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Are Worker's Wages Driven by National or Local Factors?

Abstract: Previous studies of the linkage of national and regional labor markets have focused on aggregate employment growth and migration. By focusing on the separate effects of national and regional labor market economic conditions on **wages**, this study differs from much of the previous literature. In particular, this paper will extend the previous literature in two key directions. First, it will explore whether local economic activity and location-specific amenities have different effects on metropolitan and nonmetropolitan area wages. Second, it will determine whether these effects on workers varied by education level between metro and nonmetro workers. These issues will be explored using 1988-1993 National Longitudinal Survey of Youth data merged with local labor market measures of amenities and economic conditions. In this preliminary draft, we explore the differential impact of amenities and local economic conditions on wages for metropolitan versus nonmetropolitan workers. Our findings suggest that there are differences in returns to human capital when comparing metro and nonmetro workers. Moreover, compensating differentials for location-specific amenities, and local labor market conditions also appear to depend on metropolitan versus nonmetropolitan residence. Future research will extend the model to consider addition variations for skilled and unskilled workers.

I. Introduction

Two of the most important components of regional science are: (1) the contention that there is spatial distinctions that make regional economies worth studying and (2) regions within a nation are at least loosely connected in terms of an equilibrium adjustment process that tempers regional differences. In a sense, points (1) and (2) are somewhat conflicting.

In examining both of these points, a number of regional labor market studies have emphasized the question of differential roles of people and jobs in determining regional growth. Muth, 1971 was among the first to recognize the simultaneity between migration and job growth. This was later explored by Carlino and Mills (1987) and Clark and Murphy (1996). In the migration literature, the debate has been extended to an examination of the differential roles played by site-specific amenities and employment opportunities (Graves and Linneman, 1979; Greenwood and Hunt, 1989; Knapp and Graves, 1989; Greenwood, Hunt, Rickman and Treyz, 1991; Clark and Hunter, 1992). This literature examines the relative importance of place-specific amenities and employment opportunities in generating regional net migration flows. The adjustment speeds of net migration flows and employment growth are often considered to examine whether they are primarily an equilibrium or disequilibrium response. Although the ultimate jobs versus people question remains unsettled, this research has greatly aided our understanding of why some regions persistently grow faster than other regions in terms of *employment* and *migration*.

Yet, certain aspects of point (1)-- the linkage of national and regional labor markets-- have received much less attention. In particular, in stark contrast to the vast number of studies of employment and migration patterns, the relative importance of national and regional cyclical conditions in determining workers' *wages* is less explored (Abraham and Katz, 1995). For example, it is well known that high-skilled workers are more likely to migrate than low-skilled workers (e.g., Fox et al., 1989). However, it is less clear the extent to which high-skilled wages are more or less influenced by national versus local economic conditions. Moreover, although it has been suggested that location-specific amenities are a normal good that affect migration patterns (Graves and Linnemann; 1979, Knapp and Graves, 1989), an underlying assumption is that all workers are geographically mobile. For example, some labor markets may be local as compared to national in geographic scope. Thus, if some workers (e.g., low skilled workers) work in local labor markets and other workers (e.g., high skilled workers) operate in national markets, then amenity differences may not influence migration behavior for workers in local labor markets in the same way that they do those in national labor markets. Other things equal, the more national in scope the labor market, the greater should be the impact of amenity levels on market compensation.

This study extends the regional labor market literature by examining individual wage formation using National Longitudinal Survey of Youth (NLSY) data over the 1988-1993 period. In this preliminary draft, we report separate findings for metropolitan area and nonmetropolitan area samples. Our NLSY data set is augmented by Geocode identifiers of the respondent's county of residence, which are not reported in the public release of the NLSY. Knowledge of the respondent's county of residence allows us to construct disaggregate measures of amenities and economic conditions at the county (or MSA) level and merge this information with the *individual's* demographic and human capital measures. Thus, aggregation problems that result from using regional average measures of wages, demographics, and human capital are mitigated.

The regional disaggregation in our data also allows us to explore another key issue: whether nonmetropolitan wage formation is different from metropolitan wage formation? In this manner, a key premise of urban economics is the notion that general patterns of economic behavior are influenced by the scale of the local economy. Yet, relatively little empirical research has been undertaken in examining how urban labor markets are distinguished from other labor markets. The importance of the issue is further illustrated by the relative decline in nonmetropolitan per capita income versus metropolitan per capita income (BEA, 1998). In this regard, there is a large literature regarding the spatial mismatch of workers in central cities and jobs in the suburbs (see Holzer's 1991 survey). Yet, there is much less examination of spatial mismatch of a different sort. That is between workers in one rural locale and jobs in larger metropolitan areas or elsewhere. Given the potential for lengthy commutes and an absence of public transportation in these areas, spatial mismatch may be a bigger concern in rural areas. Thus, a better understanding of the distinctiveness between metropolitan and nonmetropolitan labor markets would help guide rural and urban economic development policymaking in terms of creating high-wage or high-quality jobs. Future empirical analysis will separately consider low-skilled and high-skilled workers to further test the hypothesis that high-skilled workers are more influenced by national economic conditions and *local* region-specific amenities than low-skilled workers.

The next section presents a model of individual wage formation that includes the effects of individual skill level and location-specific factors. Section III presents the data and empirical model, Section IV contains empirical findings, and the final section discusses future directions.

II. Theoretical Model

The primary determinant of an individual's wage is ability and human capital accumulation. Yet, the presence of location-specific firm and household amenities and differences in regional economic conditions also influence wages. As Abraham and Haltiwanger (1995, p. 1261) note, "... the national labor market is probably best characterized as a web of local labor markets that are linked differentially by sector, occupation and skill type." In this manner, Roback (1982) presents a general equilibrium model that introduces location-specific firm (or productivity enhancing) amenities and household amenities in the determination of wages and land rents. Although the interaction of wages and rents complicates the analysis, it is generally thought that greater firm amenities increase wages because firms can afford to pay higher wages and remain competitive. The reverse is true for disamenities which reduce productivity. Likewise, more household amenities are generally thought to be negatively related to wages as households are willing to trade lower wages to remain in the area, whereas they increase land rents as demand for land increases in more amenable locations.

Sjaastad (1962) and Borjas et al. (1992) show that individuals tend to migrate to areas where there are higher returns to their particular bundle of human capital characteristics. Such migration tends to arbitrage away differences in returns to human capital characteristics. However, the presence of location-specific effects can result in differing marginal products for human capital characteristics across regions (Farber and Newman, 1987). In this vein, the persistence of long-term per capita income differentials across the United States (Barro and Salai-Martin, 1991) point to the sluggishness of regional economic convergence. This suggests that returns to human capital may persistently vary across regions, but a greater propensity to migrate should reduce the size of regional wage differentials.

Disequilibrium adjustments to local economic conditions can also influence regional wage differentials. For example, wages typically rise when employment increases do not immediately result in greater labor-force participation or greater labor in-migration from other regions. Consistent with this point, Partridge and Rickman (1999) show that the short-term response of in-migration to employment growth can be rather small, especially if the region's employment growth is concentrated in industries that are faring well nationally.

As noted by Abraham and Haltiwanger (1995), it is unlikely that local economic conditions have a uniform influence on wages across all occupations. Clearly, some high-skilled labor markets are thought to be much more linked to national labor market conditions (e.g., Ph.D. Economists). In this case, local (national) economic conditions should have less (more) impact on high-skilled wages than on low-skilled wages due to a greater propensity to migrate to the best economic opportunity.

Besides skill levels, it is also possible that metropolitan labor markets are in general more linked to national labor markets than are nonmetropolitan labor markets. This would be the case if new innovations or management techniques diffuse more slowly to the rural hinterlands. Similarly, a closer linkage would result when metropolitan residents are more mobile than their nonmetropolitan counterparts.[1] When metropolitan labor markets are more influenced by national conditions, a typical MSA's employment growth should have a smaller influence on its wages than a typical nonmetro area's employment growth on its wages. If so, traditional economic development policies of creating jobs -- any jobs -- makes more sense in rural areas. Yet, an implicit assumption behind this is that the elasticity of labor supply is the same or higher in metropolitan areas, which depends on the elasticity of labor participation, migration, and commuting patterns.

There are also reasons to believe that amenities will be valued differently in metropolitan and nonmetropolitan labor markets. For one, individuals self-select to live in areas with their preferred amenity bundle, suggesting that metropolitan and nonmetropolitan area residents may have heterogeneous tastes for amenities. For example, BEA data indicates that the nonmetro/metro per

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[1]In this manner, 1990 Census of Population migration data somewhat supports the hypothesis that metropolitan labor markets are more linked to the national labor market. That is, metropolitan residents were much more likely to have been born in a different state than nonmetropolitan residents (41.2% versus 27.8%) and were more likely to have moved across state boundaries in the preceding five years (9.6% versus 8.5%). However, metropolitan and nonmetropolitan residents were about equally likely to have moved across a county line (19.0% versus 19.3%) in the preceding five years.

capita income ratio has fallen since the early 1970s.[2] One reason may be that nonmetropolitan amenities are increasingly valued by households, and hence workers are willing to forego income to obtain these amenities. Furthermore, during the 1990s, despite the lower relative per capita income, nonmetropolitan areas have gained population through net migration from metropolitan areas (U.S. Bureau of the Census). Nonetheless, an alternative hypothesis for relatively lower nonmetro wages is poor economic conditions and low human capital levels.

The above discussion suggests the following two models shown in equations (1a-b) for worker i's wage (w) in year t. The model in equation (1a) is for workers residing in metropolitan area *m*, while the model in equation (1b) is for workers residing in nonmetropolitan county *n*.

(1a) $w^m_{it} = f(\mathbf{X}_{it}, \mathbf{E}_{mt}, \mathbf{CT}_{mt}, \mathbf{A}_{mt}, \mathbf{I}_{it}, \tau^m_t)$

(1b) $w^n_{it} = f(\mathbf{X}_{it}, \mathbf{E}_{nt}, \mathbf{CT}_{nt}, \mathbf{A}_{nt}, \mathbf{I}_{it}, \tau^n_t)$

In equations (1a) and (1b), **X** is a vector of time variant and invariant measures of the worker's human capital, demographic characteristics, and job characteristics. **E** is a vector of the economic structure of the county or MSA where worker i resides including measures of cyclical activity; **CT** is a vector of indicators that categorize the respondent's county; and **A** is a vector of time variant and time invariant measures of the county's level of amenities. Vector **I** is a vector of time variant indicators for the worker's industry of employment. Finally, τ is a vector of time period effects to control for factors that have a common influence across all MSAs or nonmetro areas. In particular, τ accounts for all national business cycle effects in a given year including inflation and productivity growth.

III. Data and Empirical Model

The primary data source is the 1988-1993 NLSY augmented by Geocode identifiers of the respondent's home county. The NLSY is a longitudinal survey began in 1979 with a survey of 12,686 young males and females between the ages of 14 and 22 (Center for Human Resource Research, 1997). A key feature of the NLSY sample is that the retention rate has been in the neighborhood of 90%. Budgetary constraints forced the elimination of 878 members of the military subsample in 1985 and

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[2]Nonmetropolitan per capita income was about 71.2% of metropolitan per capita income in 1969, rising to about 78.2% in 1973. This ratio fell to about 70.2% in 1988, leveling out to about 71.1% in 1997.

1,643 members of disadvantaged white subsample were eliminated in 1991. Including the disadvantaged white subsample, 10,465 were surveyed in 1988 and 9,011 were surveyed in 1993. Observations were then deleted for the self employed and for members of the military as well cases when an individual's observation was unavailable for all six years between 1988 and 1993. Likewise, observations were also omitted when the respondent's hourly wage was less than $1.50 or over $250. Finally, individuals were deleted if there were missing data for the variables of interest (except in a couple cases described below). The final sample size includes 4,236 individuals for a total sample size of 25,416 over the entire sample period.

Over the sample period, NLSY respondents were between 23 and 36 years old. The key advantage of considering young workers is that they are geographically more mobile than average, and hence should be more influenced by economic conditions. Given the greater mobility of individuals in this sample compared to average, this data set should provide a stringent test of the influence of local economic conditions and location-specific amenities. Similarly, younger workers are more likely to be part of the "active labor market" when more frequent job changes and lower firm tenure suggests that their wages are more closely related to local supply and demand (Freeman, 1993). Alternatively, older workers likely have done less "job shopping" in recent years where internal firm labor market considerations play a stronger role in wage determination.

Most of the variable, unless otherwise noted are from the NLYS. The dependent variable used in the regression analysis is the usual hourly wage taken as usual weekly earnings divided by usual weekly hours. Assuming a linear form for equations (1a) and (1b), the following metropolitan and nonmetropolitan equations can be written:

(2a) $w^m_{it} = \alpha 0 + \boldsymbol{\alpha 1 X_{it}} + \boldsymbol{\alpha 2\ E_{mt}} + \boldsymbol{\alpha 3\ CT_{mt}} + \boldsymbol{\alpha 4\ A_{mt}} + \boldsymbol{\alpha 5 I_{it}} + \boldsymbol{\alpha 6}\ \tau^m_t + v_i + e^m_{it},$

(2b) $w^n_{it} = \beta 0 + \boldsymbol{\beta 1 X_{it}} + \boldsymbol{\beta 2\ E_{nt}} + \boldsymbol{\beta 3\ CT_{mt}} + \boldsymbol{\beta 4\ A_{nt}} + \boldsymbol{\beta 5 I_{it}} + \boldsymbol{\beta 6}\ \tau^n_t + v_i + e^n_{it}.$

In equations (2a-b), $\alpha 0$ and $\beta 0$ are constants, $\boldsymbol{\alpha 1}$-$\boldsymbol{\alpha 6}$ and $\boldsymbol{\beta 1}$-$\boldsymbol{\beta 6}$ are coefficient vectors, and τ is a vector of year dummies. The error term is made up of two components, v and e, where v reflects unmeasured differences in ability for individual i that are assumed to be time-invariant ($Ev_i=0$, $Ev_i^2=\sigma_v^2$, $Ev_iv_j=0$ for all i and j). The e term represents the typical regression error with mean zero and a standard deviation equaling σ_e^2 ($Ee_{it}e_{jk}=0$, $Ee_{it}v_j=0$ for all i, t, and j, $i \neq j$).[3] Future specifications will further divide equations 2a and 2b into two separate regressions: one for workers with greater than a high school degree and another for workers with a high school degree or less. These results will be used to examine how the effect of amenities and local economic conditions vary by skill level.

The **X** vector contains the standard human capital, demographic, and workplace characteristic variables that have been used in other microdata studies. They include tenure with the current employer and actual experience in linear and quadratic form; a vector of indicator dummies for years of educational attainment; a dummy for minority and gender; a union member indicator; a dummy for health status that affects work or pay; an indicator for larger employers with 1000 or more employees; and the respondent's Armed Forces Qualifications Test (AFQT) score, which was administered to most of the NLSY sample in 1980. There are also eight occupation dummy variables with the low-skilled labor occupation being the omitted category so that wages are measured relative to laborers.

The **E** vector includes several different measures of economic conditions in the respondent's county. Generally, for nonmetropolitan respondents, we employ county level economic measures because the county is probably a reasonable characterization of the respondent's labor market. Subsequent research will investigate whether MSA measures are more appropriate for metropolitan workers.[4] The primary local labor market variables are employment based measures derived from

[3]An alternative way to model the equation is to assume fixed individual effects. Yet, Greene (1997) suggests that on a heuristic level, when the cross-sectional observations are sampled from a large population (like the NLSY), it may be more appropriate assume the individual constants are distributed randomly. Likewise, Greene notes that relative to fixed effects techniques, random effects estimates have advantages regarding their consistency when the number of years is small (like our case). A final advantage is that random effects allows the model to include time invariant variables for each individual such as race or gender, which are of interest in the empirical results. However, fixed effects has the advantage of being consistent when the individual effects are correlated to the explanatory variables, which would not be true for random effects. Nonetheless, by including a large number of variables associated with ability that are usually unobservable to investigator (e.g., AFQT score), using the NLSY data set mitigates these concerns. Yet, in future analysis, we will estimate a fixed effects model to examine the sensitivity of the results.

[4]Obviously, county or MSA may not perfectly reflect the relevant labor market for the respondent. For example, in larger MSAs, the respondent may not be able to work in the entire MSA. Likewise, some nonmetropolitan respondents may be able to work in other counties. To the extent that our labor market measures suffer from measurement error, the resulting coefficients will be biased towards zero, which should be kept in mind when interpreting the results. Of course these same problems affect other potential market definitions including BLS Labor Market Areas and BEA market areas.

Bureau of Economic Analysis REIS data (U.S. Department of Commerce, 1998) The first group is the annual percent changes in private-nonfarm employment and farm employment for the four years preceding the survey. Including lagged employment growth terms allows for the possibility of sluggish adjustment of wages to economic conditions. In particular, we are interested in the magnitude of the coefficients across the metropolitan and nonmetropolitan specifications as well as differences between less and more educated individuals.

To investigate the role played by the economic base, we include the share of private employment in manufacturing and in farming.[5] These share variables test whether a greater share in the high (low) paying manufacturing (farm) sector spills over and lifts (depresses) wages throughout the local labor market. In this manner, Treyz (1991) suggests that wage composition of the region's economy has direct spillover effects on the entire region's wage distribution. Another local labor market measure is the local unemployment rate, which is directly found in the NLSY. The unemployment rate is included as a test of the wage curve (Blanchflower and Oswald, 1994), which predicts that wages are depressed by higher unemployment rates, versus the Harris-Todaro model, which predicts that there is a positive hedonic tradeoff between wages and the unemployment rate (Harris and Todaro, 1970).

The county-type variables include seven indicators of the county's level of urbanization derived from the U.S. Department of Agriculture's Beale codes.[6,7] In particular, wage differentials across

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[5]In some cases, county farm employment was not reported in the REIS data set. For those counties, the national metropolitan or national nonmetropolitan farm employment growth rate and farm employment share were substituted. Likewise, a handful of county manufacturing employment levels were also missing. Correspondingly, the national metro and nonmetro manufacturing shares were substituted.

[6]The Beale index was developed by Calven Beale at the U.S. Department of Agriculture and includes 4 typologies for metropolitan counties (i.e., 0=central counties of metro areas of 1 million population or more, 1=fringe counties of metro areas of 1 million population or more, 2=counties in metro areas of 250,000 to 1 million population, 3=counties in metro areas of fewer than 250,000 population) and 6 classifications for nonmetropolitan counties (i.e., 4=urban population of 20,000 or more, adjacent to a metro area, 5=urban population of 20,000 or more, not adjacent to a metro area, 6=urban population of 2,500 to 19,999, adjacent to a metro area, 7=urban population of 2,500 to 19,999, not adjacent to a metro area, 8=completely rural or less than 2,500 urban population, adjacent to a metro area and 9=completely rural or less than 2,500 urban population, not adjacent to a metro area). In this draft, we use seven classifications by combining categories. Specifically, codes 0 and 1 were combined for counties in metropolitan area counties greater than 1 million residents, codes 4 and 6 were combined to form an indicator for urban nonmetro counties adjacent to metro areas, and codes 5 and 7 were combined to form an indicator for urban nonmetro counties not adjacent to metro areas. Sensitivity analysis with the

county type would be of interest in economic development policymaking. Likewise, labor market differences by region will be captured by regional dummies for the Midwest, South, and West, with the Northeast being the omitted group.

Amenities in the **A** vector are the standard variables found in the literature (e.g., Blomquist et al., 1988). These include measures of various climate, crime, and tax variables, where favorable household (firm) amenities depress (increase) wages. The climate data include average annual heating degree days, average annual cooling degree days, average daily temperature deviation between high and low temperatures, and percent of available sunshine. The climate measures are assembled from National Weather Service data.[8] Serious crimes per capita reported in the *Counties USA* (U.S. Department of Commerce, 1997) are included to capture firm and household *dis*amenities effects of crime. Finally, we include measures of the local property tax per capita (in $1,000s) and other local taxes per capita (in $1,000s) to proxy for fiscal conditions in the county (reported in *Counties USA*). The tax variables have ambiguous effects depending on the tradeoff of the favorable effects of local government expenditures (e.g., household amenities like good public schools) versus the adverse effects from a greater tax burden (e.g., negative household amenities).[9]

As with the economic variables, there are two key hypotheses that will be tested for the amenity variables. First, do nonmetropolitan workers value favorable amenities (through lower wages) more than metropolitan workers? If so, this would help to explain the nonmetro/metro income differential and migration patterns in the 1990s? Alternatively, do wages of more geographically

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regression model suggested that these combinations are appropriate.

[7]In future work, we will include private nonfarm employment density to capture potential agglomeration economies related to urbanization (Ciccone and Hall, 1996; Partridge and Rickman, 1999). Likewise, population density and its square will be included to consider whether amenities related to population also affect wages.

[8]Note that this regression does not directly control for land or housing costs, the primary reason for cost of living to vary across regions. The rationale is that wages and rents are simultaneously determined (Roback, 1982). Hence, our wage equation can be best viewed as a reduced form equation (Herzog and Schlottmann, 1993).

[9]Notice that the county-type indicators (Beale Code) may also capture amenities and disamenities associated with urban scale. Likewise, the regional dummies control for other amenity effects that vary by region.

mobile metropolitan area residents better reflect the hedonic value of their location's amenities? Second, do highly educated workers value amenities differently than less educated workers? Such findings have obvious policy implications as cities and rural areas attempt to attract high-skilled workers and jobs.

The **I** vector is a set of nine indicator variables for the worker's industry of employment. The omitted industry is manufacturing, so that all the other industry coefficients measure *ceteris paribus* industry wages relative to manufacturing.[10] One characteristic of the industry variables is they control for various unmeasured aspects of the worker's industry, which may capture some of the effects of the human capital and other variables. For example, some high-paying industries also employ a well-educated workforce, suggesting that some of education's effect may be captured by the industry dummy coefficient.

IV. Empirical Findings

Table 1 presents the descriptive statistics weighted by NLSY sample weights. Column (1) contains the metropolitan descriptive statistics, column (2) contains the nonmetropolitan descriptive statistics, and column (3) contains the absolute value of the t-statistic to test whether the metro and nonmetro means are statistically different. The sample includes 20,864 metropolitan and 4,552 nonmetropolitan observations.

The average metropolitan wage is 0.24 log points greater than the average nonmetro wage, or 27.1% higher (exp[.24]=1.271). Metro areas also have a higher average share of workers with at least a 4-year college degree, while nonmetro areas have a higher share of high school graduates. Metro area occupations are more likely to be in relatively higher-skilled managerial & professional occupations and technical occupations. The more favorable metro skill distribution somewhat explains its higher wage structure. Metro areas also have higher shares of union workers, workers employed by large employers, African American workers, Hispanic workers, as well as higher taxes and a higher crime rate. Column (3) shows that most of the metropolitan and nonmetropolitan means are

[10]In the sample, there were relatively few construction workers including none during 1993. So, given the small size, construction will be included with manufacturing as part of the omitted group, where both are relatively high-paying sectors.

significantly different, which is not surprising given the large sample sizes.

Table 2 reports random-effect regressions separately estimated for the metropolitan and nonmetropolitan samples. The semi-log functional form is estimated by a maximum likelihood procedure using the SAS statistical package. Column (1) reports the metropolitan worker results and column (2) reports the nonmetropolitan results. To test whether it was appropriate to divide the sample into metro and nonmetro subsamples, a Chow test was conducted for the null hypothesis that the metro and nonmetro coefficients were equal (not shown). This null hypothesis could be rejected at the 0.1% level of significance.[11] Likewise, in further sensitivity analysis, Chow-tests were conducted to see if the metro and nonmetro regression coefficients differed within the broad category groupings in equation (2) (e.g., do the metro and nonmetro human capital and demographic variable coefficients differ). With the exception of the local labor market variable group, the difference between the metro and nonmetro coefficients within each individual category group was statistically significant at the 5% level.[12]

Turning first to the variables in the human capital and demographic category, most of the coefficient signs are as expected. For example, there is a concave wage-actual experience and a concave wage-tenure relationship. What is most interesting is that there are consistently higher returns to educational attainment in nonmetro areas. On one hand, this could reflect a greater demand for skill in nonmetro areas. However, given the emphasis in urban economics on agglomeration effects and dynamic externalities (e.g., Glaeser et al., 1992; Henderson, 1997), it seems implausible that nonmetro areas would have the excess demand for educational attainment. On the other hand, greater nonmetro education returns are most consistent with a smaller relative supply of educated workers. For public policymaking, this suggests that there are gains to increasing the supply of college educated labor in

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[11]The Chow test was conducted by interacting a nonmetro indicator variable with each variable in the regression in Table 2 and then including these interactions in a regression of the pooled metro-nonmetro sample. The Chow test considers the joint significance of all of the nonmetro interaction variables. The resulting likelihood ratio test statistic equalled 250.7 with 63 degrees of freedom.

[12]Additional sensitivity analysis was conducted by dropping the industry dummy variables from the base models and omitting the occupation dummy variables from the base models (not shown). In both cases, the remaining coefficients were basically unchanged, suggesting that the empirical results are quite robust to even significant specification changes.

nonmetro areas. However, one possible reason for the relatively lower supplies of college educated workers in nonmetro areas is that they lack amenities associated with urban scale, which are desired by more educated workers.

Most of the occupational coefficients are approximately equal between both models, although there are some key differences. For example, the greater nonmetro manager/professional coefficient supports the notion that there are greater nonmetro returns to certain types of skill. Other metro/nonmetro labor market differences are reflected by greater nonmetro wage differentials for workers in sales, service, and operator occupations, again suggesting spatial differences between the two types of labor markets. However, caution should be exercised in interpreting the occupation coefficients because they are measured relative to laborer wages.

Not surprisingly, employees at large employers earn higher wages. Thus, as shown in Table 1, the 11 percentage point greater share of metro workers employed at large employers is one reason for higher average metropolitan wages. However, nonmetro workers earn even greater returns when working for large employers, suggesting that nonmetro workers employed at small firms are especially penalized. Part-time workers are penalized about 5% more in nonmetro areas than in metro areas, which may reflect spatial differences in their secondary labor markets. Interestingly, the race coefficients are quite similar between the two models. This goes against the idea that rural employers are more bigoted, or that the lack of labor market competition allows nonmetro employers to practice discriminatory tastes. However, nonmetro females earn about 2% less than observationally equivalent metro females, which is consistent with nonmetro females being more likely to be employed in the secondary labor market (and may also reflect discrimination).

The county-type variables also reveal some interesting patterns. First, residents of metropolitan areas with more than 1 million residents earn about 7% more than their counterparts in smaller metropolitan areas. Note that these coefficients reflect the offsetting effects of urban-scale household amenities that depress wages and household *dis*amenities that increase wages, as well as any urbanization and cost of living effects that lift worker productivity and wages. Because it is likely that the average cost of living is more than 7% higher in large metropolitan areas, it seems plausible that favorable urban amenities outweigh negative urban disamenities (which pushes large metropolitan area wages below what would be expected by simple cost of living differentials). Likewise, the relatively small large-metro wage gap suggests that positive urban agglomeration effects are not particularly strong. In future research, we will more closely examine the offsetting impacts of urbanization and congestion on wages.

All of the nonmetro county-type variables are statistically insignificant. This suggests that firm and household amenity effects offset each other in nonmetro areas. Yet, it was surprising that average wages were not higher in nonmetro counties adjacent to metro areas given that these labor markets should be somewhat linked to the neighboring metro labor market. However, this is good news for nonmetro counties not adjacent to metropolitan areas in that their wages are not necessarily depressed simply due to geographical isolation.

As expected, workers in the Midwest, South, and West earn lower wages than observationally equivalent workers in the Northeast. At least for metropolitan residents, the lower Southern and Western wage differentials are consistent with superior household amenities (and cost of living). However, since these coefficients reflect offsetting firm and household amenity effects, the regional coefficients should be cautiously interpreted. For example, the relatively low Midwest wage differential in the nonmetro model suggests that the Midwest has superior household amenities, going against conventional wisdom.

The **Local Labor Market Variables** also suggest some key differences between the two types of labor markets. Foremost, a persistent one percentage point greater private nonfarm employment growth increases wages by about 0.25% for nonmetro workers, but by only 0.02% in nonmetro areas.[13] This evidence does not support the hypothesis that wages in spatially isolated nonmetro labor markets are more influenced by local economic conditions. Instead, this suggests that labor supply in nonmetro counties are fairly responsive to economic conditions, although whether this response is through greater participation, in-migration, or by outside commuters is unknown. In both models, only the three-year lagged employment growth coefficient is statistically significant. This pattern suggests

[13]Borjas et. al (1992) found that a 1 percentage point faster *state* employment growth rate over a six-year period increased wages about 0.2% using NLSY data. This is comparable to the weighted metro/nonmetro average in this study.

that wages are relatively sluggish in adjusting to local labor market conditions, although multicollinearity may be one reason for the insignificance of the more recent years. Yet, the sluggish labor market adjustment process is consistent with Bartik (1993).

Farm employment growth is only positively related to metro wage growth at the third lag, while farm employment growth is negatively associated with nonmetro wages at all lags. Summing the farm employment growth coefficients suggests that a persistent one percentage point greater farm employment growth rate will increase metro wages by 0.04% and reduce nonmetro wages by 0.53% over a four year period. Given that farming is thought to be an important base industry in many nonmetropolitan counties, the rather surprising negative farm employment growth-wage association could be due to a negative composition effect from increasing the size of the relatively low-paying farm sector. Nonetheless, it does suggest that reoccurring farm-crises do not necessarily depress wages in nonmetro areas, whose economic health are thought to be more dependent on the farm economy. Regarding the dynamics, only the three-year lag of farm employment growth is statistically significant in the metro specification, while both the second- and third-year lags are significant in the nonmetro model. Again, this suggests a rather sluggish wage adjustment to local labor market conditions.

Neither the manufacturing share of private employment or the farm share of private employment are statistically significant, suggesting few wage spillover effects due to industry composition. In particular, this suggests that local economic development efforts to attract manufacturing may have few positive impacts outside of the workers directly employed. Given the importance placed on manufacturing in economic development efforts, this suggests that such a strategy may not be worthwhile. For both models, the local unemployment rate was insignificant, suggesting that neither wage curve effects nor Harris-Todaro compensating differential effects dominate.

The **Amenity and Fiscal Variables** also indicate some key metro/nonmetro differences. First local taxes are positively associated with metro wages suggesting that even accounting for the services that local taxes fund, local taxes are still a disamenity that are compensated through higher wages. This was especially the case for property taxes, which is somewhat surprising given its importance in funding local schools (which should have some positive benefits). For the nonmetro specification, neither tax variable was significant, which may reflect a lower importance placed on local taxes by nonmetro residents. For example, as shown in Table 1, taxes are generally quite low outside of metropolitan areas, which suggest that taxes may not be at the threshold to dramatically affect household behavior. Alternatively, it may be easier for nonmetro residents to identify the positive benefits (or amenities) from the services that are funded by their taxes (e.g., note the positive nonmetro property tax coefficient).

Per capita crimes are positively related to metro and nonmetro wages, suggesting that crime's household disamenity effects outweighs the negative effects that greater crime has on firm productivity (e.g., a need for costly protective and preventative measures). Moreover, it is noteworthy that despite average nonmetro crime rates being one-half of the average metro level, crime appears to be a much bigger disamenity in nonmetro areas as reflected by the six-fold larger crime coefficient.

The climate variables are all statistically significant in the metro specification. The coefficients suggest that metro workers prefer climates that are neither too hot nor too cold. Surprisingly, the positive percent of available sunshine coefficient suggests that metro residents view sunshine as a disamenity. In the nonmetro specification, climate appears to be less important in wage determination. Even at the 10% level, only heating degree days were statistically significant. One possible explanation for these results is that at the margin, relatively footloose metro residents arbitrage utility differentials due to favorable climate. This supports the hypothesis that wages in more closely linked metro labor markets are more sensitive to the effects of locational amenities.

The **Industry Where Employed** results indicate that agriculture and retail are the lowest paying metropolitan industries, while retail and personal services are lowest paying nonmetro industries. At the other end, mining and transportation and public utilities are the highest paying sectors in both specifications. Overall, the industry coefficients suggest that the relative industry rankings are quite similar between the two specifications. Yet, most of the industry coefficients differ between the two models by at least 0.03 points (or 3%), although caution needs to be exercised since the coefficients are measured relative to manufacturing. Nonetheless, farm workers fare relatively better in nonmetro areas, while personal service workers fare relatively better in metro areas.

As noted above, the average metro-nonmetro wage differed by about 0.24 log points (27%). To answer the important question of how much of this variation can be explained by differences in characteristics (such as higher metro educational attainment) and by differences in the regression coefficients, the following Blinder-Oaxaca decomposition was conducted:

(3) $W^{m}_{AVG} - W^{n}_{AVG} = (X^{M}_{AVG} - X^{N}_{AVG})\beta^{M} + X^{N}_{AVG}(\beta^{M} - \beta^{N})$,

where X^{M}_{AVG} and X^{N}_{AVG} are vectors of all of the metro and nonmetro variable means and β^{M} and β^{N} are the corresponding coefficient vectors from Table 2. The Blinder-Oaxaca decomposition breaks down the wage differential into the portion that can be explained by differences in average characteristics, or the first term after the equal sign, and the part that can be explained by differences in coefficients or differences in "prices," which is the second term on the right hand side of the equation.

The decomposition suggests that about 74.5% of the metro/nonmetro wage gap is due to more favorable average characteristics of metro workers. However, differences in coefficients explain -57.1% of the wage. That is, the regression coefficients actually work to *increase* nonmetro wages relative to metro wages. Together, only 17.4% of the wage gap can be explain by differences in observable characteristics and differences in the prices for those attributes.[14] The remaining 82.6% is unexplained. Yet, it is surprising that returns to characteristics (i.e., the coefficients) are actually more favorable in nonmetro areas. Specifically, urbanization and agglomeration effects, as well as dynamic externalities, would seem to predict that returns to characteristics (especially for education and skill) would be greater in large urban centers.[15] Nonetheless, reasons for the more favorable nonmetro returns merit further investigation.

IV. Future Directions

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[14]One problem with the Blinder-Oaxaca decomposition is that it is sensitive to whether the metro or nonmetro coefficients are used to weight the contribution due to differences in means. Specifically, the decomposition could also be written as:

$$W^{m}_{AVG} - W^{n}_{AVG} = (X^{M}_{AVG} - X^{N}_{AVG})\beta^{N} + X^{M}_{AVG}(\beta^{M} - \beta^{N}).$$

Using this alternative decomposition, about 44.8% can be explained by differences in average characteristics and about -25.7 can be explained by differences in coefficients, which is the same pattern as before. The remaining 80.9% cannot be explained by either source.

[15]Focusing just on the demographic and human capital variables, differences in the regression coefficients and differences in the mean characteristics together explain about 42.2% of the metro/nonmetro wage gap, where each effect contributed about equally. That means that despite the higher returns to education and managerial occupation in nonmetro areas, other individual variables (such as part-time employment) offset that effect.

The primary aim of this study is to explore the linkage of national and local labor markets by examining how human capital, local labor market activity, and locational amenities interact in a wage model. By focusing on wages, this study differs from much of the previous literature which emphasized the role of aggregate employment growth and migration patterns. In particular, once completed, this study will extend the previous literature in two key directions. First, it will explore whether local economic activity and location-specific amenities have different effects on metropolitan and nonmetropolitan area wages. Second, it will determine whether these effects on workers varied by education level between metro and nonmetro workers.

Although only preliminary empirical estimates have been generated, we believe that the results are promising. There is evidence of differences between metropolitan and nonmetropolitan labor markets in their responses to employment opportunities and location specific factors. That is, despite the relatively free mobility of labor, capital, and goods, there are still important spatial differences that distinguish larger urban labor markets from smaller rural labor markets. We find that metro workers have more favorable characteristics on average, which alone explains about 75% of the 27% metro/nonmetro wage gap. However, returns to these characteristics actually favor higher nonmetro wages. More research of this surprising pattern is necessary to provide a good explanation, but differences in supply and demand are likely culprits. For example, the greater nonmetro returns to education and managerial & professional occupations is consistent with a relative shortage of more skilled workers. The next step in this project will be to separately estimate the model for skilled and unskilled workers. Based on the differences in returns to skill in the pooled sample, there are reasons to expect differing linkages to national labor market between metro and nonmetro areas.

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Table 1
Metropolitan and Nonmetropolitan Descriptive Statistics[a]

Variable	(1) Metro Means (Std Dev)	(2) Nonmetro Means (Std Dev)	(3) Metro-NM Diff (t-stat)[b]
Log Hrly Wage	2.32	2.08	31.88
	(0.48)	(0.47)	
Human Capital & Demographic Variables			
AFQT Score	51.7	44.8	15.03
	(27.8)	(28.2)	
$Exper_{actual}$	9.6	9.4	3.34
	(3.1)	(3.3)	
Tenure	4.1	4.2	2.02
	(3.7)	(4.0)	
HS-Degree	0.56	0.63	7.44
	(0.49)	(0.50)	
2YR Degree	0.08	0.08	0.55
	(0.27)	(0.28)	
4YR Degree	0.22	0.15	10.00
	(0.41)	(0.37)	
ADV-Degree	0.04	0.02	10.78
	(0.20)	(0.13)	
Prof-Degree	0.007	0.004	3.54
	(0.09)	(0.06)	
Manag-Prof Occ	0.26	0.18	10.78
	(0.43)	(0.40)	
Technical Occ	0.06	0.04	5.95
	(0.23)	(0.20)	
Sales Occ	0.09	0.08	4.10
	(0.29)	(0.27)	
Clerical Occ	0.19	0.14	9.13
	(0.39)	(0.35)	
Service Occ	0.10	0.11	2.84
	(0.30)	(0.33)	
Nat Resource Occ	0.02	0.04	7.61
	(0.12)	(0.20)	
Craft Occ	0.11	0.15	5.68
	(0.31)	(0.36)	
Operator Occ	0.11	0.18	12.06
	(0.31)	(0.40)	
Married	0.56	0.65	11.79
	(0.49)	(0.49)	
Union	0.20	0.15	6.93
	(0.39)	(0.37)	
Large Employer	0.46	0.35	13.01
	(0.49)	(0.49)	
Health Condition	0.04	0.04	0.09
	(0.19)	(0.20)	
Part-Time	0.11	0.10	1.77
	(0.30)	(0.31)	
Female	0.46	0.43	3.18
	(0.49)	(0.51)	
Black	0.14	0.10	8.39
	(0.34)	(0.30)	
Asian	0.01	0.01	0.97
	(0.10)	(0.10)	
Hispanic	0.06	0.02	13.28
	(0.23)	(0.15)	
Native Amer.	0.03	0.08	10.87
	(0.17)	(0.28)	
County Type & Regional Dummy Variables			
Metro > 1 million	0.60		na
	(0.49)		

Variable	(4) Metro Means (Std Dev)	(5) Nonmetro Means (Std Dev)	(6) Metro-NM Diff (t-stat)[b]
County Type & Regional Dummy Variables-continued			
250k > Metro < 1 mill.	0.29		na
	(0.45)		
Metro < 250k	0.12		na
	(0.32)		
Nonmet Urban adj Met		0.46	na
		(0.52)	
Nonmet Nonadj Urban		0.41	na
		(0.51)	
Nonmet Rural adj Met		0.07	na
		(0.26)	
Nonmet Nonadj Rural		0.06	na
		(0.23)	
Midwest	0.29	0.30	1.38
	(0.45)	(0.47)	
South	0.32	0.51	22.95
	(0.46)	(0.52)	
West	0.17	0.12	9.40
	(0.37)	(0.34)	
Local Labor Market Variables			
Farm Share of Priv Emp	0.02	0.08	51.68
	(0.03)	(0.09)	
Manu Share of Priv Emp	0.16	0.22	25.30
	(0.08)	(0.13)	
%ΔPrivate Emp	0.017	0.019	4.00
	(0.03)	(0.04)	
%ΔFarm Emp	-0.023	-0.017	9.11
	(0.05)	(0.04)	
%ΔPrivate Emp_{-1}	0.019	0.018	0.36
	(0.03)	(0.04)	
%ΔFarm Emp_{-1}	-0.023	-0.017	9.10
	(0.06)	(0.04)	
%ΔPrivate Emp_{-2}	0.022	0.018	6.44
	(0.03)	(0.04)	
%ΔFarm Emp_{-2}	-0.022	-0.023	1.13
	(0.06)	(0.05)	
%ΔPrivate Emp_{-3}	0.029	0.021	12.33
	(0.03)	(0.04)	
%ΔFarm Emp_{-3}	-0.027	-0.029	2.40
	(0.06)	(0.05)	
Unemployment Rate	6.0	8.0	37.1
	(2.2)	(3.6)	
Amenity and Fiscal Variables			
Local Prop tax per capita (in $1,000)	0.514	0.348	43.52
	(0.23)	(0.23)	
Local other taxes per capita (in $1,000)	0.179	0.079	52.32
	(0.22)	(0.08)	
Temp Deviation[c]	19.6	20.9	34.15
	(2.7)	(2.3)	
Heating Degree Days	4579.6	5222.5	17.32
	(2089.1)	(2306.7)	
Cooling Degree Days	1266.7	1103.2	12.75
	(873.5)	(762.9)	
% Available Sunshine	59.0	56.6	15.90
	(8.1)	(9.4)	
Serious Crimes per capita	0.062	0.033	83.90
	(0.02)	(0.02)	

Table 1-Continued

Variable	(1) Metro Means (Std Dev)	(2) Nonmetro Means (Std Dev)	(3) Metro-NM Diff (t-stat)[b]	Variable	(4) Metro Means (Std Dev)	(5) Nonmetro Means (Std Dev)	(6) Metro-NM Diff (t-stat)[b]
	Industry Where Employed				**Industry Where Employed-Continued**		
Agriculture	0.01	0.05	10.21	Finance, Ins, Real Estate	0.07	0.04	7.19
	(0.11)	(0.22)			(0.25)	(0.21)	
Mining	0.004	0.02	8.40	Prof Bus Serv	0.28	0.23	7.50
	(0.06)	(0.16)			(0.45)	(0.43)	
Trans & Pub	0.08	0.05	7.45	Personal Serv	0.03	0.03	3.14
Utility	(0.27)	(0.22)			(0.18)	(0.16)	
Wholesale	0.04	0.03	1.03	Public Admin	0.06	0.04	4.43
	(0.19)	(0.19)			(0.23)	(0.21)	
Retail	0.13	0.14	2.81				
	(0.33)	(0.36)					

a. To be representative of the national population, the metro and nonmetro descriptive statistics are weighted by the NLSY sample weights rescaled such that the weights sum to the combined sample size. The metro sample size N=20,864 and the nonmetro sample size N=4,552.

b. The absolute value of the t-statistic for the difference between the metro and nonmetro sample means.

c. Temperature deviation is the difference between annual average high temperature and the average annual low temperature.

Table 2

Metropolitan and Nonmetropolitan Effect Random Effects Regression

Variable	(1) Metro (t-stats)	(2) Nonmetro (t-stats)
Intercept	1.72	1.53
	(25.32)	(10.02)
Human Capital & Demographic Variables		
AFQT Score	0.004	0.004
	(18.44)	(8.68)
$Exper_{actual}$	0.038	0.033
	(9.33)	(4.20)
$Exper^2_{actual}$	-3.8E-4	-4.9E-4
	(1.87)	(1.24)
Tenure	0.037	0.028
	(18.36)	(7.10)
$Tenure^2$	-0.002	-0.002
	(11.58)	(4.71)
HS-Degree	-0.028	0.003
	(2.23)	(0.14)
2YR Degree	0.086	0.165
	(5.05)	(4.66)
4YR Degree	0.154	0.185
	(10.04)	(5.44)
ADV-Degree	0.154	0.230
	(7.15)	(4.15)
Prof-Degree	0.289	0.547
	(5.50)	(3.94)
Manag-Prof Occ	0.053	0.094
	(5.70)	(4.90)
Technical Occ	0.070	0.072
	(5.87)	(2.58)
Sales Occ	0.009	0.089
	(0.88)	(4.04)
Clerical Occ	0.004	0.015
	(0.39)	(0.78)
Service Occ	-0.015	0.032
	(1.62)	(1.81)
Nat Resource Occ	-0.008	-0.033
	(0.41)	(1.21)
Craft Occ	0.015	0.042
	(1.60)	(2.47)
Operator Occ	-0.006	0.031
	(0.67)	(1.93)
Married	0.034	0.031
	(5.74)	(2.44)
Union	0.072	0.075
	(11.04)	(5.53)
Large Employer	0.034	0.053
	(6.85)	(5.13)
Health Condition	-0.017	0.003
	(1.53)	(0.15)
Part-Time	-0.001	-0.054
	(0.12)	(3.64)
Female	-0.126	-0.149
	(12.63)	(7.48)
Black	-0.031	-0.024
	(2.31)	(0.81)
Asian	0.078	-0.021
	(1.50)	(0.19)
Hispanic	0.004	0.006
	(0.27)	(0.16)
Native Amer.	0.009	0.040
	(0.28)	(0.16)
County Type & Regional Dummy Variables		

Table 2-Continued

	(1) Metro (t-stats)	(2) Nonmetro (t-stats)
Midwest	-0.066 (4.34)	-0.067 (1.57)
South	-0.108 (5.55)	-0.063 (1.42)
West	-0.108 (4.58)	-0.040 (0.71)
Local Labor Market Variables		
Farm Share of Priv Emp	-0.079 (0.58)	0.117 (0.98)
Manu Share of Priv Emp	-0.025 (0.43)	0.045 (0.58)
%ΔPrivate Emp	0.084 (0.87)	-0.190 (1.54)
%ΔFarm Emp	-0.009 (0.25)	-0.106 (0.95)
%ΔPrivate Emp_{-1}	-0.002 (0.03)	0.035 (0.33)
%ΔFarm Emp_{-1}	-0.038 (1.20)	-0.010 (0.10)
%ΔPrivate Emp_{-2}	-0.028 (0.32)	-0.088 (0.85)
%ΔFarm Emp_{-2}	-0.011 (0.38)	-0.194 (2.12)
%ΔPrivate Emp_{-3}	0.199 (2.34)	0.258 (2.81)
%ΔFarm Emp_{-3}	0.099 (3.13)	-0.219 (2.58)
Unemployment Rate	-3.2E-4 (0.20)	6.4E-4 (0.31)
Amenity and Fiscal Variables		
Local Property Taxes Per Capita (in $1,000)	0.105 (4.67)	0.055 (1.36)
Local Other Taxes per capita (in $1,000)	0.046 (2.82)	-0.117 (1.01)
Temp Deviation	-0.008 (3.60)	0.004 (0.72)
Heating Degree Days	-2.9E-5 (4.48)	-1.9E-5 (1.65)
Cooling Degree Days	-6.9E-5 (6.17)	-4.6E-5 (1.61)
%Available Sunshine	0.004 (4.21)	-0.002 (0.81)
Serious Crimes Per Capita	0.405 (2.10)	2.551 (5.89)
Industry Where Employed		
Agriculture	-0.150 (6.43)	-0.061 (1.98)
Mining	0.055 (1.48)	0.091 (2.32)
Trans & Pub Utility	0.048 (4.48)	0.012 (0.48)
Wholesale	-0.045 (3.79)	-0.051 (2.02)
Retail	-0.149 (17.01)	-0.180 (10.41)
Finance, Ins & Real Estate	-0.029 (2.45)	-0.019 (0.58)
Prof Bus Serv	-0.064 (8.49)	-0.065 (3.88)
Personal Serv	-0.126 (8.78)	-0.211 (7.50)
Public Admin	0.021 (1.80)	-0.019 (0.68)
Year Fixed Effects	y	y
-2Log Likelihood Ratio	7389.4	1428.1
N	20864	4552

Table 3

Metropolitan and Nonmetropolitan Probit Estimates

Variable	(1) Metro (t-stats)	(2) Nonmetro (t-stats)
Intercept	2.66	1.53
	(15.52)	(1.62)
Human Capital & Demographic Variables		
AFQT Score	-0.003	0.004
	(1.44)	(8.68)
$Exper_{actual}$	0.027	0.033
	(0.93)	(4.20)
$Exper^2_{actual}$	2.6E-4	-4.9E-4
	(0.17)	(1.24)
Tenure	0.106	0.028
	(8.36)	(7.10)
$Tenure^2$	-0.004	-0.002
	(0.28)	(4.71)
HS-Degree	0.112	0.003
	(1.33)	(0.14)
2YR Degree	0.326	0.165
	(2.35)	(4.66)
4YR Degree	-0.008	0.185
	(0.24)	(5.44)
ADV-Degree	-0.046	0.230
	(0.55)	(4.15)
Prof-Degree	-0.443	0.547
	(1.62)	(3.94)
Manag-Prof Occ	0.138	0.094
	(0.71)	(4.90)
Technical Occ	0.051	0.072
	(0.57)	(2.58)
Sales Occ	0.009	0.089
	(0.88)	(4.04)
Clerical Occ	0.054	0.015
	(0.38)	(0.78)
Service Occ	-0.021	0.032
	(0.65)	(1.81)
Nat Resource Occ	0.012	-0.033
	(0.12)	(1.21)
Craft Occ	0.176	0.042
	(0.14)	(2.47)
Operator Occ	0.185	0.031
	(1.52)	(1.93)
Married	0.068	0.031
	(1.21)	(2.44)
Union	0.249	0.075
	(2.67)	(5.53)
Large Employer	-0.102	0.053
	(1.66)	(5.13)
Health Condition	-0.036	0.003
	(0.58)	(0.15)
Part-Time	0.336	-0.054
	(2.62)	(3.64)
Female	0.034	-0.149
	(0.81)	(7.48)
Black	0.137	-0.024
	(1.64)	(0.81)
Asian	-0.051	-0.021
	(0.33)	(0.19)
Hispanic	0.295	0.006
	(2.65)	(0.16)
Native Amer.	-0.529	0.040
	(3.48)	(0.16)
County Type & Regional Dummy Variables		
Population Density	0.100	Population Density
	(1.65)	
Population Density Squared	-0.003	Population Density
	(0.85)	

Table 3-Continued

	(1) Metro (t-stats)	(2) Nonmetro (t-stats)
Midwest	-0.532	-0.067
	(0.43)	(1.57)
South	-0.330	-0.063
	(2.11)	(1.42)
West	-0.529	-0.040
	(2.66)	(0.71)
Local Labor Market Variables		
Farm Share of Priv Emp	2.079	0.117
	(0.58)	(0.98)
Manu Share of Priv Emp	-0.025	0.045
	(0.43)	(0.58)
%ΔPrivate Emp	0.084	-0.190
	(0.87)	(1.54)
%ΔFarm Emp	-0.009	-0.106
	(0.25)	(0.95)
%ΔPrivate Emp_{-1}	-0.002	0.035
	(0.03)	(0.33)
%ΔFarm Emp_{-1}	-0.038	-0.010
	(1.20)	(0.10)
%ΔPrivate Emp_{-2}	-0.028	-0.088
	(0.32)	(0.85)
%ΔFarm Emp_{-2}	-0.011	-0.194
	(0.38)	(2.12)
%ΔPrivate Emp_{-3}	0.199	0.258
	(2.34)	(2.81)
%ΔFarm Emp_{-3}	0.099	-0.219
	(3.13)	(2.58)
Unemployment Rate	-3.2E-4	6.4E-4
	(0.20)	(0.31)
Amenity and Fiscal Variables		
Local Property Taxes Per Capita (in $1,000)	0.105	0.055
	(4.67)	(1.36)
Local Other Taxes per capita (in $1,000)	0.046	-0.117
	(2.82)	(1.01)
Temp Deviation	-0.008	0.004
	(3.60)	(0.72)
Heating Degree Days	-2.9E-5	-1.9E-5
	(4.48)	(1.65)
Cooling Degree Days	-6.9E-5	-4.6E-5
	(6.17)	(1.61)
% Available Sunshine	0.004	-0.002
	(4.21)	(0.81)
Serious Crimes Per Capita	0.405	2.551
	(2.10)	(5.89)
Industry Where Employed		
Agriculture	-0.150	-0.061
	(6.43)	(1.98)
Mining	0.055	0.091
	(1.48)	(2.32)
Trans & Pub Utility	0.048	0.012
	(4.48)	(0.48)
Wholesale	-0.045	-0.051
	(3.79)	(2.02)
Retail	-0.149	-0.180
	(17.01)	(10.41)
Finance, Ins & Real Estate	-0.029	-0.019
	(2.45)	(0.58)
Prof Bus Serv	-0.064	-0.065
	(8.49)	(3.88)
Personal Serv	-0.126	-0.211
	(8.78)	(7.50)
Migration Control Variables		
Predicted Wage Change	-0.137	0.019
	(1.80)	(0.68)
Year Fixed Effects	y	y
-2Log Likelihood Ratio	7389.4	1428.1
N	20864	4552