation. Since the former effect is a long-term one, it would manifest itself more in variations among regions than over time.

Transfer payments are also linked to past earnings because much transfer income consists of social security income and government retirement benefits. However, this association between transfers and retirees is more likely to lead to a negative relationship between transfers and participation rates, attributable not only to transfer income discouraging work but also to high concentrations in certain regions of persons who would have low participation rates under any circumstances and who also receive high transfers. Including in the equation the fraction of the adult population over 65 should control for the presence of the elderly, but not for other groups characterized by low participation and high eligibility for transfers. Transfer payments also have a countercyclical pattern, rising in economic downturns. Thus, the apparent association with participation could reflect the response of both transfers and participation to changing economic conditions rather than participation responding to transfers. As noted previously, equation 2 was judged superior to equation 3 (and 5 superior to 6) for these reasons.

Male labor force participation appears to be encouraged by a growing demand for labor and discouraged by growing competition for jobs.

Female Participation Rates

Regional variations in female participation rates are also very durable. However, in contrast to male participation rates, which have not changed much over time, female rates have climbed steadily upwards in all regions. A simple time trend explains much of the variation in female participation.

Rising female participation appears to be associated with a relative decline in the number of young

children in the population. The ratio of the number of children under five to the number of adults eighteen to forty-four has declined in most regions. Whereas male participation rates are positively related to the presence of children, female rates are negatively related; so the decrease in the ratio of small children to adults tends to raise female participation rates. (One probably should interpret this relationship as meaning that decisions to work and decisions to have children are intertwined, rather than that the absence of children causes higher female participation rates.) Increases in the fraction of the adult population over 65 may have dampened the rise in female participation rates.

No statistically significant relationship was found between female participation rates and real wages; female participation, unlike male, did not respond to higher wages. This result runs counter to many studies of participation, which have found that female participation rates respond positively to real wages. The explanation may be the time period covered by this article. During the period under study real wages were stagnant in most regions; nevertheless, female participation increased substantially. It may also be that the measure of wages used here, even though weighted towards female-oriented industries, does not adequately represent the earnings opportunities open to women. However, a simple comparison of regional participation rates and earnings certainly supports the regression results (table 3). New England had high female participation and, in the late 1980s, relatively high earnings; the West North Central region, with equally high female participation, had low earnings. The Mid Atlantic states had a very low female participation rate despite the highest earnings of any region.

Unemployment rates, on the other hand, do help explain the variation in female participation, with higher unemployment rates discouraging participation. A comparison of the equations, including and excluding the regional dummy variables, suggests that the unemployment rate plays a greater role in explaining variations in female participation among regions than it does over time. Female participation also seems positively related to the volatility of employment growth. While women may be discouraged from seeking work by high unemployment rates, a history of variable employment seems to encourage participation. Growth in employment opportunities seems to foster participation, although the result is not statistically significant; the growth in the working-age population negatively affects participation.

Table 3
Regional Comparison of Female Participation Rates and Earnings

	1988 Participation		1987 "Female" Earnings/ Employment[a]	
	Percent	Rank	$	Rank
New England	60.2	(2)	19,144	(3)
Mid Atlantic	52.4	(8)	20,683	(1)
East North Central	56.7	(6)	18,156	(4)
West North Central	60.6	(1)	15,696	(7)
South Atlantic	57.8	(4)	16,871	(6)
East South Central	51.8	(9)	15,666	(8)
West South Central	56.4	(7)	17,080	(5)
Mountain	58.9	(3)	15,545	(9)
Pacific	57.6	(5)	19,799	(2)

[a]1987 earnings divided by employment, deflated by the U.S. Consumer Price Index.

Source: U.S. Bureau of Labor Statistics, *Geographic Profile of Employment and Unemployment*, 1988; U.S. Bureau of Economic Analysis; U.S. Bureau of the Census.

Some versions of the equation suggest that female participation is positively related to the growth in regional consumer prices; women work as a hedge against inflation.

As was the case for male participation rates, female participation was positively related to income from dividends, interest, and rent and negatively related to transfer income in the equations excluding regional dummy variables. When the dummy variables were included, neither dividends, interest, and rent nor transfer payments had a statistically significant effect on participation. Possible interpretations of this pattern have already been discussed.

In summary, participation rates for both men and women respond positively to employment opportunities, but the responses are not strong and the nature of the responses varies somewhat between men and women. Participation of both men and women is deterred by higher unemployment rates. The influence of unemployment rates on participation seems more important in explaining variations across regions than over time. This result is consistent with a pattern that has recurred in the literature: studies that look at variations in participation across metropolitan areas, states, or regions generally find a stronger link to unemployment rates than studies that look at participation rates over time. Strong growth in employment seems to be associated with

higher participation; strong growth in the working-age population, a measure of competition for work, with lower participation rates. Female participation rates were found to be positively related to the volatility of past employment changes; male rates, but not female, were positively related to real wages.

The rising proportion of adults of retirement age seems to have dampened both male and female participation rates over time. The presence of young children is associated with higher male participation rates and lower female participation.

Perhaps the most striking conclusion arising from these regressions, however, is the durability of regional variations in male and female participation rates. Long-standing variations in participation rates across regions have tended to persist, despite dramatic changes in the economic fortunes of different regions and despite a dramatic increase in female participation during this period. While the regional dummy variables may subsume some of the influence of other variables, such as unemployment rates, which exhibit persistent differences, the point remains: regional differences in participation are remarkably durable.

IV. Implications for New England

The magnitude of the unspecified sources of regional variations in participation rates is indicated by the regional dummy variables. Depending upon the equation chosen, participation rates in New England would be 2 to 4 percentage points higher than in the South Atlantic given the same unemployment rate, age structure of the population, price and employment performance in the two regions. Comparing the dummy variables for New England with those for other regions, one can see that not only would participation in New England exceed that in the South Atlantic, but that it would exceed that in all regions except the West North Central, given the same values of the other explanatory variables.

The explanatory variables are not, of course, the same for New England as for other regions. Comparing the values for New England with those elsewhere, one discovers that New England has had persistently high participation rates despite a relatively large population over sixty-five. The number of young children in New England is relatively low, a pattern consistent with higher female participation but lower male participation. Real wages in New England changed over the period of study. By the mid-1980s real wages were above average, contributing to higher male participation rates. Participation rates were also bolstered in the 1980s by strong employment growth relative to population. Unemployment rates were below average for most of the study period. All of these effects were quite small, however, in comparison with the unspecified causes of high participation represented by the New England dummy variable.

That participation rates would be so much higher in New England—and also the West North Central region—than in other parts of the country for given values of the explanatory variables means that some other factor or group of factors, not included in the equation, has had a powerful and persistent influence on participation. One suspects that education plays a role: the fraction of the adult population with at least 12 years of education is above average in both regions. (The education level is higher still in the Pacific and Mountain states.) Other explanations are also possible. With nine regions, one cannot readily distinguish between factors that do not change much with time. What is apparent is that the high participation rates in New England and the West North Central states have deep-seated and enduring origins.

The low participation rates of the East South Central and Mid Atlantic states are also due in large part to unspecified, long-standing factors. However, low male participation rates in the East South Central also reflect low wages and an older population. In the Mid Atlantic states, in contrast, wages are higher than average; but the elderly population is large. Transfer payments and property income are very high in the Mid Atlantic states. In both regions, unspecified factors play a greater role in depressing female rates than male.

The high participation rates in New England and the West North Central states have deep-seated and enduring origins.

While the equations provide only limited insight into the reasons why participation rates vary from

one region to another, they do shed light on how regional participation rates have shifted over time. In particular, male participation rates did not fall as much in New England as in the rest of the country because real wages held up better in New England than elsewhere and because employment growth was strong in the 1980s relative to the growth in the working-age population. Relatively strong growth in employment and low unemployment rates also boosted female participation in the region; above-average increases in the cost of living in the region may have made a small contribution to rising female participation as well.

That participation rates respond to favorable employment opportunities should provide some comfort to those concerned about the possibility of labor shortages.

In contrast to New England, the economic performance of the West North Central states deteriorated between 1974 and 1988. However, changes in the age structure of the population helped to bolster participation in that region. Although the West North Central states have a relatively old population, the fraction of the adult population over 65 did not increase as much in this region as in the rest of the country.

Sharp declines in male participation in the East North Central states can be attributed to declining real wages and higher than average unemployment rates, especially in the early 1980s, as well as to a larger than average increase in the proportion of the adult population over 65. Recent declines in male participation in the West South Central and Mountain regions also reflect poor wage and unemployment performance, and in the case of the Mountain region a sharp increase in the fraction of adults over 65. In the late 1970s and early 1980s, relatively strong wage growth and low unemployment rates tended to raise participation in these regions. Rapidly rising living costs may have contributed to increasing female participation in the Mountain states.

V. Conclusions

This article has attempted to explain regional variations and changes in the participation rate, the fraction of the working-age population that is employed or seeking employment. It found that the decision to work or seek work responds positively to favorable employment opportunities. Strong growth in employment encourages participation, while rapid growth in the working-age population, the number of potential job seekers, has a negative effect.

That participation rates respond to favorable employment opportunities should provide some comfort to those concerned about the possibility of labor shortages. Strong growth in employment relative to the growth in the population, low unemployment rates and high real wages tend to increase participation. New England's experience in the 1980s is illustrative. Although economic conditions have recently deteriorated, for most of the 1980s employment growth in New England was stronger than average, while population growth was slower than average; unemployment rates were low and wages increased relative to those elsewhere. The strong demand for labor elicited an increase in supply. The region's already high participation rates increased more than participation rates nationwide.

Although participation rates respond to the growth in employment opportunities and to unemployment rates and, for men, earnings differentials, much of the variation in participation rates from one region to another seems to reflect immutable regional characteristics rather than economic variables that may change over time. Because of the importance of these persistent regional characteristics, variations in participation rates are remarkably durable. Despite striking changes in the economic fortunes of different parts of the country during the period under study, New England and other regions that had relatively high participation rates in the mid-1970s generally had high participation rates in the 1980s. The persistence of such differentials is even more remarkable when one considers that female participation rates rose dramatically over the period. Surely the forces responsible for rising female participation rates would be more powerful in some regions than in others. Surely one would see a tendency for regions with low participation rates to catch up. However, that has not been the case.

For state and local policy-makers concerned about the possibility of future labor shortages, the lessons are twofold and slightly contradictory. First,

the labor supply is not fixed. Participation rates will rise in response to favorable employment opportunities and, to a limited extent, will compensate for slow population growth. Second, while low participation rates in some areas might seem to indicate potential sources of future labor supply, the regional experience suggests that tapping such a resource will be difficult: regional differences in participation rates have been very persistent.

Appendix: Definitions of Variables and Sources

All variables refer to the nine census regions and the years 1974 to 1988 except where noted.

Census regions:

New England (NE): CT, ME, MA, NH, RI, VT.
Mid Atlantic (MAT): NY, NJ, PA.
East North Central (ENC): IL, IN, MI, OH, WI.
West North Central (WNC): IA, KS, MN, MO, ND, NE, SD.
South Atlantic (SAT): DC, DE, FL, GA, MD, NC, SC, VA, WV.
East South Central (ESC): AL, KY, MS, TN.
West South Central (WSC): AR, LA, OK, TX.
Mountain (MT): AZ, CO, ID, MT, NM, NV, UT, WY.
Pacific (PAC): AK, CA, HI, OR, WA.

Dependent variable:

Male and female civilian participation rates—civilian labor force relative to the civilian population 16 years of age and over. Separate equations were run for male and female participation rates because of the strikingly different patterns of change over time exhibited in chart 1 of the text.

Source: U.S. Bureau of Labor Statistics, *Geographic Profile of Employment and Unemployment*, issues for the years 1974–77 and 1982–88. Data for the years 1978–81 were obtained from unpublished tabulations supplied by the Bureau.

Explanatory variables:

Real annual earnings—calculated as earnings by place of work relative to total employment. Earnings were calculated for the major industry categories for each year and were weighted according to the 1980 distribution of male (female) employment in the regions to obtain earnings measures reflective of developments in male (female) oriented industries. The earnings figures were deflated by the U.S. Consumer Price Index. Earnings were lagged one year.

Regressions were run using the "male" and "female" earnings and also using total earnings divided by total employment. The choice of the earnings variable did not affect the results very much, although "male" earnings seemed to explain male participation slightly better than total earnings. Including both "male" and "female" earnings variables in the same regressions did not produce satisfactory results; the signs of the two wage variables were unstable.

Source: Employment and earnings figures were obtained from computer tapes supplied by the U.S. Bureau of Economic Analysis.

Unemployment rates—number unemployed relative to the civilian labor force. The unemployment figures were lagged one year to reduce the possibility of distortions arising from the fact that the denominator of the unemployment rate is the numerator of the participation rate.

Source: Same as participation rates.

Time—1974 to 1988 for all regions. The time trend is intended to represent cultural, demographic, and economic developments that have changed over time in all regions and that are not adequately represented by other variables in the equation.

Persons over 65/ adults—the population 65 years of age and over relative to the population 18 years of age and over. Although the working age population is defined as those 16 years of age and over, historic data on the age structure of the regions require a division at 18.

Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-25, Nos. 875 and 1024.

Employment growth—growth in employment between year t − 5 and year t.

Volatility of employment changes—standard deviation of employment changes between year t − 5 and year t.

These variables were included to approximate expectations and uncertainties surrounding future employment opportunities.

Source: U.S. Bureau of Economic Analysis, tape data.

Growth in prices—growth in prices between year t − 5 and year t.

Volatility of price changes—standard deviation of price changes between year t − 5 and year t.

A consumer price index for each region was calculated by averaging (no weights) the available indices for metropolitan areas located in the region. No index is available for a metropolitan area within the East South Central region, so an adjacent metropolitan area was used. Using the U.S. CPI or the CPI for the largest metropolitan area in each region does not produce markedly different results.

The past rate of growth in the CPI was intended to represent expectations of future inflation, while the standard deviation of price increases was included as a measure of uncertainty about inflation. Because of the crudeness of the regional indices, earnings were deflated by the U.S. CPI.

Source: U.S. Bureau of Labor Statistics, *Handbook of Labor Statistics*, 1983 and 1989.

Small children/young adults—population under 5 relative to the population aged 18 to 44.

Source: *Current Population Reports*.

Growth in working-age population—Because population figures have been revised over time, it was decided to estimate the working-age population by multiplying a consistent series of total population figures by the ratio of the population 18 and over to the total population. The growth in the working age population was calculated as the change between years t − 5 and t.

Source: Total population figures were obtained from computer tapes supplied by the Bureau of Economic Analysis. Data on the age structure of the population came from the *Current Population Reports*.

Property income per adult—dividends, interest and rent relative to the population 18 years of age and over.

Transfer income per adult—transfers relative to the population 18 years of age and over.

Dividends, interest, and rent and transfer payments per adult were included in some equations, but the nature of their relationship to participation is problematic. Theory argues that higher non-wage income should lead to greater consumption of leisure and lower participation. However, both dividends, interest, and rent and transfer payments are positively related to past earnings and income levels—transfers because a large portion of transfer payments consists of social security payments and government retirement pay, the magnitude of which depends—in part—upon past earnings; dividends, interest, and rent because higher income levels permit greater asset accumulation, which generates more income in the form of dividends, interest, and rent. Thus, high transfers and high dividends, interest, and rent may be the result of high wage rates in the past and even of high participation rates. Such a relationship might well appear as a positive link between current participation and these non-wage income sources. However, such a link would not mean that theory is wrong, only that the measures of non-wage income are not truly independent of earnings.

A further complication arises from the fact that, particularly in the case of transfers, so much non-wage income is associated with retirement. In other words, high transfer income may be negatively related to participation because some transfer payments are available only to population groups, such as the elderly, that would have low participation rates under any circumstances. One can attempt to control for this by taking into account the age structure and other characteristics of the population.

Source: Income data from the Bureau of Economic Analysis; adult population calculated as described above.

Regional dummy variables—do not change over time. The South Atlantic was arbitrarily chosen as the base region. Each dummy shows how much higher or lower participation would tend to be in the region in question than in the South Atlantic for the same values of the other variables. These variables are intended to represent the collective effects of long-standing sources of regional variations in participation rates. Possible sources of such variations are differences in educational levels, marital status, racial characteristics and cultural attitudes. The influence of factors that do not change much over time cannot readily be sorted out with only nine regions.

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