

The Effects of the Size Distribution of Establishments on Employment and Earnings

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Abstract

This investigation examines local employment opportunities for low-skill men and women focusing on the role of changes in the number and size distribution of employers in local labor markets. The study uses data from the Census Bureau's 1989-97 County Business Patterns files to characterize the number and size distribution of establishments by county over time. It links the local area establishment measures to person-level data from the 1990-98 Annual Demographic Supplements (March files) of the Current Population Survey (CPS) on employment, earnings and other personal attributes. The study estimates probit models of the relationship between local business conditions and individual employment outcomes and regression models of the relationship between business conditions and individual hourly and weekly earnings. The empirical results show that changes in the size distribution of businesses have both general and skill-specific effects on employment and earnings. The emnditi business conditions. Th

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1. Introduction

By some general measures, labor market conditions in the United States could hardly be brighter than they have been in the past few years. Aggregate unemployment was recently at a 30-year low, and productivity continues to rise. By several other measures, however, labor market performance has been disappointing. Real average wages and compensation for workers have remained essentially flat over the 1990s. Employment trends have been demographically uneven with high-skill workers benefitting more than low-skill workers. There have also been large regional differences; some areas have experienced tremendous growth while other areas have suffered net declines. Because of these disparities, it is difficult to determine whether job prospects for particular groups of workers in particular labor markets have improved.

This investigation examines local employment opportunities for low-skill men and women focusing on the role of changes in the number and size distribution of employers in local labor markets. Distinguishing between employer sizes is important for several reasons. Small and large establishments differ in their responsiveness to business cycles with small establishments being more responsive. Small businesses are also widely viewed as an engine for net employment growth. For instance, Robb (1999) reports that businesses with fewer than 500 employees accounted for just over 70 percent of net job growth in the U.S. non-farm business sector between 1994 and 1995.

Small businesses may be especially crucial in determining the job opportunities for low-skill workers. The U.S. Small Business Administration (SBA; 1998) documents that small businesses with less than 500 employees hired a greater proportion of part-time employees, lower

growth, employment and earnings. Section 4 discusses the CBP and CPS data that are used for the detailed analyses. Results from the multivariate analyses of the relationship between changes in the number of local business establishments and individual employment and earnings outcomes are reported and discussed in Section 5. Section 6 concludes.

2. Literature and Background

A simple supply and demand analysis predicts that if jobs disappear from a local labor market, employment rates and wages for residents are likely to fall. Conversely, if jobs are added, employment rates and wages for residents will rise. It is less clear, however, how much employment and wages will change and which workers will be most strongly affected.

Numerous studies suggest that employment and earnings outcomes for women, minorities, and less-skilled workers are especially sensitive to changes in local labor demand (see, e.g., Bartik 1993, Bound and Holzer 1993, Freeman 1991, Freeman and Rogers 1999, Hoynes 1999, Ribar 2000, 2001, and Topel 1986). Most of these studies have considered either general measures of labor market conditions such as overall employment or unemployment rates or considered industry-specific measures such as manufacturing employment. The studies have not considered the effects that changes in the local size distribution of businesses have on outcomes for skilled and unskilled workers.

It is reasonable to suppose such changes might have differential effects depending on skill level. For instance, there is a sizeable research literature which has documented a positive relationship between firm size and worker wages. Additional evidence indicates that large firms offer more fringe benefits than small firms (Brown, Hamilton and Medoff 1990, SBA 1998). One explanation for the relationship between employer size and compensation is that larger firms

Leighton found evidence that workers at small firms did have less stable job histories.

Other explanations of the wage/size relation are based on higher information costs at larger firms which results in higher costs of monito

(b) show which segments of the population have the strongest interactions with and are most likely to be impacted by different types of businesses.

Trends in the size distribution of establishments. The investigation first examines how the number and distribution of different-sized establishments changed from 1989 to 1997. One difficulty in analyzing trends in business growth is the widely-varying scales of the underlying establishment figures. For instance, in 1989 the CBP database indicates that there were 6.1 million establishments. Of these, 4.6 million had fewer than 10 employees, 1.4 million had 10 to 99 employees, just over 100,000 had 100 to 499 employees, just under 10,000 had 500 to 999 employees, and just over 5,000 had over 1,000 employees. A second difficulty with comparing figures over time—and in subsequent analyses across geographic space—is that the size of the potential labor force changes. Because the investigation is concerned with the effects of establishment growth on worker outcomes, it is natural to consider the number of establishments relative to the number of workers in the economy.

Figure 1 uses information from the 1989-97 CBP data sets to graph the national trends in the number of establishments in five different size classes: those with 1 to 9, 10 to 99, 100 to 499, 500 to 999, and 1000 or more employees. To make the figures comparable across size classes over time, Figure 1 scales the numbers of establishments in each size class by the numbers of establishments in 1989 and by the approximate population of working-age adults (population aged 15-64 years) in each year. The graph therefore depicts the percentage change in the number of establishments of each size per working age adult relative to the number in 1989.

[Figure 1 about here.]

It should be noted that this categorization of establishments differs in several respects from the classifications typically employed by the SBA. Specifically, the SBA defines a small

business as a firm with fewer than 500 employees. The figure displays results for a finer size classification than the standard over- and under-500-worker dichotomy. Even narrower establishment size classifications are available in the CBP data; however, the qualitative results from Figure 1 do not change much w

¹An establishment is a physical location or plant where a firm conducts its activities. A firm can include multiple establishments.

small businesses grew while the number of other employers remained constant or declined.

Taken together, the trends for the different industries indicate that the changes in the overall size pattern of employers reflect some changes in industrial composition but also changes in the size patterns within industries.

[Figure 2 about here.]

Trends in employment and earnings outcomes. Looking at the other side of the labor market, Figure 3 shows the trends from 1989 to 1997 in employment in small, medium and large private businesses, employment in the public sector, and non-employment separately for men and women. The vertical axis shows the proportion of the working age population (16-64) in the given demographic groups who were employed by a business with 1-99, 100-999, or 1,000 or more employees, by a unit of government, or who did not work during the year.² The data used to produce the figure were aggregated from individual-level information from the March files of the CPS. Because the CPS uses employee self-reports and records firm size rather than establishment size, the data are not entirely comparable with the previous figures. To account for differences in skill levels, the graphs in Figure 3 further disaggregate the data by age, which proxies for potential work experience, and education level. To make the graphs more readable, some of the size categories from the previous figures have been collapsed. In particular, small firms are defined as those with fewer than 100 employees; medium firms are defined as those with 100 to 999 employees, and large firms are defined to be those with 1,000 or more employees.³

²The business categories include non-profit firms. Self-employed individuals (proprietors) are also included.

³The decision to collapse the data this way was based on the analysis of Figure 1 and other data. A disadvantage of this scheme is that it does not allow us to identify the exact trends

[Figure 3 about here.]

As with the figures reported by the SBA (1998), the graphs in Figure 3 show that businesses with fewer than 100 employees accounted for a substantial share of employment in all years for all gender, age and education groups. The graphs also show that businesses in the smallest size category accounted for a disproportionate share of employment for women workers, younger workers and less-educated workers. Government employment was more important for older and more-educated workers than for other workers.

If we examine the trends in the different employment categories, the proportion of employment in small and medium sized businesses did not change very much over the period for any of the groups. The volatility in medium-sized establishment growth from the previous graphs does not carry through to Figure 3. Employment in large businesses was cyclical for young women with low levels of schooling. Over the entire period, employment in large businesses increased slightly for women. For women with a high school education or less, the percentage employed by large businesses increased from 18.8 in 1989 to 20.4 in 1997; for women with more education the percentage increased from 21.0 to 23.9. Government employment fell for all groups. On net, employment for women rose slightly over the period while employment for men declined.

The lack of time series variability in Figure 3, especially in the trends for medium-sized businesses, is a little surprising. One shortcoming in the data that might account for this is that the CPS only records characteristics of the longest job held during the previous year. Thus, the data do not indicate changes in jobs from one type of employer to another that occur during the

for businesses with fewer than 500 employees—the standard dividing line for small businesses. The collapsed categorization is only used for the present graphical analysis; the subsequent multivariate statistical analyses return to the 5-size categorization.

year. The use of a simple binary measure for employment may also mask some variation in work outcomes since “no work” refers to no work during the entire previous year. Most spells of unemployment are relatively brief and last less than a year; changes in the size distribution of businesses that affect workers through such brief spells would not be detected using the binary annual employment measure.

Figure 4 repeats the analysis from Figure 3 but uses annual hours (reported weeks worked times usual hours) in place of the binary employment measure. The hours measure still suffers from the problem that the employer type (small, medium, large or government) is assigned to all hours worked during the year; so, it fails to capture individual job changes between different types of employers. Nevertheless, the measure may provide a better indication of intensity of employment over the year by accounting for within-year joblessness and for differences in typical hours across different sized employers. As expected, Figure 4 shows more cyclical variability in employment trends than the previous graph. Aside from the cyclical variability, many of the general patterns from Figure 3, such as expanding large business employment and contracting government employment, are replicated in Figure 4.

[Figure 4 about here.]

Figure 5 shows the trends in real hourly earnings across the four employment categories for men and women with different ages and levels of schooling. The vertical axis in this case is gross earnings per hour adjusted to 1998 dollars. Figure 6 shows similar trends using real weekly earnings, where the vertical axis is gross earnings per week in 1998 dollars. The employer-size effect is evident in the graphs for both types of earnings. Hourly and weekly earnings are consistently positively related to employer size for men and women in each age and education group, although the differences are more compressed for younger and less-educated workers.

The differentials persist despite some large changes in the overall level of wages. For men as a whole, average weekly wages in private sector employment fell by roughly \$100 during the early 1990s and remained roughly constant thereafter. For women, there was relatively little change in wages over time. The figures illustrate that despite gradually tightening labor market conditions during the mid- to late-1990s, workers as a whole did not see substantial improvements in their hourly wages or weekly paychecks.⁴

[Figures 5 and 6 about here.]

4. Data

The primary data for the detailed analyses for this article come from the 1990-98 Annual Demographic (March) Supplements of the CPS. The CPS is a large monthly survey of roughly 50,000 U.S. households. For the adults in each household, the CPS gathers information about current labor force behavior and other personal characteristics. In addition to these regular data items, the March supplements also collect information on work behavior and the receipt of different types of income during the preceding year. When sampling weights are used, the data for each year are nationally representative.

Specifically, the March Supplements record whether a person was employed during the previous year, the number of weeks the person worked, the number of hours worked in an average week, and the amount of money earned from different sources (e.g., wage and salary, self-employment and farm employment). From these measures, the investigation constructs three primary variables: a dummy variable indicating employment during the previous year, weekly

⁴One shortcoming of these data is that they reflect only money wages and not the total value of wages and fringe benefits; however, trends based on the Employer Cost Index lead to the same general conclusion.

earnings during the previous year (total gross personal earnings from all sources divided by weeks worked), and hourly earnings during the previous year (total gross personal earnings from all sources divided by weeks and typical hours worked). Nominal amounts are re-expressed in constant 1998 dollars using the Consumer Price Index for Urban Consumers (CPI-U). Because the economic data from each supplement refer to the preceding year, the period covered by the combined data is 1989-1997. The employment, hourly earnings and weekly earnings variables serve as the dependent variables in the subsequent multivariate analyses.

The CPS also contains information on each person's sex, age, ethnic origin, and schooling level. The analysis uses the sex and age information as recorded. From the ethnic origin data, the analysis constructs dummy indicators for people of African origin and people of other non-European origins (mostly native Americans, Asians, and Pacific Islanders); the omitted category is European origin. The analysis also constructs a separate dummy variable for Hispanic origin which may overlap with the other racial/ethnic categories. Using the schooling information, the analysis distinguishes between people who obtained no more than a high school education and those who went on to complete at least some college. For the detailed analyses, the investigation separately examines results for eight different groups cross-categorized by gender, age (under and over 30 years of age) and education. As the previous graphical analyses indicated, the labor market experiences and employment patterns for these groups varied greatly.

From the CPS, the investigation selects non-institutionalized civilians who were 16 to 64 years of age. The analysis then makes several other exclusions. First, it excludes people who reported being enrolled in school. Second, it drops observations for individuals whose earnings were in the top one percent of all earnings for each year or whose average weekly hours exceeded

98.⁵ Third, it excludes observations if the calculation of real hourly or weekly earnings was unreasonable—below 75¢ or above \$250 for hourly earnings and below 75¢ or above \$10,000 for weekly earnings. Fourth, it drops observations with allocated economic or demographic data.⁶ Fifth, to avoid statistical complications, the study drops observations each year from the “outgoing” rotation groups.⁷ Finally, the investigation excludes all observations from counties with fewer than ten respondents and counties with no variation in employment outcomes within the gender×age×education categories (the reasons for this last exclusion are explained in

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⁵The CPS masks (top-codes) information for people with earnings above certain levels; however, the levels differ over years. The percentile cut-off trims the data more uniformly than dropping the top-coded observations would.

⁶If a survey question in the CPS was unanswered, the Census Bureau “allocated” a response using a hot deck procedure. Instead of using the allocated information, this study treats these data as missing and drops the corresponding observations. See Lillard et al. (1986) for a thorough discussion of allocation procedures and their potential effects on empirical labor analyses. Dropping observations with allocated data reduced the sample sizes in the CPS files by about ten percent.

⁷In the CPS, households are interviewed for four consecutive months, left alone for eight consecutive months, then interviewed again for four consecutive months. When the annual surveys are appended (as is done in this investigation), the same individuals can appear in two consecutive years. Removing the respondents who are in their second round of interviews eliminates this possibility. This simplifies the computation of standard errors since we do not need to consider multiple non-independent observations.

various years) and is used to capture the income available if a family head does not work. The minimum wage measure is taken from papers by Neumark, Schweitzer and Wascher (1998) and Neumark (1999). Over the period of the study there were several increases in the federal minimum wage that may have affected both the supply of and demand for low-skill and contingent labor.⁸ Additionally, a small number of states set minimum wages above the federal level and changed their wages at different times. The analysis adjusts the public assistance and minimum wage measures to 1998 dollars using the CPI-U.

A distinguishing feature of this research is that it relies on special internal versions of the CPS that contain detailed geographic information for each household. The regular, public-use versions of the CPS identify each respondent's state of residence and for a subset of urban residents, the metropolitan area of residence. The lack of geographic detail hampers what can be done in the public-use files to control for local economic conditions. In contrast, the internal versions of the CPS, which were accessed through a special arrangement with the Center of Economic Studies of the U.S. Census Bureau, identify the county of residence for all respondents. The present research uses these county identifiers in two ways: first, to form dummy variable controls for the factors within counties that are time-invariant over the period, such as general business climate, resident attitudes and area amenities, that might be associated with both business success and individual work behavior, and second, to link to time-varying information on the number and size distribution of establishments from the County Business Patterns database.

The CBP database contains information on the aggregate employment, payroll, number of

⁸The federal minimum wage was \$3.35 in 1989. It increased to \$3.80 in 1990, \$4.25 in 1991, and \$4.75 in 1996.

establishments, and number of establishments in different size categories for detailed industries in each county. While the data are very comprehensive, there are some omissions and qualifications which limit the data set's usefulness. For instance, the CBP only tallies information for employer establishments and thus omits people who are self-employed or work in private households (e.g., maids and nannies). The CBP also omits certain types of employers such as governments, agricultural producers and railroads. In addition, some data items are suppressed to preserve confidentiality when there are only a few businesses in particular categories in a county. The existence, industry classification and general size classification of a business are not considered to be confidential information; so, the number of establishments and size distribution for an industry are not suppressed. However, the exact number of employees and total payrolls are viewed as confidential and thus subject to suppression.

As with the earlier descriptive analyses, the investigation considers the number of establishments in five size categories: 1 to 9, 10 to 99, 100 to 499, 500 to 999 and 1000 or more employees. It scales these figures by the estimated number of people aged 15 to 64 in each county to form approximate measures of the number of establishments in each size category per working-age adult.⁹ For some sensitivity analyses, the investigation also considers the total number of establishments (for all size categories) in the manufacturing, retail and service sectors per working-age adult in the county.

Means and standard deviations for the analysis variables from the linked individual- and county-level CPS and CBP observations are reported in Table 1. The columns in the table list

⁹The population data are from the U.S. Census Bureau county estimates program and were graciously provided by Alfred Nucci. The data come from Census Bureau research that he and Larry Long are conducting on migration and population densities. For 1989, intercensal estimates are used; for 1990, decennial census figures are used; and for the period 1991-1997, post-censal estimates are used.

separate estimates for the eight gender×age×education categories; they also indicate the sample sizes for the categories. Descriptions of the variables appear in the rows. Table 1 reproduces the overall differences in employment and earnings levels for the alternative gender and skill groups that were evidenced in the earlier figures.

[Table 1 about here.]

Additionally, Table 1 shows why it may be important to control for other attributes besides age and schooling in examining economic outcomes. For example, the table indicates that people of African and Hispanic origins are over-represented among the younger and less-educated population groups. People of other non-European origins are also slightly over-represented among the younger population but under-represented among the less-educated population. Analyses that fail to account for these racial and ethnic differences could end up confounding the effects of skills with the effects of discrimination or culture.

5. Multivariate analyses of employment and earnings outcomes

Probit models of annual employment. The investigation estimates multivariate probit models of the determinants of annual employment outcomes. Among the explanatory variables, the primary measures of interest are the numbers of establishments per working-age adult in the five size categories in each county. The probit models also include controls for each person's age, age squared, African origin, Hispanic origin, other non-European origin, the prevailing minimum wage, and the prevailing AFDC/TANF benefit level. Age-squared is included to allow for non-linear age effects, such as diminishing marginal returns to age, that are commonly observed in employment and wage profiles. In addition, the models include year-specific dummy variables as general controls for national economic trends and policies and county-specific

dummy variables as controls for time-invariant local factors. Thus, the models account for two-way (time and location) fixed effects. Initial specification tests indicated that the demographic variables, year effects and county effects were jointly significant.

The use of county-level fixed effects in the probit models comes at some cost. In contrast to the linear regression model, where the fixed effects can be “conditioned out” by differencing the dependent and independent variables across counties, the non-linear probit model requires that separate coefficients be estimated for each county. The fixed effects probit procedure is therefore computationally intensive. Worse, because it is not possible to condition out the fixed effects, the model estimates are only consistent in the number of observations per county, rather than the sample size generally. Also, if there is no variation in the outcome variable within a county, the associated fixed effect is either infinitely positive or negative and cannot be identified. Accordingly, the investigation restricts the fixed effects probit analysis to counties where there are at least ten observations and some variation in employment outcomes (i.e., counties with both working and non-working individuals) for a given sub-sample.

The effects of these restrictions on the analysis sample can be seen at the bottom of Table 1. The combined data from the 1990-98 CPS files contain observations from roughly 1,600 different counties (just over half the counties in the U.S.). Imposing the other sample exclusions and disaggregating by gender, age and education reduces the potential coverage within each of the eight sub-samples to between 1,284 to 1,507 counties. When small counties and especially when counties with no employment variation are excluded, the coverage drops further to the final range of 246 to 1,176 counties shown at the bottom of Table 1. The loss in individual observations from the county size and variation exclusions is not nearly so dramatic

ranging from 3 to at worst 34 percent of the observations, depending on the sub-sample.¹⁰

Despite the loss of data, the resulting sub-samples remain large in absolute terms (the smallest sub-sample contains more than 11,000 individual observations) and include a wide range of geographic areas.

Another property of the county and year fixed effects is that they eliminate the pure cross-section and time series variation in the local business size variables. Because of this, the coefficients on the business and policy variables in the multivariate models should be interpreted as the effects of these variables within counties that are distinct from national trends. More substantively, there may be little relevant variation left in the business and policy variables after the county and year controls are applied. Indeed, preliminary analyses revealed that the controls removed 97-99 percent of the variation in the three smallest establishment size measures and roughly 90 percent of the variation in the two largest establishment size measures. Weak results for the coefficients on these measures could reflect this lack of variation.¹¹

Table 2 reports the coefficient estimates and standard errors for the establishment size variables and state policy measures from annual employment probit models run on the eight different sub-samples. For brevity, detailed results for the demographic variables, year effects and county effects are not shown.

[Table 2 about here.]

Increases in the number of establishments with 100-499 employees are estimated to

¹⁰To put things in a different perspective, the most affected subsamples are still more representative than the CPS samples used by Freeman (1991) and Freeman and Rodgers (1999) which only included individuals from identifiable metropolitan areas.

¹¹The loss of variation in the investigation's local economic measures is not unusual for this type of study. A similar analysis of the civilian employment rate shows that county and year effects account for 99 percent of its variation.

increase the employment of older men with low levels of schooling, younger men with higher levels of schooling, and younger women from both education groups. Increases in the number of establishments with 500-999 employees are estimated to raise the employment of younger women with low levels of schooling and older women with more schooling. The estimates indicate that younger, less-educated women (the group most likely to participate in welfare) have been significantly affected by the swings in the number of middle-sized establishments. The employment of other groups has also been affected by changes in these establishments.

Changes in the number of establishments in the smallest employment size category (those with fewer than ten employees) are estimated to reduce the employment of young men and women with more than a high school education. As Figures 5 and 6 indicated, very small firms offer the lowest wages on average. If we interpret a rise in the number of very small employers as an expansion in low wage opportunities and possibly wage variability in a market, the negative coefficients in Table 2 could reflect well-educated labor force entrants in such markets voluntarily extending their initial job searches and initial periods of unemployment.

At the other end of the distribution, changes in the number of very large employers are estimated to have mixed effects on individual employment outcomes. For older men with low levels of schooling and older women with higher levels of schooling, increases in the number of establishments with 1,000 or more employees increase the probability of employment. However, for young men with higher levels of schooling, the opposite is true—growth in the number of large establishments is negatively related to employment. A variant of the earlier explanation might apply where expansion at the extreme ends of the size distribution increases the variability in wages and thus, makes prolonged job search by young, educated labor force entrants more attractive. An alternative explanation for these results might be that larger establishments are

more likely to be unionized and thus harder for young job seekers to enter.

Among the policy variables, more generous public assistance benefits are estimated to reduce young, less-educated men's employment but increase young, less-educated women's employment. Higher minimum wages are estimated to decrease employment among younger men with high levels of education and increase employment among older men with high levels of education. The results for younger, educated men run counter to the findings of Ribar (2001) and others.

In addition to the specification tests to check whether the demographic and fixed effects controls should be included, all of the models in Table 2 were re-estimated to include the total number of manufacturing, retail and service establishments per working-age adult and the total number of civilian jobs per working-age adult in each county. The coefficient estimates reported in Table 2 were generally robust to the inclusion of these controls for overall industry and job market effects. Further, the models were re-estimated including a measure of total working age population in the county to control for growth effects. The results of Table 2 were again robust.

Regression models of hourly earnings. Table 3 reports coefficient estimates and heteroskedasticity-consistent standard errors from hourly earnings regressions that are specified and stratified similarly to the employment probits from Table 2. The dependent variable in the regressions is the natural logarithm of hourly earnings. Because earnings are only reported by workers, the models in Table 3 rely on possibly selective samples. Consequently, each of the regressions controls for selectivity using Heckman's (1979) two-stage procedure. Besides the county employer size distribution and state minimum wage variables indicated in the table, the earnings regressions include controls for demographic factors, time effects and county effects. As with the employment models, initial specification tests indicated that these additional controls

were jointly significant and belonged in the regressions. Specification tests also indicated that selectivity controls were necessary for some of the sub-samples.¹²

[Table 3 about here.]

In Table 3, the number of establishments with 10-99 employees is estimated to raise hourly wages for seven out of the eight gender×age×education groups and is statistically significant for six of those groups. The estimated impacts are larger for younger workers than for older workers. The number of establishments in the next larger size category (100-499

¹² Coefficient estimates from the employment probit models reported in Table 2 are used to form the selection controls (the 8 terms). In addition to the identification from the non-linearity of the selection terms, the selection controls also rely on an exclusion restriction (welfare benefits are included in the probit models but not the wage models).

¹³The SBA (1998) reports that female ownership declines with business size. Figures from the U.S. Census Bureau (1997) indicate that female owners of businesses with 1-9 employees have higher levels of education than other women.

men and women, but these estimates are less precise and not statistically significant.

Establishments with 1000 or more employees are estimated to raise hourly wages for younger, less-educated men. The statistically significant results for larger businesses are consistent with a positive employer-size wage effect.

Turning last to the minimum wage variable, the estimated coefficients are positive, large and statistically significant for younger, less-educated women and weaker, though still significantly positive, for older, less-educated women. A higher minimum wage raises wages for less educated women. The point estimates indicate that the elasticity of younger, less-educated women's wages to a change in the minimum wage is 0.39 while the elasticity for older, less-educated women is 0.17. For younger, less-educated men, the estimated elasticity is 0.19, but the estimate falls just short of being significant.

Regression models of weekly earnings. Table 4 presents results for weekly, rather than hourly, earnings from selectivity-corrected regressions with time effects and county effects. Weekly earnings capture more of an element of labor supply than do hourly earnings. They also provide a better indication of the availability of part-time versus full-time work. To the extent that different types of employers might be more likely to offer part-time jobs or different types workers might be more willing to accept them, allowing work week variability could affect the estimation results. Despite the differences in the measures, however, the estimation results for the weekly earnings regressions are quite similar to the results from Table 3.

[Table 4 about here.]

Specifically, the number of establishments with 1-10 employees is estimated to significantly reduce weekly earnings for less-educated women. The number of establishments with 10-99 employees is estimated to raise weekly earnings for all workers except older, more-

educated women. In the next size category, the pattern is reversed—the coefficients are insignificant for most groups but significantly positive for older, more-educated women. A larger number of establishments with 500-999 employees raises weekly earnings, but the coefficient is insignificant for all groups. For the largest size category, the coefficient indicates that more large firms raises weekly earnings for younger, low-skilled workers, but the coefficient is insignificant for other workers. Higher minimum wages are estimated to raise less-educated women’s weekly earnings but have insignificant effects on other groups’ earnings.

The hourly and weekly earnings regression models were re-estimated to include the total number of manufacturing, retail and service establishments per working-age adult, the total number of civilian jobs per working-age adult, and the total working age population in each county as well as the self-reported information on employer size. The coefficient estimates reported in Tables 3 and 4 were generally robust to the inclusion of these additional variables.

disproportionate effects on people who are less-skilled in terms of their formal education and potential work experience.

The multivariate estimation results using the linked data s

Figure 1. Change in establishments per working age adult since 1989

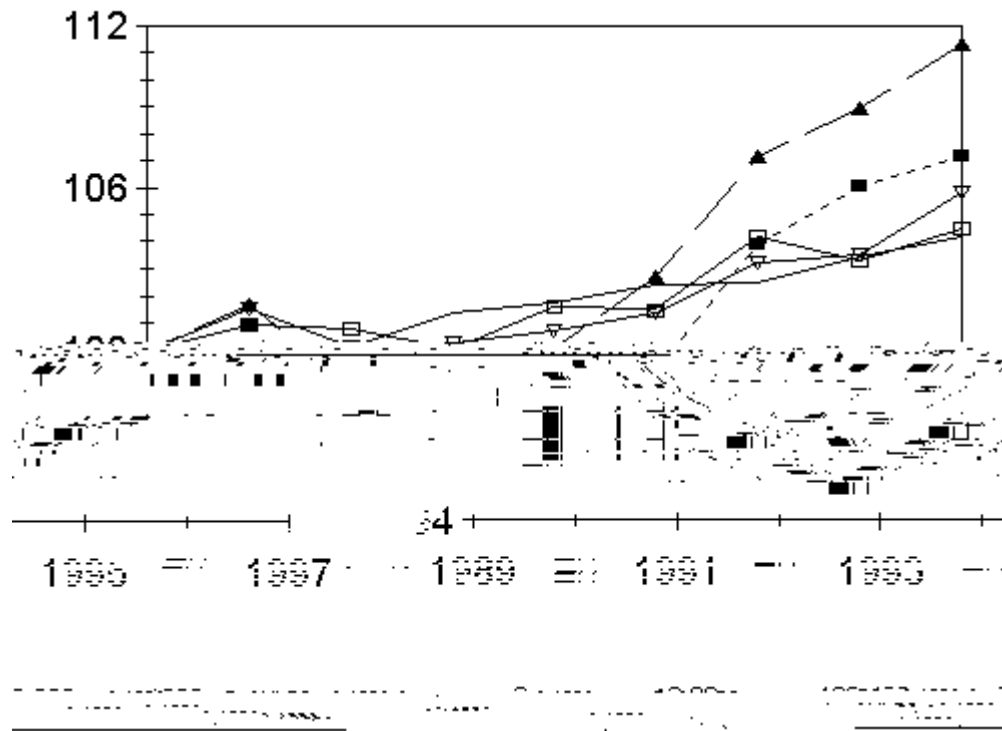
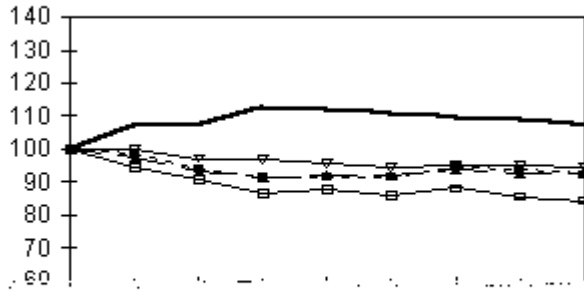
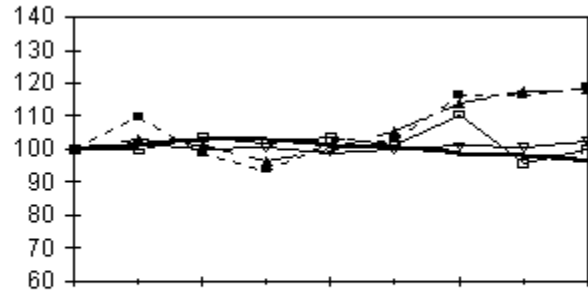


Figure 2. Change in establishments per working age adult for different industries

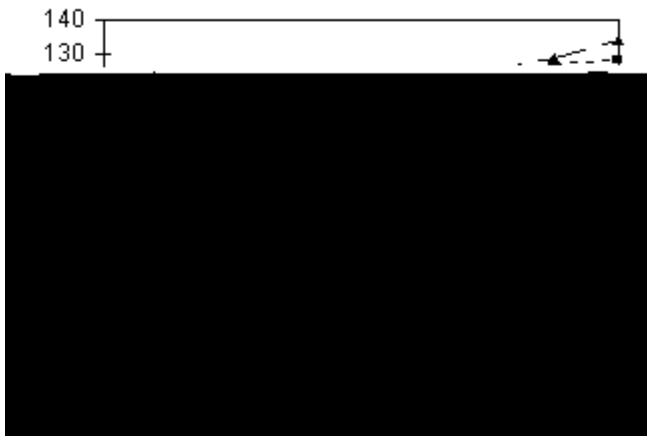
Manufacturing Establishments



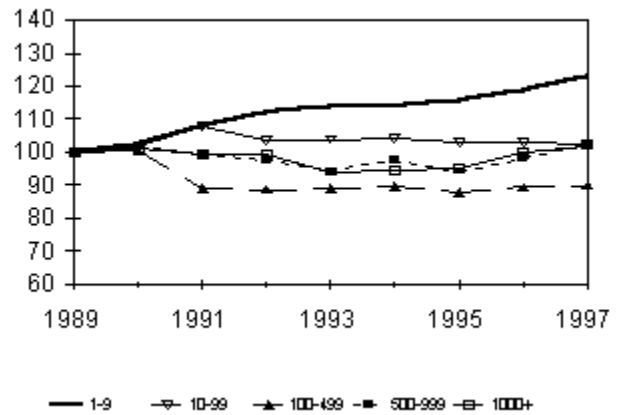
Retail Establishments



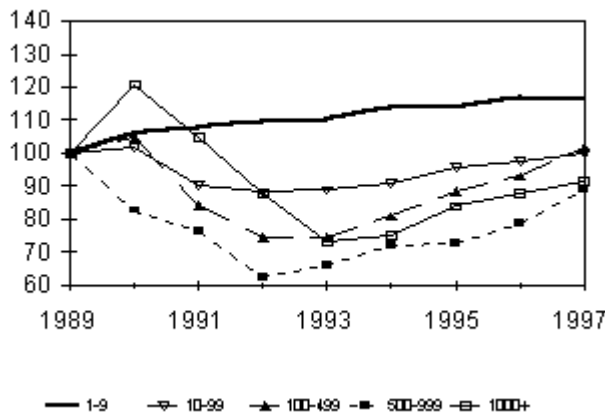
Service Establishments



Fin., Ins. & R.E. Establishments



Construction Establishments



Trans. & Utility Establishments

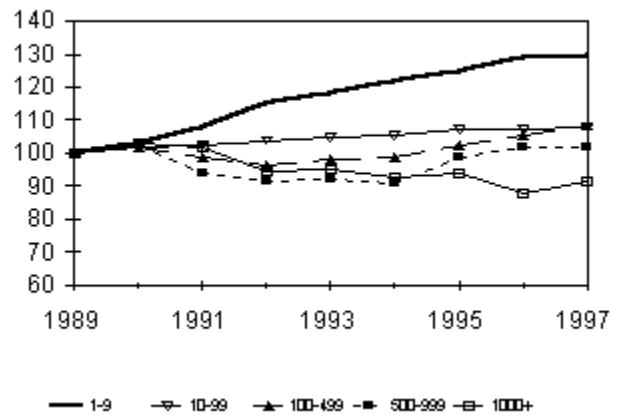


Figure 3. Trends in employment by gender, schooling and age

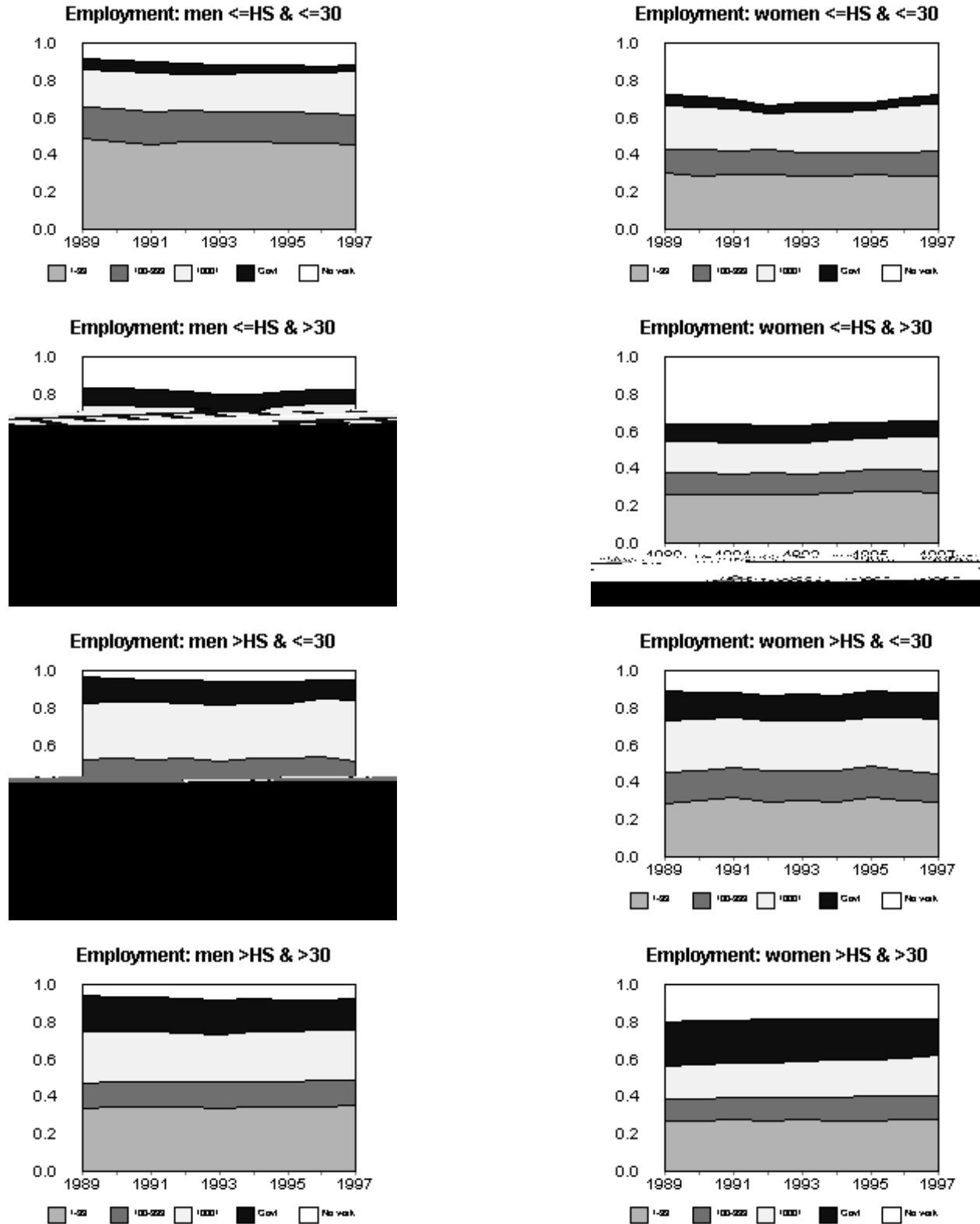
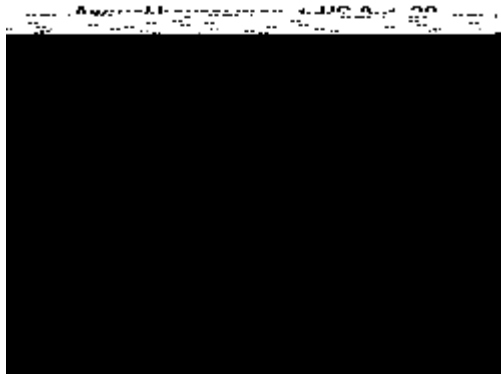
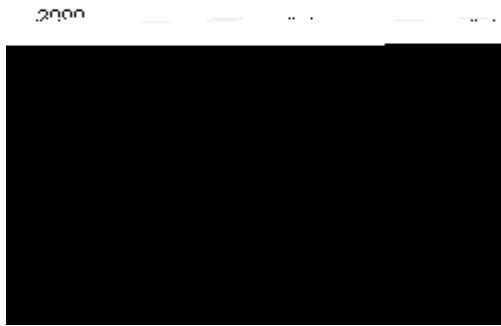


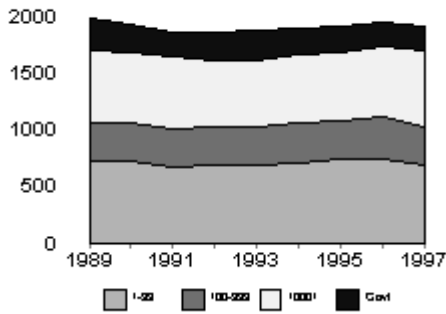
Figure 4. Trends in annual hours by gender, schooling and age



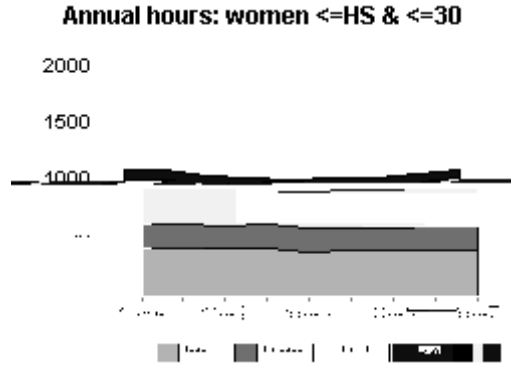
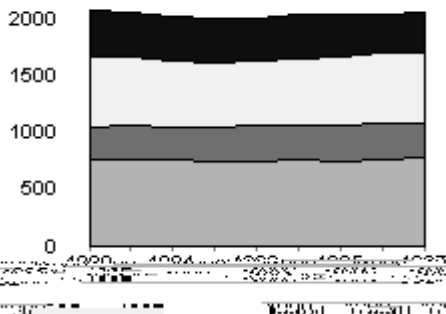
Annual hours: men <=HS & >30



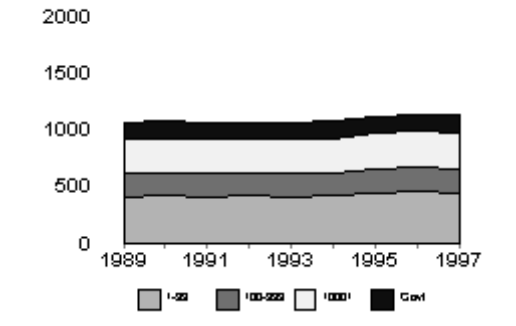
Annual hours: men >HS & <=30



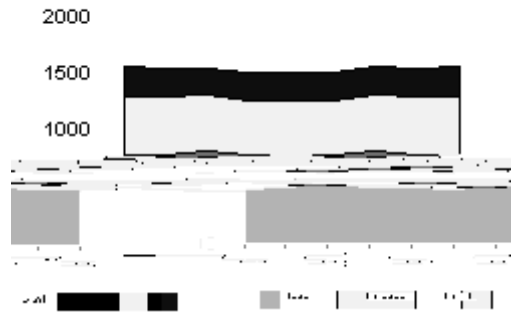
Annual hours: men >HS & >30



Annual hours: women <=HS & >30



Annual hours: women >HS & <=30



Annual hours: women >HS & >30

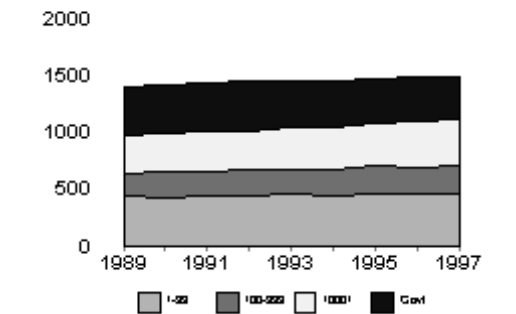


Figure 5. Trends in real hourly earnings by employer type, gender, schooling and age

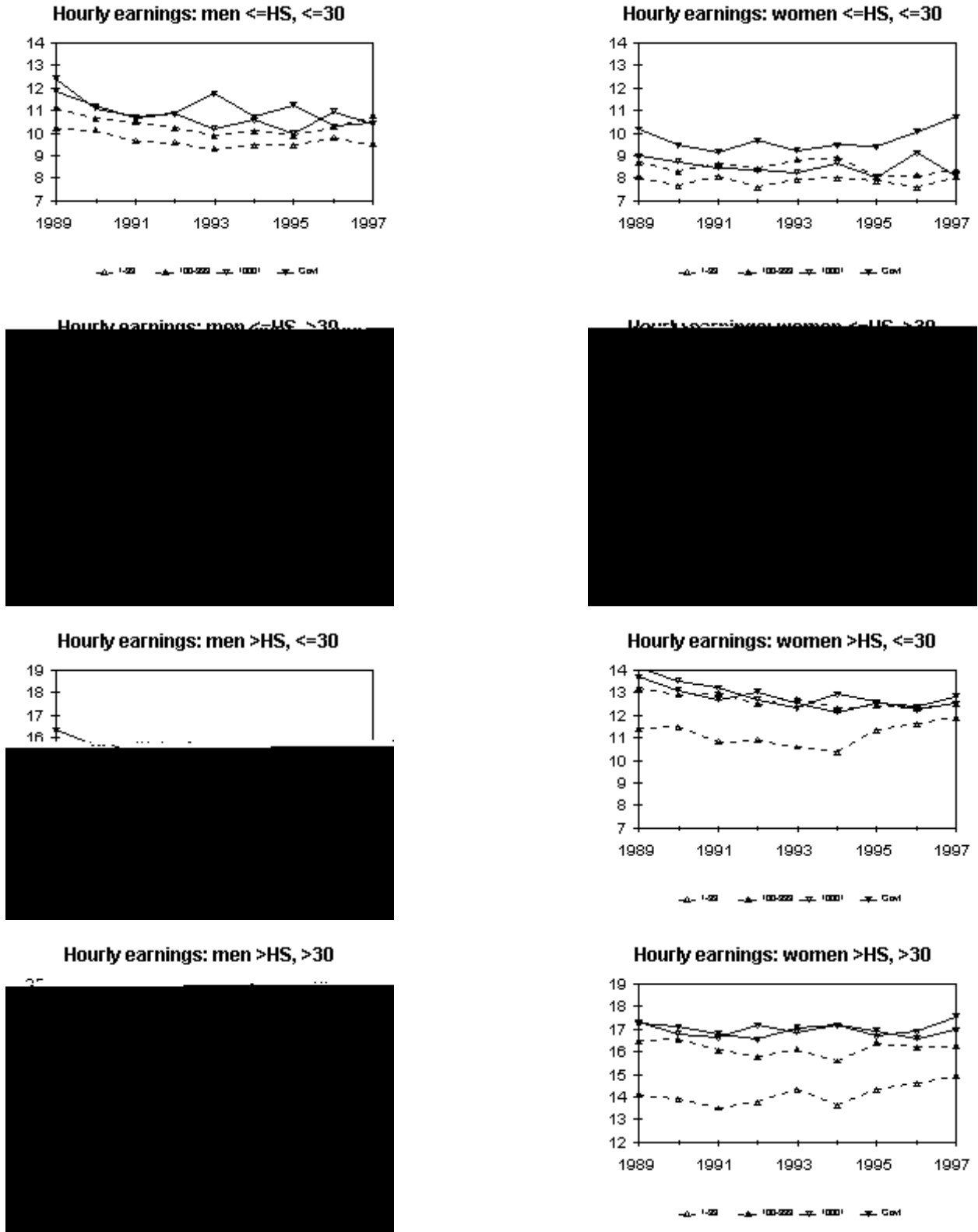


Figure 6. Trends in real weekly earnings by employer type, gender, schooling and age.

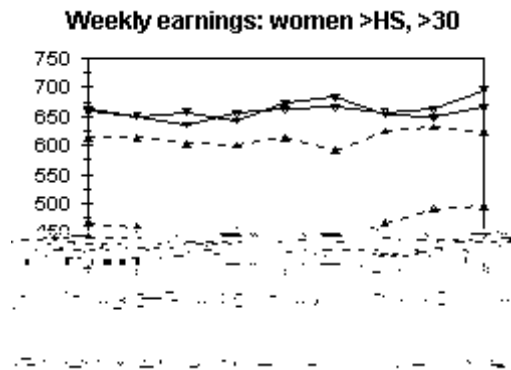
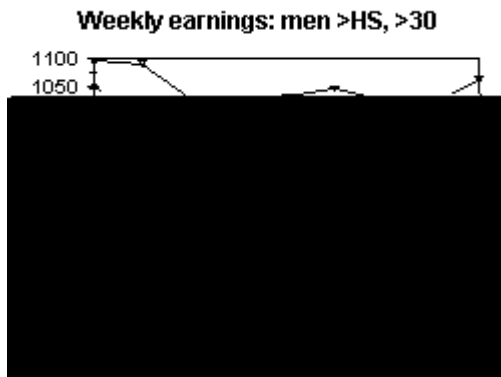
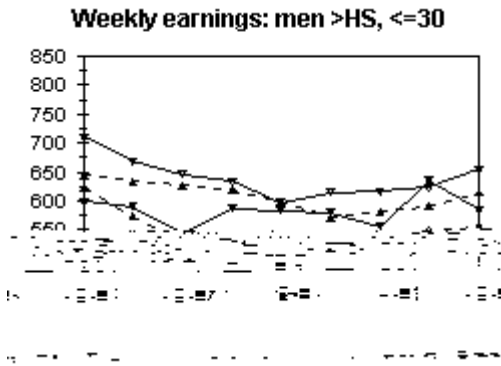
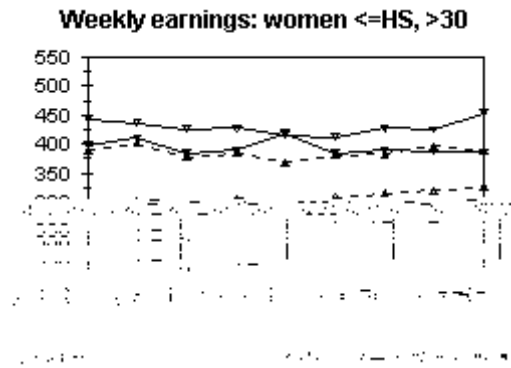
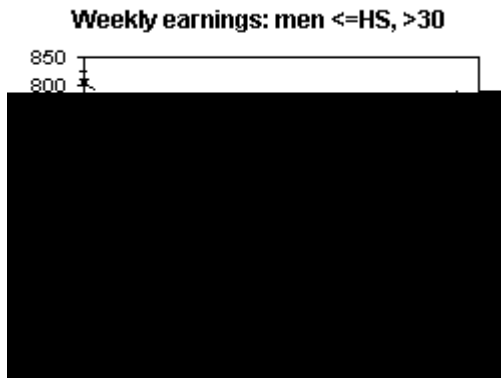
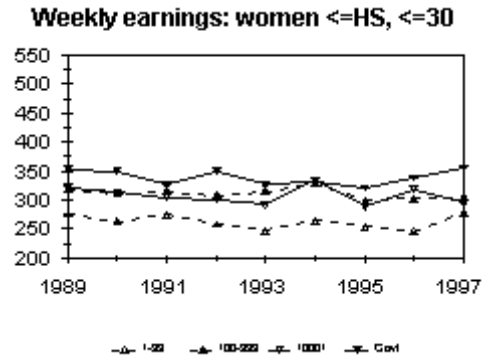


Table 1. Descriptive Statistics for Analysis Variables from the Combined CPS/CBP Data Set

	Men				Women			
	high school or less # age 30	high school or less over age 30	more than high school # age 30	more than high school over age 30	high school or less # age 30	high school or less over age 30	more than high school # age 30	more than high school over age 30
Employed last year	0.86							
	(0.34							

Civilian employment per working-age adult in cty.	0.85 (0.21)	0.82 (0.22)	0.92 (0.25)	0.87 (0.22)	0.84 (0.22)	0.82 (0.22)	0.90 (0.25)	0.87 (0.23)
Real max. monthly AFDC benefits (fam. 3)	483.03 (197.65)	454.92 (182.11)	502.28 (184.99)	482.93 (183.33)	470.95 (193.49)	452.58 (181.60)	479.33 (186.46)	476.79 (181.50)
Minimum wage	4.89 (0.33)	4.87 (0.29)	4.91 (0.30)	4.90 (0.29)	4.88 (0.30)	4.87 (0.29)	4.89 (0.29)	4.90 (0.29)
Age	24.17 (3.91)	45.28 (9.92)	25.93 (2.89)	43.79 (9.00)	24.18 (3.94)	46.36 (10.00)	25.81 (3.00)	43.15 (8.84)
African origin	0.16 (0.36)	0.14 (0.34)	0.11 (0.30)	0.08 (0.27)	0.18 (0.38)	0.13 (0.34)	0.13 (0.33)	0.10 (0.30)
Hispanic origin	0.22 (0.41)	0.11 (0.31)	0.09 (0.28)	0.04 (0.20)	0.18 (0.38)	0.10 (0.30)	0.07 (0.26)	0.04 (0.20)
Other non-white origin	0.04 (0.20)	0.03 (0.18)	0.07 (0.26)	0.05 (0.22)	0.04 (0.20)	0.04 (0.20)	0.06 (0.23)	0.05 (0.21)
Individual observations	18,543	49,523	11,087	44,874	22,539	64,110	17,030	50,811
Counties	509	1,077	246	744	668	1,176	446	892

Note: Statistics estimated using weighted data from the 1990-98 March CPS and CBP files. Standard deviations appear in parentheses.

^A Establishment figures expressed per 1,000 working-age adults in county of residence.

Table 2. Employment Probit Results

	Men				Women			
	high school or less		more than high school		high school or less		more than high school	
	# age 30	over age 30	# age 30	over age 30	# age 30	over age 30	# age 30	over age 30
Estabs. in county with 1-9 employees ^A	1.73 (20.01)	-14.19 (9.54)	-72.44* (34.76)	-16.16 (13.61)	4.05 (14.24)	0.57 (7.11)	-36.73* (21.13)	-4.97 (9.25)
Estabs. in county with 10-99 employees ^A	67.29 (51.54)	18.34 (23.43)	9.85 (91.94)	7.80 (35.80)	13.90 (35.59)	-10.51 (17.62)	6.55 (54.22)	32.34 (24.30)
Estabs. in county with 100-499 employees ^A	52.2 (273.6)	351.9* (127.6)	1015.5* (540.4)	137.3 (208.8)	367.3* (199.2)	201.6** (94.6)	-32.2 (309.1)	-224.7 (140.4)
Estabs. in county with 500-999 employees ^A	-1410.4 (1095.1)	56.3 (479.9)	2076.0 (2151.4)	-919.4 (844.7)	1371.5* (749.2)	465.2 (369.7)	-1494.3 (1224.0)	1062.4* (558.0)
Estabs. in county with 1000+ employees ^A	-2380.8 (2194.6)	1647.4* (968.3)	-7050.6* (3856.1)	1938.7 (1541.6)	-626.6 (1486.1)	61.4 (736.0)	-1857.7 (2356.6)	1924.4* (1053.9)
ln maximum AFDC benefits	-0.56* (0.32)	-0.07 (0.18)	0.80 (0.51)	-0.15 (0.25)	0.43* (0.24)	0.17 (0.14)	0.02 (0.32)	-0.27 (0.18)
ln minimum wage	-0.04 (0.33)	-0.15 (0.21)	-1.02* (0.53)	0.50* (0.28)	0.05 (0.25)	0.24 (0.16)	0.21 (0.35)	0.25 (0.19)
ln likelihood	-6,288.0	-21,126.2	-2,585.8	-11,007.6	-12,975.5	-38,405.7	-6,289.5	-24,245.3
Individual observations	18,543	49,523	11,087	44,874	22,539	64,110	17,030	50,811
Counties	509	1,077	246	744	668	1,176	446	892

Note: Models estimated using weighted data from the 1990-98 March CPS and CBP files. Models also include controls for age, race, county effects and year effects. Estimated standard errors appear in parentheses.

^A Establishments expressed per working-age adult in county of residence.

* Significant at .10 level.

** Significant at .05 level.

*** Significant at .01 level.

Table 3. Hourly Earnings Regression Results

	Men				Women			
	high school or less		more than high school		high school or less		more than high school	
	# age 30	over age 30	# age 30	over age 30	# age 30	over age 30	# age 30	over age 30
Estabs. in county with 1-9 employees ^A	-7.94 (7.23)	-4.14 (4.32)	-4.92 (10.49)	-2.73 (4.79)	-11.03 (7.32)	-7.28* (4.18)	1.34 (8.69)	8.02* (4.74)
Estabs. in county with 10-99 employees ^A	56.90*** (17.69)	17.20* (10.22)	34.72 (24.89)	30.35** (12.14)	47.90*** (17.75)	21.29* (10.35)	41.13** (19.64)	-11.80 (11.89)
Estabs. in county with 100-499 employees ^A	23.4 (100.4)	27.7 (57.3)	285.1* (159.5)	31.3 (70.3)	70.4 (114.4)	11.3 (57.2)	190.0* (112.7)	181.1* (71.1)
Estabs. in county with 500-999 employees ^A	-1.6 (397.1)	164.3 (208.7)	877.6 (619.1)	287.4 (277.8)	-430.7 (401.0)	70.6 (208.6)	709.0 (445.6)	485.8* (276.5)
Estabs. in county with 1000+ employees ^A	2685.6*** (798.6)	-195.6 (442.0)	-1020.2 (1180.1)	-72.3 (527.9)	793.1 (704.1)	-59.2 (415.4)	-661.9 (881.9)	239.6 (526.0)
ln minimum wage	0.19 (0.12)	-0.05 (0.10)	0.08 (0.15)	-0.05 (0.09)	0.39*** (0.14)	0.17* (0.10)	-0.08 (0.13)	-0.04 (0.10)
8	0.22* (0.13)	0.17** (0.07)	0.25 (0.22)	-0.10 (0.29)	0.10 (0.27)	0.13 (0.12)	-0.45 (0.28)	0.33* (0.17)
R^2	0.211	0.144	0.197	0.108	0.175	0.113	0.208	0.093
Individual observations	16,114	39,569	10,339	40,921				



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