

**The Patterns of Job Expansions in the United States:
a comparison of the 1960s and 1990s**

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Abstract

This paper examines the quality of jobs generated during periods of job expansion from the 1960s through the 1990s. The central results of the study are: First, the long 1990s economic boom produced a pattern of *asymmetrically polarized job expansion*: very strong expansion of jobs in the top tier of the employment structure combined with very limited growth in the middle. Second, while job growth at the top was strong in the 1990s, the overall pattern of job expansion was much less favorable for the labor force as a whole than in earlier expansions. Third, there has been a dramatic change in the racial and gender patterns of job expansion since the 1960s: gender differences in job expansion were very sharp in the 1960s and quite muted in the 1990s, while the racially polarized character of job expansion has increased, especially at the bottom of the employment structure. Finally, immigration, especially of Hispanics, is deeply connected to the employment expansion in the bottom tiers of the employment structure. Underlying these descriptive patterns are dramatic changes in the sectoral patterns of job expansion in the 1990s compared to the 1960s: the much slower growth of middle-level jobs in the 1990s is rooted in the decline of manufacturing; the stronger growth of bottom end jobs is rooted in accelerated growth of retail trade and personal services in the 1990s; and the very strong growth of high end jobs is rooted in high tech sectors.

The 1990s witnessed the most extended period of sustained economic growth, and with it employment expansion, in the United States in the 20th century: the 120 months of expansion surpassed the previously longest boom of 106 months in the 1960s. While no one disputes the fact of this enormous employment expansion, there is considerable disagreement over its character and implications. Two images have dominated both scholarly analyses and the popular media. One image characterizes this expansion as dominated by the creation of *McJobs* – low paid, low security, dead-end service sector jobs. The 1990s is seen as a continuation, perhaps in some ways even an intensification, of trends already present in the 1980s of increasing inequality, transfers of well-paid industrial jobs to the third world, wage stagnation for the large majority, and real economic improvements limited only to the highest tiers of the employment structure. As Robert Kuttner (1994:16) wrote in *Business Week* in the first Clinton

Administration:

“As labor day approaches the economy is generating jobs – 4 million since President Clinton was elected – but too few good ones. If anything the trends of the 1980s have intensified: astronomical earnings gains for the economy’s superstars. In the middle: relentless downsizing, with new pressures on once-secure professionals as well as depletion of solid blue-collar jobs. At the bottom: growing part-time and temporary hires, low wage jobs in services, especially retailing, and dismal starting wages.”

The other image sees the expansion as a job creation miracle, reflecting the emergence of a dynamic “new economy” of well-paid jobs, deepening prosperity and enhanced opportunities. As an ad placed by the Pfizer corporation in *The Economist* in 1999 declared:

“But what about the quality of the new jobs created? The figures about the American labour market tell us a quite different story from the “trash-job-and-working poor” litany that we so often hear. Since 1983 about 50 percent of the new net jobs created in the U.S. economy – about 15 million – were in the managerial and professional sector, and adding the medium skilled occupation, the figure rises to over 80 percent. Furthermore, around 70% of the new net jobs were in occupations remunerated above the median income for all full-time employees” (Rojas, 1999)

One might have thought that with such divergent descriptions of the employment expansion there would be a great deal of academic research carefully charting the patterns of job creation in the 1990s. This is in fact not the case. There is large body of research examining individual income and earnings inequality and how this has changed in recent decades (e.g. Gottschalk, 1997; Mishel, et. al., 2001; Morris and Western, 1999), and studies which chart the broad trends of expansion and contraction of employment by economic sectors (Meisenheimer, 1998; Plunkert, 1990; Godbout, 1993; Levy, 1998), as well as numerous technical reports from the department of labor about employment trends and prospects for different kinds of occupations (Ilg, 1996; Rosenthal, 1995; Bureau of Labor Statistics, 2002), but there is almost no research that looks in detail at the overall distribution of the quality of jobs generated in the 1990s employment expansion as such (for exceptions see Council of Economic Advisors, 1996; Farber, 1997; Ilg and Haugen, 2000), and none that we know of that compares the 1990s job expansion with earlier expansions, especially the long, robust employment expansion of the 1960s. The central objective of this paper is to fill this gap in the existing literature.

The central punchline of the paper is that the employment expansion in the 1990s can be described as a pattern of *asymmetrical polarization*: very strong growth in the top tier of the

employment structure, moderately strong at the bottom, and extremely weak growth in the middle. This is a novel pattern. The employment expansion of the 1960s constituted a non-polarized upgrading of the employment structure, and the expansions of the 1970s and 1980s involved relatively even job growth across the employment structure. In the 1990s, for the first time, there was sharply slower job growth in the middle. The task of this paper is to carefully describe these patterns and provide some preliminary explanations for the changes..

We begin in Part I by elaborating a method for studying changes in the quality of employment that focuses on *jobs* rather than simply on *individual earnings*. Most research on inequality and changing patterns of inequality focuses on distributions of earnings across individuals and income across households. For reasons we will elaborate below we believe it is also important to study the distribution of jobs as such and how this changes. Part II uses this method to chart the changing patterns of job expansion and contraction in the United States since the early 1960s. Since these results are not available in the literature we will devote a considerable amount of space to fine-grained descriptions of these patterns. Part III then provides some preliminary explanations of the patterns we observe. In particular we will examine the extent to which the dramatic changes in the pattern of job expansion in the 1990s compared to the 1960s are driven by changes in the sectoral distributions of employment.

I. Methodological Issues

1. A methodology for studying job expansions and contractions

The methodology we will use is an extension of the empirical strategy of one of the few pieces of research that examined the overall pattern of job expansion in part of the 1990s economic boom, research done under the supervision of Joseph Stiglitz when he was the chairperson of the

President's Council of Economic Advisors in the first Clinton Administration. Stiglitz studied the job expansion over a fairly short span of time, 1994-1996. His objective was to see what proportion of the job expansion in this period were “good jobs” and what proportion “bad jobs”.¹ His method was the following: Using Current Population Survey data, he constructed an occupation-by-sector matrix with 45 occupations and 22 sectors. This yielded a total of 990 potential kinds of “jobs” (cells in the matrix). Many of these cells were, of course, empty or near-empty. After eliminating the small cells, there were some 250 or so jobs left in the analysis accounting for roughly 95% of total employment. The median weekly earnings of full-time employees in each cell were then calculated and job quality defined by the distribution of these cell medians. In the simplest model, good jobs were defined as all cells with median earnings above that of the median cell and bad jobs were defined as cells with median earnings below the median cell.² The change in the number of people in each cell was then calculated for the period 1993-1995. The central finding was striking: roughly 70% of all job growth was among the “good” jobs, and roughly 50% of all job growth was in jobs in the top three deciles of the median-earnings-ranked job distribution. The conclusion offered in the report was that the job expansion was strongly weighted towards the creation of good jobs.

While the Stiglitz paper received a great deal of press attention at the time, it did not provoke a body of subsequent research. We therefore do not know if the patterns he observed at the very beginning of the job expansion of the 1990s held for the entire decade, or whether the 1990s expansion was in any way unusual compared to earlier periods of job growth.

1. Throughout this paper we will use the expressions “job expansion” or “job growth” to mean *net* job expansion (i.e. the net result of job creation and job destruction).

2 The criterion in the Stiglitz study is the median earnings in the *median cell*, not the median earnings of the labor force as such. In principle, these could be quite different.

The research in this paper extends and refines Stiglitz's analysis in several ways: First, we will adopt a much more fine-grained set of categories than Stiglitz used in his analysis, and use these categories to examine the quality of jobs generated throughout the entire 1990s employment expansion, rather than simply in the first two years of the expansion. Second, we will focus not simply on the question of what percentage of the job expansion consists of "good jobs", but on the whole distribution of job quality. Of particular concern here will be the extent to which job growth has a polarized character. Third, we will carry the analysis backwards to the 1960s to see the extent to which the 1990s constitute a distinctive pattern of employment growth. Fourth, we will explore the demographic aspects of the job expansion: the racial and gender composition of the job expansion in the 1960s and the 1990s, and the immigration composition in the 1990s (data on immigration status for job holders are not available in the earlier periods). This will further help us to identify the distinctive characteristics of the two periods of extended employment growth. Finally, as part of an explanation of the changes in patterns of job expansion between the 1960s and 1990s, we will examine the sectoral patterns of the two expansions.

2. Classifying jobs and measuring "job quality"

The basic descriptive task of this project is to chart the quality of jobs created in the employment expansion of the 1990s compared to earlier job expansions. To do this we need to solve two methodological problems: first, how should we classify the millions of jobs in the US economy into various general categories, and second, how should we measure the quality of jobs so classified. What we want is a typology of *types of jobs* and then a criterion for ranking these types of jobs in terms of their "quality". Once this is done we can investigate where in this

quality ranking of jobs job expansion is concentrated.

Job classification

There are, of course, many alternative ways one can classify jobs. In previous work, Wright and his collaborators classified jobs by their class character: working class, manager, employer, etc. (Wright and Martin, 1987; Steinmetz and Wright, 1989; Wright, 1997). For some purposes it would be useful to classify jobs by the type of organization generating the job: government, nonprofit, large corporation, small business, etc. For the purposes of the present investigation, we will follow the basic strategy adopted in Stiglitz analysis and classify jobs by economic sector and occupation. For the analysis of job expansion in the 1980s and 1990s we construct a labor force matrix of 104 occupational categories by 23 economic sectors. We will treat the 2392 cells of this matrix as types of jobs. Examples of the cells in this matrix include: janitors in business repair services; bus and truck drivers in retail trade; secretaries, typists and stenographers in nondurable manufacturing; and financial managers in wholesale trade. Of course, even in a very large data set, many of these cells have very few people in them, although surprisingly few are literally empty. While we will include all the job-cells in our analysis that have any people in them, about 479 these job types account for over 90% of total employment.³ The available data for the 1960s and 1970s did not allow for so fine-grained a set of occupational distinctions, so in the earlier period we use a job matrix of 30 occupations by 23 economic

3 While it is the case, of course, that the estimates of median earnings will be highly unstable for cells in which there are few cases, these cells also contribute virtually nothing to the patterns of job growth and thus these measurement problems cannot affect the overall results. The patterns are unchanged if small cells are dropped.

sectors which generates a total of 690 potential types of jobs.⁴

Job quality

The second task is to rank-order the jobs in the occupation-by-sector matrices from the “best” type of job to the “worst”. This, of course, immediately raises the problem of what precisely one means by “job quality”. There is a wide range of heterogeneous attributes of jobs which matter to people and thus contribute to their desirability. Some of these attributes can be measured with readily available data – such as earnings, fringe benefits, educational levels of incumbents of jobs; others are in principle measurable, but data are not readily available – such as opportunities for advancement, job security, and levels of authority; and some involve job attributes that are difficult even in principle to measure – such as stress levels, degree of personal autonomy within the labor process, or opportunities for social connectedness on the job. Ideally in order to fully assess the extent to which economic growth in the United States is generating good or bad jobs one would want data on a full range of such attributes. Such data are simply not available for any extended periods of time for the entire employment structure. In practice, therefore, if we want to evaluate trends in the entire employment structure the only possibility is to measure job quality primarily on the basis of earnings generated by jobs. The cells in the occupation-by-sector matrix will thus be rank ordered on the basis of median earnings of incumbents of the cells. The details of the procedure used is explained below. To the extent that the various other desirable features of jobs are correlated with earnings, then this can be considered a proxy for a more general gestalt of job quality attributes. But even if this is not the case, earnings are a

4. For details of the categories used for both the earlier and later periods see Wright and Dweyer (2003, Appendix A). The basic patterns of results in the 1980s and 1990s data were substantively the same when we used the simpler classification scheme used in the 1960s, so this shift in categories does not significantly affect our conclusion.

sufficiently salient aspect of job quality that it is important to know the distribution of well-paying compared to badly-paying types of jobs in the employment expansion.⁵

Why study growth of earnings-indexed jobs rather than simply individual earnings?

With this set of job categories rank-ordered by median earnings, we can determine what proportion of job growth occurs among the higher-ranking rather than lower-ranking categories of jobs in this list. But why go through the step of assigning median earnings to *types* of jobs and then examining the contributions of these *categories* to job growth rather than simply examining the changes in the number of individuals at different points in the earnings distribution? Isn't it better to know, say, that 20% of the job expansion was among *individuals* earning more than \$25/hour than to know that 20% of the job expansion was in *job categories* whose median earnings were above \$25/hour? Since there is a distribution of earnings around the median within each of the job cells, these two statistics could mean very different things in the lives of the people holding these jobs. In the job category analysis, for example, it could conceivably be the case that while 20% of the expansion of jobs was in *cells* with medians above \$25/hour, most of the job expansion in these cells was in *individual jobs* that earned below \$15/hour. It would therefore seem that if the basic point of caring about the quality of jobs is its impact on the economic conditions of the lives people in those jobs, then focusing directly on individual earnings would be more relevant than examining broader categories of jobs indexed by their median earnings.

There are two reasons why we feel it is important to study the growth of job categories

5. A comparison of patterns of job expansion in the 1990s using earnings as the basis for indexing jobs and a number of other indicators – SEI, education, and unemployment rates – is presented in Wright and Dwyer (2003, Appendix B).

indexed by median earnings rather than simply studying the changing distribution of the individual earnings themselves. First, we believe that the cells in the occupation-by-sector matrix tap real categories of jobs created in an economy. Jobs are not just employment contracts to “work” at a given earnings level; they are contracts to perform sets of tasks to produce specific outputs. The occupation-by-sector categories, therefore, map this task dimension of jobs. Second, we believe the earnings *potential* embodied in an employment expansion is better measured by the growth of job categories than simply by individual earnings. A job type, defined by cells in a 100 occupation by 23 sector matrix, can be thought of as demarcating labor market opportunities for a particular kind of employment with a particular earnings potential. The growth of managerial occupations in the finance, insurance and real estate sector constitutes the growth of good jobs because the earnings potential of this specific job type is high, even if many of the jobs that may be created earn below the median of that category. The growth of jobs in specific locations within the earnings-ranked job distribution may therefore give a better picture of the longer-term real economic impact of job growth than simply the changing patterns of individual earnings.⁶

Although we will present data on both job expansions and contractions, we will focus our attention primarily on periods of job expansion, especially the 1990s and 19960s. Changes in the overall job distribution, of course, are the result of the specific patterns of job creation and destruction, and it could in principle be the case that periods in which the rate of job destruction is greater than the rate of job creation (i.e. periods of net employment contraction) generate bigger changes in job distributions than do periods of employment expansion. In the four

6. This will be especially the case where there are relatively steep seniority-wage trajectories in a job, since in such cases newly hired younger people in a period of rapid job growth are likely to have lower earnings than the median person already in the job.

decades under study here this is simply not the case: there is much less job decline in periods of contraction than there is job growth in periods of expansion, and the variation in net changes across the job distribution is much more dramatic in periods of expansion than contraction. It thus appears that periods of job expansion have a bigger impact on the distribution of quality of jobs and it is for this reason we focus on the expansionary periods.

None of this implies, of course, that it is foolish to study the distribution of individual earnings or the growth of employment at specific locations in the individual-earnings distribution. All that we claim is that it is also important to understand the patterns of job expansion and contraction across categories of jobs in the job-type-earnings distribution, not simply the individual-earnings distribution.⁷

3. Data

The data come from the Current Population Survey (CPS) annual out-going rotation group files for the period 1983-2000, and from the CPS March annual demographic supplement files for the period 1963-1980. Because of problems in data quality, sampling and weights for the early 1960s, we had to begin the analysis of the 1960s job expansion in 1963 rather than in 1961 when the expansion began. Similarly, because of changes in the occupation coding in the early 1980s we had to begin the analysis for the 1980s expansion in 1983 rather than 1982.⁸

Throughout this analysis we will restrict our investigation to jobs held by employees,

7. It is important *not* to interpret the results from the study of patterns of job expansion as bearing directly on the question of changes in income distribution. In principle one could have absolutely even growth of jobs across the distribution of job-types and still have rapidly increasing income inequality – either because the spread of income across job-types was increasing or because earnings inequality within job types was increasing.

8. A detailed discussion of the data is available in Wright and Dwyer (2003, appendix A).

thus excluding the self-employed. In principle the problem of job expansion should include all jobs filled by active participants in the labor force, both employees and self-employed. However, the CPS does not contain comparable earnings data for both self-employed and employees, and thus it is difficult to create comparable earnings-based job category rankings for these segments of the labor force. For present purposes, therefore, we will restrict the analysis to employees.

We will also restrict our attention to full-time jobs. Part-time jobs pose a number of problems for the analysis of job growth. Should a 20 hour-a-week job be considered half a job? If so, should a 60 hour a week job be weighted 1.5 in a measure of job growth? If we did this, then in effect the analysis would shift from an investigation of job expansion to person-hours-in-jobs expansion. On the other hand, if we consider a half-time job the equivalent of a full-time job – a job is a job is a job – then the overall patterns of job expansion could potentially be distorted by the presence of jobs filled primarily by teenagers and others with relatively marginal attachments to the labor force in part-time work. Since the 1990s job expansion was in any case overwhelmingly dominated by the expansion of full-time employment, for the present analyses we will restrict the investigation to such jobs.⁹

4. Variables

Occupations

For the CPS data for 1983-2000 it is possible to construct a quite fine-grained occupational typology. We began with the standard 45-category two-digit occupational variable constructed by the CPS. We then went through each of these categories and examined the median earnings of

9. Contrary to much popular opinion, part-time employment did not increase as a proportion of the labor force in recent years and in fact declined in the course of the 1990s expansion from 18.1% of employment in 1992 to 16.2% in 2000 (Bureau of Labor Statistics data). For a discussion of trends in part-time work, see Levenson 1996.

the three-digit occupations within the broader category. Wherever there were substantial differences in the median earnings among these three-digit occupational categories we tried to group them into more homogeneous subcategories.¹⁰ For example, the CPS two-digit occupational category “Other Executives, Administrators, and Managers” accounts for just under 10% of all full time employee jobs in the 1990s. This is a very heterogeneous collection of occupations, ranging from managers of food services with median earnings of \$10.25/hour to marketing managers with median earnings over \$22/hour. Accordingly, we broke this broad manager occupation category down into 8 distinct manager occupations. The result is a 104-category occupational variable.

In the 1960s, the CPS data only contains a 30 category two-digit occupational variable. For the earlier period, therefore, we were not able to generate this refined set of occupational categories.¹¹

Economic Sectors

The classifications for industry change less over time than the codes for occupation. We code industries into 23 categories, which can be created for each period. Because of minor changes to the 3-digit Census classifications we use to create the 23 categories, a few of the

10. There is a certain arbitrariness in any effort at disaggregating broad occupational categories into more homogeneous components. We did not adopt a mechanical decision-rule, since we needed to balance pragmatic considerations about generating reasonably large categories, conceptual issues of the homogeneity of the content of different occupations, and empirical issues of their homogeneity with respect to the criterion of median earnings. In order to see if our specific disaggregation choices affected the results we examined the general patterns of job growth under a number of different occupational breakdowns, and in no case were the basic patterns substantially affected.

11. For the full list of occupational codes for each period, see Wright and Dwyer (2003, appendix A2)

sectoral categories are not perfectly comparable across all expansions, though they are very close.

We also constructed, for certain specific purposes, two more aggregated categories. The first, “personal services”, consist of four sectors from our full typology: private household service; repair services; entertainment and recreation services; assorted personal services (which include hotels; laundry; barber and beauty; miscellaneous personal services). The second, which we will refer to as the “high technology domain” consists of all jobs in high technology sectors plus all high technology-using occupations in non-high tech sectors.¹²

Earnings

We use hourly earnings to index job quality rather than weekly earnings, as in the earlier Stiglitz report. The results are not substantively affected by this shift, but we felt that hourly earnings was a better measure of job quality. In the data for the 1980s and 1990s, the CPS collected earnings per hour for hourly workers and per week for all others. To calculate hourly wages, we divide the “usual weekly earnings” of non-hourly workers by their “usual hours worked per week.” Within each expansion, earnings were converted into constant 2000 dollars. In the 1960s respondents were not directly asked about their hourly earnings for their *current* job. Instead they were asked about their earnings for the longest job held the previous year. We therefore had to use this retrospective data to calculate the median earnings of the cells in the occupation-by-sector matrix based on data for people who had not changed jobs since the previous year. It is possible that the restriction of the sample to people who had not changed jobs will bias the estimates of median earnings, since on average one might expect that people in any given job category who change jobs have lower earnings than those who do not change jobs. In order to

12. See Wright and Dwyer, (2003, appendix A2) for details of the sector coding.

assess this bias, we used March CPS files to analyze the 1990s and estimated wages using the same method we used in the 1960s, restricting the sample to people who had not changed jobs. Our results using this method for the 1990s were similar to our results produced with the ORG files, indicating that the method used in the 1960s does not distort the results.

Median earnings of job types

Median earnings for cells in the jobs-matrix are calculated separately for each of the periods of job expansion we examine (1963-1970, 1975-1980 ,1983-1990, 1992-2000) . In each period we combine all of the relevant CPS samples across all the years within the period and then calculate median earnings in constant dollars for this multiyear sample for each period. This creates a very large sample for each period so that there are significant numbers of cases in nearly all cells of the matrix. This procedure also means that if earnings change in a cell over the period of a job expansion, the rank-order position of the job in the hierarchy of job quality will be based on a weighted average of the earnings over the period (weighted by the number of people in the job in each year of the CPS sample). It turns out that although median earnings of job types do change over time, the rank-order of cells changes hardly at all, and this is all that really matters for our analysis. For example, in the 1992-2000 job expansion, the correlation of quintile or decile position of a job cell in 1992 (calculated on the basis of only 1992 data) and those same cells in 2000 is .99 and the correlation of cell median earnings (for cells with at least 50 people in the 1992 CPS sample) was .95.¹³

13. For details of measurement issues connected to the earnings variable, see Wright and Dwyer (2003, Appendix A3)

5. Strategy of Analysis

Our empirical goal is to measure the relative contributions to job expansion of jobs of differential quality defined by the median hourly earnings of job categories. Our strategy of analysis is to rank-order these jobs from the highest median hourly earnings to the lowest and then group this ranked-ordered set of cells into five ordered-categories each containing as close as possible to 20% of the employment *at the beginning of a job expansion*.¹⁴ We refer to these aggregated categories of jobs as “Job Quality Quintiles.” The bottom quintile contains the roughly 20% of the employment at the beginning of a job expansion that are in the jobs with the lowest median earnings, the highest quintile contains the roughly 20% of the employment in jobs with the highest median weekly earnings, and so on. To convey a sense of what sorts of jobs fall within each of the quintiles, the three largest job categories within each quintile in the 1990s are given in Table 1.

– Table 1 about here –

The rank-ordering of job categories and their aggregation into quintiles is done separately for each period we are studying. Because of the differential growth and decline of specific job categories over time, a few jobs do change their location within this job-earnings distribution from one period to another. In no instance, however, has a job category moved either up or down more than one quintile in the distribution. In any case, the interpretation of the job quality quintiles remains the same even if there are such shifts in detailed jobs.

In order to facilitate comparisons across demographic categories, when we analyze race

14. Since jobs come in lumpy units, it is not possible to aggregate the rank ordered jobs into groups each containing exactly 20% of employment. Thus, for example, of the five quintiles in 1992, one (the 4th quintile) contained 21.3% of employment and one (the highest quintile) 18.7%. None of the patterns we will be examining are significantly affected by these deviations from equal quintile categories.

and gender compositions of jobs we will use the same job-aggregations as we use in the total employment sample. That is, we will not recalculate median earnings of categories in the job matrix, nor recalibrate the job quality quintile categories within given demographic groups.

We will use these job-quality quintiles to generate graphs showing the distribution of *net changes in number of jobs within each quintile* during periods of job expansion and contraction. Figure 1 illustrates four different ideal-type patterns we might find in these results. The numbers in these graphs refer to *net* job expansion rather than job creation per se. That is, employment growth is always a simultaneous process of the creation of new jobs and the destruction of already existing jobs within any given job category. When we observe that a particular cell in the occupation-by-sector job matrix increased by 10,000 over a period of time, this could mean the creation of 25,000 new jobs and the destruction of 15,000 previously existing jobs. All that we observe is the net effect of these two processes.

– Figure 1 about here –

In the hypothetical illustrations in Figure 1, there is an expansion of 5 million jobs in each of the graphs, but the pattern of job expansion varies sharply across the different cases. The *McJobs* image of job growth looks something like the second graph in this figure: job growth is concentrated in the lower deciles of the employment structure with only marginal growth among jobs in the upper tiers. The jobs miracle vision is closer to the third graph. The image of highly polarized job growth in some accounts of the “New Economy” (eg. Reich, 1992) would look something like the fourth graph. Our primary task in this paper, then, is to chart in the manner various aspects of the patterns of job expansion since the 1960s.

II. DESCRIPTIVE RESULTS: PATTERNS OF JOB EXPANSION

1. Overall patterns of job expansion in the 1990s

Over 15 million full-time jobs were added to the American employment structure in the period 1992-2000. Figure 2 indicates that job growth was especially strong in the top quintile and especially low in the middle quintile of the employment structure.¹⁵ These results are broadly consistent with those in the Stiglitz study: in his research, using cruder categories over a much shorter period, just under 70% of the job expansion occurred in jobs above the median (i.e. in the top five job quality *deciles*) whereas in our analysis for the entire expansion of the 1990s the comparable figure is just under 63%. But the results also indicate something not revealed in the Stiglitz analysis, namely that job growth was especially weak in the middle of the employment structure: only 6% of the job expansion occurred in the middle quintile. The result is therefore a polarized pattern, albeit one weighted toward the better jobs.¹⁶

– Figure 2 about here –

2. The trajectory of job expansions: 1960s-1990s

To fully assess the character of the 1990s job expansion it is important to compare it with earlier episodes of sustained job creation. Figure 3 presents the patterns of job expansion for each job expansion and contraction since the 1960s for which we have reliable data.¹⁷ Four features of

15. Job growth was especially marked in the top *decile*, which accounted for 3.2 million of the nearly 5.5 million job expansion in the top quintile. The bottom decile also showed relatively strong growth: 1.75 million jobs of the 3 million in the bottom quintile occurred in the bottom decile.

16. It might be objected that these results are affected by a) the exclusion of part-time work, and b) by the growth of the kinds of jobs filled by young workers rather than the core adult part of the labor force. In analyses not shown here, neither of these factors account for the patterns observed. For details, see Wright and Dwyer (2003, appendix C).

17. As explained in detail in Wright and Dwyer (2003, Appendix A1) there are a number of gaps in this time series: 1. the data were unreliable for the early 1960s, so we had to begin the 1960s expansion in 1963 rather than 1961; 2. there were also data problems in the early 1970s – there was a short contraction and short expansion in this period –

these patterns are important to note. First, the 1990s expansion is the first in which a clear polarized pattern of job growth occurs. Even in the 1980s, a period in which there was a sharp rise in earnings inequality, it was not the case that job growth in the middle of the employment structure was lower than at the tails of the distribution.¹⁸ Second, in every expansion, job growth is highest in the top quintile of the employment structure. Indeed, if we further break down the results into deciles, in every period of expansion job growth is strongest in the top decile. This is thus not a unique feature of the 1990s expansion. What is new in the 1990s expansion is the extent to which the top quintile grew disproportionately relative to other quintiles: in the 1990s the ratio of the growth of top quintile to the 4th quintile was 1.8:1, whereas in the three earlier periods of sustained job growth the ratios were between 1.3:1 and 1.4:1. Third, the contribution of the bottom quintile of jobs to total job growth increases dramatically over time: in the 1960s just under 10% of the total job growth occurred in the bottom quintile of jobs; in the 1970s the figure was 15%; and in both the 80s and 90s, this figure was 20%. Fourth, if you look at the trends across this entire period, the patterns of job expansion in the 1970s and 1980s appear to be intermediary between the patterns of the 1960s and 1990s: from a strong, unequivocal pattern of job expansion upgrading in the 1960s, to muted upgrading in the 1975-1980 expansion, to a relatively flat pattern of job growth in the 1980s and, finally, the polarized pattern of the 1990s. The 1970s and 1980s therefore appear as a kind of transition from the “golden age” of upgrading job expansion of the 1960s to the polarized pattern of the 1990s.

so we begin the 1970s data with the 1973-1974 contraction; 3. the occupational categories changed in 1983, so we begin the 1980s expansion in 1983 rather than 1982.

18 As noted earlier, increasing income inequality is in principle consistent with a completely flat pattern of job growth across job-quality quintiles because (a) the income spread between the best and worst job-types could be increasing even if both types of jobs are growing at the same rate, and (b) increasing earnings inequality can occur within job-types.

– Figure 3 about here –

3. Race and Gender patterns of job expansion, 1960s vs 1990s

The quality of jobs created in employment expansions matters not simply because employment is the principle means by which individuals acquire their standards of living, but also because of the ways it reinforces or undermines other dimensions of social inequality. In particular, periods of robust job expansion in the upper tiers of the employment structure potentially offer relatively favorable conditions for disadvantaged social categories to make especially rapid gains, since in these conditions there is less of a zero-sum character to their movement into relatively privileged jobs. Figures 4 and 5 present the patterns of job expansion within race/gender categories in the 1960s and the 1990s. In the 1960s CPS data Hispanics are not distinguished from non-Hispanic whites, and thus only two racial categories are reported: whites and African-American. In the 1990s Hispanics and non-Hispanic whites are treated as separate categories.

– Figures 4 and 5 about here –

The data in these figures indicate a fairly complex set of changes in the demographic patterns of job expansion between the 1960s and the 1990s. One way of characterizing the overall contrast in gender/race patterns between these two episodes of massive job expansion is that in the 1960s gender differences in patterns of job expansion are sharper than the racial differences, whereas in the 1990s the racial differences are generally more striking than the gender differences. In the 1960s the patterns for white and black women are almost identical: job expansion was highest in the second quintile and lowest in the top quintile. Among men, there is some racial difference – among white males job expansion is highest in the top quintile whereas for black men it is highest in the middle quintile. Yet, for both white and black men there is very little (or even negative) job expansion in the bottom two quintiles, whereas this is where job

growth is concentrated for women, both black and white. Now, compare this to the 1990s: For both white men and white women, job growth is concentrated in the top of the employment structure; for both Hispanic men and Hispanic women, job growth is heavily concentrated at the bottom of the employment structure. The pattern of job growth among African Americans is also sharply different from that of whites, although in this case there is some gender difference as well: job expansion is polarized among black women (the only demographic group within which there is a polarized pattern) whereas among black men job expansion is fairly evenly distributed throughout the employment structure. Overall, then, relative to the 1960s, the job expansion of the 1990s is less gendered, but more racialized.

The decline in the gender polarization of the job expansion occurs at both the top and bottom of the employment structure. As indicated in Table 2, in the 1960s 79% of the job expansion in the top quintile was filled by men and only 21% by women; in the 1990s the corresponding figures were 56% and 44%. In the bottom quintile, on the other hand, in the 1960s for men as a whole there was a decline in employment, so women accounted for more than 100% of the job expansion in that category. In contrast, in the 1990s, men accounted for nearly 40% of the job expansion in the bottom quintile.

The increasingly racially differentiated pattern of job expansion in the 1990s is concentrated at the bottom and middle of the employment structure, not the top. In fact, if anything, the job expansion in the top quintile is somewhat less dominated by whites in the 1990s than in the 1960s: in the earlier job expansion over 93% of the job expansion in the top quintile was filled by whites, whereas in the 1990s this declined to 68% (or 79.5% if Hispanic

whites are added).¹⁹ In the bottom quintile, in contrast, the percent of the job expansion filled by whites declined from over 90% in the 1960s, to around 11% in the 1990s, and in the second quintile from just over 85% to around 24%.

Putting all of these observations together suggests that the aggregate pattern of job expansion polarization we observe in the 1990s in Figure 2 is a highly racialized, but not strongly gendered, pattern.

4. Immigration in the 1990s

The striking pattern of employment growth for Hispanics in the 1990s suggests that, perhaps, a significant part of the employment growth at the bottom of the job structure in the 1990s was due to immigration. Figure 6 shows that this is in fact the case. In the period 1994-2000, nearly 64% of the job expansion in the bottom quintile of the employment structure was filled by immigrants (of these, almost 75% were Hispanic), and 58% of the expansion below the median was filled by immigrants.²⁰ What is more, in the course of the 1990s, this concentration of immigrants in the expansion of jobs at the bottom increased: in second half of the period, 1996-2000, 79% of the job expansion in the bottom quintile and 68% of the job expansion below the median was filled by immigrants. Although not as large as at the bottom of the employment structure, immigration also contributed significantly to employment expansion in the top two job quality quintiles in which over 20% of the job expansion was filled by immigrants.

19. It is important to remember that in the 1960s data we could not differentiate Hispanic whites from nonHispanic, so the categories are not strictly comparable in the two periods. In any case, the percent of blacks in the job expansion in the top quintile increased from 4.5% in the 1960s to 13.3% in the 1990s.

20. Immigration data were available in the CPS only beginning in 1994. “Immigrants” are here defined as “foreign born”. There is no implication that these jobs were filled by people who immigrated in this period, but simply that they were foreign born.

Unsurprisingly, non-Hispanic immigrants predominate here: almost 90% of the job expansion filled by immigrants in the top quintile in the 1990s consisted of non-Hispanic immigrants compared to under 30% of the bottom quintile.

– Figure 6 about here –

5. A preliminary descriptive summing up

The descriptive results we have so far reviewed can be distilled into four basic observations:

First, the long 1990s economic boom produced a pattern of *asymetrically polarized job expansion*: very strong expansion of jobs in the top tier of the employment structure combined with very limited growth in the middle, and moderately strong at the bottom. This is the only job expansion among those studied here in which this polarized pattern occurred.

Second, while the claim that the 1990s job expansion is significantly weighted towards “good jobs” is correct, the overall pattern of job expansion is much less favorable for the labor force as a whole than the pattern in the previous longest episode of job expansion, the 1960s, and less favorable for people in the middle of the employment structure than the expansions of the 1970s and 1980s.

Third, there has been a dramatic change in the racial and gender patterns of job expansion since the 1960s: gender differences in job expansion were very sharp in the 1960s and quite muted in the 1990s, while the racially polarized character of job expansion has increased, especially at the bottom of the employment structure.

Finally, immigration, especially of Hispanics, is deeply connected to the employment expansion in the bottom tiers of the employment structure. To a significant extent the overall polarization of the employment expansion in the 1990s is linked to immigration.

III. EXPLAINING THE PATTERNS OF JOB EXPANSION: 1990s vs 1960s

There are three principle contrasts between the overall patterns of job expansion in the 1960s and the 1990s that we need to explain: first, the deep trough in job expansion in the middle quintile of the job quality distribution in the 1990s; second, the much higher contribution of the bottom quintile to job growth in the 1990s; and third, the especially strong growth in the 1990s in the top quintile relative to the fourth. Each of these contrasts is closely linked to the fate of specific sectors of the economy.

1. The middle of the employment structure: the 1990s trough

To understand the slow growth of middle quintile jobs in the 1990s we must examine closely two sectoral contrasts with earlier periods: first, a striking difference between the 1960s and the 1990s in the contribution of durable manufacturing to job expansion; and second, a difference between the 1980s and the 1990s in the contributions of service sectors to the growth of jobs in the middle of the employment structure.

Durable manufacturing

Of the 23 economic sectors in terms of which we have analyzed the patterns of job expansion, there is one which is massively linked to the weak growth in the middle job quality quintile in the 1990s compared to the 1960s: durable manufacturing (see Figure 7). As indicated in Table 3, in 1963 18.7% of all full-time employee jobs in the American economy were in durable manufacturing, and nearly half – 48% – of all middle quintile jobs were in that sector (no other sector contributed as much as 20% of the middle quintile jobs). Durable manufacturing was thus the pivotal sector within which jobs in the middle of the employment structure were located. In

the course of the long 1960s employment expansion, jobs within durable manufacturing increased by nearly 4.7 million accounting for 27% of the total job expansion in the period. Durable manufacturing, therefore, accounted for a higher proportion of job growth in the period (27%) than of jobs at the beginning of the period (18.7%). Of this expansion of employment in durable manufacturing, over 2.5 million jobs were in the middle quintile. This constituted 58% of the expansion of jobs in durable manufacturing and just under two thirds of the total expansion of jobs in the middle quintile in the 1960s.

– Figure 7 and Table 3 about here --

The contrast with the 1990s could not be starker. In 1992, at the beginning of the employment expansion, durable manufacturing was still the largest single sector of full-time employment in our 23-sector categories, but it had declined from 18.7% of all jobs to only 12.8%. What is even more striking, the concentration of durable manufacturing among middle quintile jobs declined from 48% to 14%. In the course of the 1990s boom, durable manufacturing jobs increased by only 600,000, or about 4% of total job growth, and within the middle quintile there was actually a loss of around 250,000 jobs. In the 1960s the strong expansion of durable manufacturing fueled strong job expansion in the middle of the employment structure. The absence of such growth in the 1990s accounts is one of the crucial reasons for the trough in growth in the middle.

Services

The decline of durable manufacturing is only part of the story. After all, as much research has argued, the decline of good jobs in manufacturing began in the 1970s and accelerated in the 1980s, and yet it is only in the 1990s expansion that aggregate slow growth of middle quintile

jobs occurs. Figure 8 helps explain what happened in the 1980s that muted the effects of the decline in manufacturing.

– Figure 8 about here –

This figure indicates the contributions of the middle job quality quintiles within two broad sectors – manufacturing (durable and nondurable) and services – to total job expansion in each of the periods we have examined. The results confirm the standard view of the decline of manufacturing in the 1970s and 1980s. By the 1980s expansion, the middle quintile of jobs in manufacturing contributed nothing to total job expansion. And yet there was no trough. The reason is that in the 1980s there was a sufficiently strong growth of middle quintile jobs in a number of service sectors to compensate for the absence of such growth in manufacturing. In the 1990s this countervailing trend had largely disappeared: whereas in the 1980s, 16% of the overall expansion of employment was generated by job growth in the middle quintile within services, in the 1990s this had declined to under 6%.²¹ The low overall growth of middle quintile jobs in the 1990s, therefore, is the result of decline in manufacturing, especially durable manufacturing, since the 1960s, combined with the sharp decline in the growth of middle quintile jobs in service sectors compared to the 1980s.

2. The bottom quintile of jobs: strong growth in the 1990s, weak growth in the 1960s

The strong growth of employment in the bottom quintile of the employment structure in the 1990s relative to the 1960s is especially concentrated in retail trade and the various sectors

21. The contrast between the 1980s and 1990s is especially sharp for services involving high human capital: business services, FIRE, public administration, miscellaneous professional services, medical services and educational services. The middle quintile of these sectors combined contributed just under 10% to total job expansion in the 1980s, but -1% in the 1990s.

which comprise the aggregated personal service sector (see figure 9 and table 4). If anything, these results probably understate the growth of employment in the bottom quintile in the 1990s because of problems of undercounting low wage minority and immigrant workers, especially in activities like personal services that are often in the informal economy.²² Retail trade and personal services together accounted for 18% of the full-time employed labor force in 1992, yet during the 1990s period of job growth these sectors accounted for just over 23% of the total expansion of jobs in the economy (just over 3.5 million additional jobs). Within this large sectoral expansion of employment in retail trade and personal services, a growth of 1.9 million jobs occurred in the bottom quintile of the job structure. This accounted for almost two thirds of the growth of jobs in the bottom quintile and 13% of the expansion of jobs overall.²³ As in the case of manufacturing, the contrast with the 1960s is striking. The expansion of 1.16 million jobs in retail trade and personal services in the 1960s accounted for only 6.5% of total job growth (in contrast to the 23% of total job expansion in the 1990s), and furthermore, the job expansion in these two sectors was less concentrated in jobs in the bottom quintile than in the 1990s. In the 1960s, in fact, more of the growth of employment in retail trade occurred in the middle quintile (almost 700,000 jobs) than in the bottom quintile (about 540,000 jobs).

– Figure 9 and Table 4 about here –

This very large expansion of low-end services in the 1990s clearly indicates that there

22. The Immigration and Naturalization Service (2001) estimated that “About 5.0 million illegal undocumented immigrants were residing in the United States in October 1996 with a range of about 4.6 to 5.4 million... The population was estimated to be growing by about 275,000 each year.” Many – perhaps most – of these undocumented immigrants would be missing from both the census population estimates used to generate sample weights and in the CPS surveys themselves. For a discussion of undercounts of low income populations in surveys using weights derived from the census, see Juhn and Potter (1999) and Anderson and Fienberg (1999).

23. If we look at the bottom *decile* of jobs, then retail and personal services make up 86% of the job growth (1.5 million jobs) in the 1990s, i.e. most of the growth in these two sectors in the bottom quintile actually occurs in the bottom decile of the job structure.

was a demand on the part of employers for such jobs. But demand alone is not sufficient to explain actual job creation; there must also be a pool of people willing to fill such jobs. Here the pivotal issue is immigration. As already noted, immigrants account for nearly two thirds of the job growth in the bottom quintile of employment in the period 1994-2000. In personal services, the figure was even higher -- 91%. These figures, if anything, probably underestimate the impact of immigration at the bottom of the employment structure since the CPS survey almost certainly significantly undercounts illegal immigrants. While we do not have corresponding CPS data for the 1960s, we know from general census data that there was very little immigration to the US in the 1960s: the percentage of the population that was foreign born actually declined between 1960 and 1970 from 5.4% to 4.8% (U.S. Census Bureau, 2001a: 44), while between 1990 and 2000 it increased from 7.9% to 10.4% (U.S. Census Bureau, 2001a: 45). Of course, one cannot tell from the sheer presence of immigrants in low-end job expansion whether immigration as such is primarily a cause of the expansion of jobs at the bottom of the employment structure or primarily an effect of the supply of such jobs. Nevertheless, it seems unlikely that in the absence of substantial immigration there would have been an alternative domestic labor supply to fill the several million jobs in the bottom quintiles of the employment structure generated in the 1990s. The result would have been either that the wages of those jobs would have had to rise significantly to attract a labor supply from other sectors within the US labor force, or – more likely – those jobs simply would not have been created.

While immigration may have made the growth of jobs in the bottom quintile of the employment structure possible by providing a labor supply willing to work in such jobs, one other factor probably contributed significantly to the actual creation of these jobs: the very low minimum wage in the 1990s compared to the 1960s. Using 1999 dollars, the minimum wage

rose from \$6.26/hour in 1963 to a high of \$7.07 in 1968 (Mishel, et. al., 2001: 187). In 1992 the minimum wage (in 1999 dollars) was \$5.03, and it fluctuated slightly up and down from this level throughout the 1990s job expansion, ending at \$5.00/hour in 2000. Given how much the overall productivity of the economy had grown since the 1960s, the 1990s minimum wage in the \$5 range was even lower in effective economic terms relative to the 1960s. Even though there is much debate among economists about the impact of the minimum wage on the demand for labor, it seems very likely that if the minimum wage in the 1990s was as high as it was in the 1960s that this growth of jobs in the bottom quintile would have been considerably less robust.²⁴

3. The top of the employment structure

The exceptionally strong relative growth of employment in the top quintile in the 1990s is a story of the growth of business services (Figure 10 and Table 5) and, to an even greater extent, of the “high tech domain” (Figure 11 and Table 6). As indicated in Table 5, In 1963 business services was a very small sector, accounting for only 1.3% of full time jobs in the economy and 3% of the top quintile jobs. During the 1960s, there was a expansion of about 420,000 jobs in this sector (about 2.5% of the total expansion). Of these, 186,000 were in the top quintile, which accounted for about 4% of the overall job expansion in the top quintile. By 1992 the sector had nearly tripled as a percentage of the full-time employee labor force, but was still a relatively small sector (3.4% of full-time employment and 5% of the employment in jobs in the top quintile of the employment structure). In the 1990s job expansion, however, 16% of the expansion of employment occurred in this sector, and 22% of the top quintile job expansion. That is, business

24. As indicated earlier, the contribution of the bottom quintile of jobs to total job expansion increased from 10% in the 1960s to 15% in the 1970s and 20% in the 1980s and 1990s. This trend is consistent with the trend in the erosion of the minimum wage: it was at a peak in the late 1960s, eroded slowly in the 1970s and more rapidly in the 1980s.

services, which at the beginning of the period accounted for only 5% of the jobs in the top quintile generated 22% of the job expansion in the top quintile.

One of the popular images of the growth of well-paying jobs in the 1990s is that they are closely connected to “high tech”. The exact meaning of such claims is usually pretty vague: sometimes “high tech” refers to sectors which produce high technology (eg. the software or computer industry), sometimes to sectors which use lots of high technology (eg. medical care), and sometimes to occupations involving high tech regardless of the sector (eg. computer scientists). For our analysis of this problem we have constructed a synthetic category consisting of all jobs within high tech sectors and all high tech jobs in all other sectors.²⁵ Unfortunately, it was impossible to construct even a rough version of this category for the 1960s since only 2-digit occupation and industry classification schemes were available in the CPS in that period, so our analysis here will be restricted to the 1990s.

Table 6 and Figure 11 clearly indicate how important the expansion of this high tech domain was for the growth of jobs in the top quintile of the employment structure in the 1990s. In 1992, 17.3% of all full time jobs were in the high tech domain. During the 1990s, this sector increased by 2.8 million jobs – or 18.6 % of the total expansion. The expansion of jobs in this domain, however, accounted for over 50% of the expansion of jobs in the top job quality quintile for the economy as a whole. The growth of high tech thus fueled the expansion of the highest quintile of jobs in the 1990s almost as much as the growth of durable manufacturing dominated the expansion of middle quintile jobs in the 1960s.

25. Details are presented in Wright and Dwyer (2003, Appendix A2.) Our classification of high tech sectors is based on work by Benner (1998) supplemented by personal communications with Benner.

CONCLUSIONS

The extraordinarily robust pattern of job creation in the American economy of the 1990s was heralded by many in the US and abroad as a triumph of deregulated, “free market” capitalism.

The rigidities of the much more regulated European labor markets were seen by many as central components of “Eurosclerosis”, leading to relatively weak job creation and stubbornly high rates of unemployment, especially among young workers. European governments were thus urged by leading economists to emulate the American model if they wanted to generate their own “jobs miracle.”

The results of this study suggest a complex set of lessons from the American experience. If all one cares about is the sheer number of new jobs being generated in an economy, then it is certainly the case that masses of new jobs have indeed been created in the United States in the 1990s. It is also the case that a disproportionate amount of this job expansion occurred in the top tier of the employment structure, particularly in those sectors and activities dominated by high tech. This was not a job expansion dominated by McJobs in low paid services.

The overall robust job creation and the expansion of well-paying high tech jobs of the 1990s, however, are only part of the story. When we compare the 1990s with the 1960s, a much less rosy picture emerges. In the 1960s, the sustained job expansion was unequivocally a process of *upgrading the employment structure*: slow growth at the bottom reflecting the relatively modest expansion of retail trade and personal services; strong growth in the middle anchored in durable manufacturing; and even stronger growth at the top. In the 1990s, the job expansion is characterized by an *asymmetrical polarization of employment opportunities* weighted toward the high end of the job structure. Of particular salience is the deep trough in employment expansion in the middle of the employment structure, a trough generated by the collapse of durable

manufacturing as a source of employment growth, the absence of a countervailing expansion of middle quintile jobs in high-end services, and a much stronger growth at the bottom than in the 1960s, generated by the expansion of retail trade and personal services. Moreover, this polarized pattern of job expansion is highly racialized. Employment for whites — both men and women — has expanded sharply among the better jobs in the employment structure, whereas expanding employment for blacks, Hispanics and immigrants is much more concentrated at the bottom of the employment structure. The sustained period of economic growth in the 1990s may indeed be creating masses of new jobs, and in the aggregate many of these jobs may be among the better paying kinds of jobs in the American economy, but the net effect of this employment expansion has been to increase polarization in the employment structure in a particularly racialized form.

The patterns we have been studying are distributions of *marginal changes* in the employment structure, not directly the patterns of job distributions as such. The deep trough in middle quintile jobs is thus a trough in the growth of those jobs, not a description of the relative size of jobs in the middle compared to the tails of the employment structure. The long term ramifications of these changes depend, then, upon the extent to which they are reinforced or counteracted in subsequent periods of job expansion and contraction.

Assuming that these trends do continue, there are a number of implications of the change in the pattern of employment expansion from the 1960s to the 1990s for the character of social inequality in the United States. First, the polarization of employment growth may suggest that poverty in the United States increasingly involves the working poor rather than simply people largely marginalized from the system of employment altogether.²⁶ The minimum wage of \$5.15

26. It is possible, of course, depending upon patterns of cohabitation and family size, that people working in jobs in the bottom quintile of the employment structure may not actually have standards of living that fall below the poverty line. A two-earner household in which each working spouse worked full time at the minimum wage would have a

in 2001 means that a person working 50 weeks a year at 40 hours a week would earn just over \$10,000/year, or about 58% of the official poverty line for a family of four. In the late 1960s the minimum wage was sufficient to support a family at about 90% of the official poverty line. This is not to say that the link of poverty to unemployment and exclusion from the labor force has disappeared, but rather that an increasing proportion of poor people are working full-time in those kinds of jobs which pay below poverty-level wages. To seriously tackle poverty in America today requires more than just getting poor people into jobs; it requires changing the quality of jobs available to them or reducing the linkage between income and employment.²⁷

Second, the very slow rate of growth of jobs in the middle range of job quality suggests that it may become increasingly difficult for people working in the worst jobs to move up in the employment structure. In the 1960s the very strong growth of middle quintile jobs in durable manufacturing meant that people from economic origins in the bottom tier of the employment structure or who currently occupied such jobs faced expanding employment opportunities in the middle of the employment structure in jobs that did not require high levels of education. The subsequent sharp decline in the 1990s in the growth rate of middle quintile jobs in general (the middle quintile grew at about a quarter the rate of all jobs in the 1990s), and of durable manufacturing jobs in particular (middle quintile jobs in durable manufacturing declined in the 1990s), means that this mobility channel has been sharply curtailed. A similar point could be made about retail trade: in the 1960s a significant proportion of job growth in retail trade

household income just above the official poverty line. Nevertheless, the expansion of poorly paid employment is one of the factors that increases weight of the working poor in the American structure of inequality.

27. The Earned Income Tax Credit is a move in the direction of partially delinking income and job-earnings, thus softening the impact on people's lives of increasing polarization in the job structure. A more radical extension of this delinking would be a full-blown negative income tax or an unconditional basic income. (Van Parijs, et al, 2001)

occurred in the middle quintile of the employment structure; in the 1990s there was virtually no growth in middle quintile retail jobs. This suggests that people employed in the rapidly expanding bottom quintiles of the employment structure will confront much more limited opportunities for significant improvements in employment in the future. This may pose a particular problem for immigrant communities who already face disadvantages because of cultural and linguistic issues.²⁸

Third, there may be significant long-term political ramifications of the deep trough in growth of middle quintile jobs when combined with such strong growth of jobs at the top. The question here is the social structural basis for what might be called a progressive-egalitarian political coalition in capitalist democracies. In the past, as a broad generalization, this coalition involved substantial numbers of people in jobs around the middle of the employment structure as well as in jobs at the bottom. This constituted a potential majoritarian coalition because of the strength of job growth in the middle. If the current pattern of economic development was a simple “hour glass” pattern of job growth of symmetrical polarization or polarization weighted at the bottom as some have implied (Massey and Hirst, 1998; Rayman-Read, 2001; Miller, 1999), then the prospects for a new majoritarian progressive-egalitarian coalition might seem promising since a coalition with people in the middle of the employment structure might be less important. However, the combination of very rapid expansion of jobs in the top tier of employment with stagnation in the middle may mean that in the future it will be increasingly difficult to rebuild such a majority coalition even in the face of deteriorating conditions at the bottom of employment.

28. For a discussion of the implications for mobility prospects of immigrants of a structure of economic opportunity increasingly being marked by a polarized structure of menial jobs at the bottom and high-wage jobs requiring a college degree at the top, with little in the middle, see Portes and Zhou (1993).

Fourth, if the specific sectoral and occupational character of the patterns of employment growth were to continue into the future – high tech jobs being created at the top of the employment structure, personal services and retail trade jobs being created at the bottom – then this could signal the emergence of a new cultural reality of social inequality in which an increasing proportion of the people at the bottom are engaged in providing personal services to the people at the top. While it would be a gross exaggeration to describe this as a transformation of the working class into a servant class, nevertheless aspects of the servant relation may become an increasing part of the cultural context of inequality.

Finally, the pattern of job expansion in the 1990s suggests significant transformations in the structure of racial stratification. Since the 1960s there has been a considerable expansion of employment of African-Americans and other racial minorities in what are loosely described as middle class jobs. The proportion of doctors, lawyers, professors, managers and even executives who are African-American has increased significantly. Among higher level jobs, therefore, there has been a partial deracialization. Among jobs at the bottom of the employment structure, on the other hand, the 1990s has generated a process of deepening racialization. Only 12% of the expansion of jobs among non-Hispanic whites occurred in the bottom three quintiles of employment compared to nearly 65.5% of job expansion among minorities.

This heightened racialized polarization at the bottom of the employment structure raises difficult moral and political issues. On the one hand, the expansion of jobs in the bottom quintile, even if badly paid, may constitute a real improvement in the lives of some people. This is especially the case for many immigrants, but also at least in some cases for people who otherwise might be marginalized from employment altogether. It is obviously too simple to unequivocally condemn the creation of such jobs if the real alternatives were materially much

worse for the people who filled them. On the other hand, this racialized pattern of job growth, especially when combined with the slow rate of growth of accessible jobs in the middle of the employment structure, may contribute to new, deepened forms of racial division.

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Table 1. Characteristics of Jobs in Each Job Quality Quintile

1992-2000 Job Quality Quintiles	1992- 2000 median hourly earnings	Three largest jobs within quintile	Occupation	Industry	Number, 1992	Number, 2000	% of employ- ment in quintile, 1992	% of employ- ment in quintile, 2000	Number of jobs in quintile
lowest quintile	\$7.00 8.00 6.72	cooks health services (aides) cashiers	retail trade other medical service retail trade		1112421 894857 804451	1366377 1153608 1124075	20.1	20.1	305
2nd quintile	\$11.30 10.20 10.53	sales supervisors/ proprietors assemblers retail sales: durables and misc.	retail trade manufacturing, durable retail trade		1679872 804837 753128	2171198 936770 1011751	20.3	20.0	279
3rd quintile	\$12.54 12.68 12.69	bus and truck drivers carpenters top tier clerks	transportation construction FIRE		1035319 567187 524112	1334783 828040 545124	19.5	17.4	346
4th quintile	\$16.88 17.87 16.73	elementary school teachers high school teachers police and fire, public service	educational service educational service public administration		1769063 1031006 832736	2267855 1137167 1040199	21.3	21.1	329
highest quintile	\$20.07 23.46 20.08	registered nurses managers, corporate misc. public administration	hospital service manufacturing, durable public administration		915786 656531 551314	957726 941792 647130	18.7	21.3	291

Distribution of net job expansion of job quintiles within race/gender categories

1960s	Job Quality Quintiles	white male	white female	black male	black female	other male	other female
	Lowest	0.9%	19.1%	-17.2%	25.1%	-18.3%	20.9%
	2nd	4.8%	39.0%	14.7%	35.9%	1.1%	19.4%
	3rd	19.3%	19.9%	51.4%	19.1%	35.0%	19.9%
	4th	30.9%	10.9%	34.9%	12.4%	1.4%	9.1%
	Highest	44.2%	11.1%	16.2%	7.5%	80.8%	30.8%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

1990s	Job Quality Quintiles	white male	white female	black male	black female	Hispanic male	Hispanic female	other male	other female
	Lowest	-0.3%	12.7%	15.3%	27.0%	32.8%	47.4%	14.0%	23.3%
	2nd	14.5%	8.0%	22.3%	20.9%	28.8%	24.0%	16.4%	15.5%
	3rd	9.8%	-22.5%	20.4%	8.6%	18.5%	7.9%	11.2%	9.7%
	4th	12.5%	41.2%	19.5%	23.9%	10.8%	12.8%	13.9%	20.7%
	Highest	63.6%	60.5%	22.4%	19.7%	9.0%	8.0%	44.5%	30.8%
	total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Distribution of job expansion of race/gender categories within job quintiles

1960s	Job Quality Quintiles	white male	white female	black male	black female	other male	other female	Total	
								Total	
	Lowest	5.6%	88.2%	-11.3%	17.2%	-1.2%	1.5%	100.0%	
	2nd	12.7%	72.9%	3.9%	9.9%	0.0%	0.6%	100.0%	
	3rd	46.7%	34.4%	12.6%	4.9%	0.9%	0.5%	100.0%	
	4th	70.8%	17.9%	8.1%	3.0%	0.0%	0.2%	100.0%	
	Highest	79.3%	14.3%	2.9%	1.4%	1.5%	0.6%	100.0%	

1990s	Job Quality Quintiles	white male	white female	black male	black female	Hispanic male	Hispanic female	other male	other female	total
	Lowest	-0.3%	11.4%	28.9%	27.2%	6.0%	15.5%	4.6%	6.7%	100.0%
	2nd	16.1%	7.8%	27.7%	15.0%	9.6%	13.1%	5.8%	4.8%	100.0%
	3rd	33.2%	-66.7%	54.1%	15.0%	26.7%	16.3%	12.1%	9.2%	100.0%
	4th	13.0%	37.5%	9.7%	7.5%	7.8%	13.9%	4.6%	6.0%	100.0%
	Highest	37.1%	30.9%	4.5%	2.6%	5.0%	6.5%	8.3%	5.0%	100.0%

Table 2
Race-Gender distributions within
Job Quality Quintiles of Job Expansion, 1960s and 1990s

Job Quality Quintiles	Percentage durable manufacturing jobs that are in each quintile	Percentage of jobs in each quintile that are in durable manufacturing	Percentage of total job expansion for each quintile that occurred in durable manufacturing
	1963	1963	1963-1970
1st	0.0%	0.0%	0.0%
2nd	4.7%	4.3%	-6.1%
3rd	54.9%	48.3%	65.5%
4th	15.6%	15.6%	21.2%
5th	24.8%	23.7%	26.2%
total	100.0%	18.7%	27.3%

	1992	1992	1992-200
1st	1.9%	1.2%	-0.2%
2nd	32.9%	20.7%	13.0%
3rd	21.8%	14.3%	-29.9%
4th	19.6%	11.8%	-1.3%
5th	23.8%	16.3%	10.6%
total	100.0%	12.8%	4.1%

Table 3.
**Distribution of jobs and job expansion by quintiles for Durable Manufacturing,
1960s and 1990s**

RETAIL TRADE

Job Quality Quintiles	Percentage retail jobs that are in each quintile	Percentage of jobs in each quintile that are in retail	Percentage of total job expansion for each quintile that occurred in retail
	1963	1963	1963-1970
1st	54.4%	44.3%	31.9%
2nd	18.1%	14.5%	-13.1%
3rd	24.0%	18.3%	16.7%
4th	1.1%	1.0%	-1.2%
5th	2.3%	1.9%	-0.3%
total	100.0%	16.3%	4.9%
	1992	1992	1992-2000
1st	48.3%	30.3%	46.9%
2nd	38.7%	24.0%	34.3%
3rd	10.0%	6.5%	4.9%
4th	1.4%	0.8%	2.2%
5th	1.5%	1.0%	1.9%
total	100.0%	12.6%	17.0%

PERSONAL SERVICES*

Job Quality Quintiles	Percentage personal services jobs that are in each quintile	Percentage of jobs in each quintile that are in personal services	Percentage of total job expansion for each quintile that occurred in personal services
	1963	1963	1963-1970
1st	78.2%	31.3%	15.4%
2nd	4.8%	1.9%	1.1%
3rd	12.8%	4.8%	4.8%
4th	3.1%	1.3%	1.9%
5th	1.1%	0.5%	1.1%
total	100.0%	8.1%	3.6%
	1992	1992	1992-2000
1st	59.7%	24.8%	37.0%
2nd	22.7%	9.4%	6.8%
3rd	13.0%	5.6%	29.1%
4th	4.0%	1.6%	3.9%
5th	0.7%	0.3%	0.2%
total	100.0%	8.4%	11.1%

*personal services is an aggregated category that includes 5 of the 23 detailed sectors in our analysis: private household services; hotels, laundry, barber and beauty, misc. personal services; entertainment and recreation services; automotive and repair services; eating and drinking places.

Table 4
**Distribution of Jobs and Job Expansion in Retail Trade and Personal Services,
 1960s and 1990s**

BUSINESS SERVICES

Job Quality Quintiles	Percentage business services jobs that are in each quintile	Percentage of jobs in each quintile that are in business services	Percentage of total job expansion for each quintile that occurred in business services	1963	1963	1963-1970
1st	6.3%	0.4%	1.7%			
2nd	40.2%	2.6%	7.1%			
3rd	1.6%	0.1%	0.2%			
4th	6.8%	0.5%	0.4%			
5th	45.1%	3.0%	3.9%			
total	100.0%	1.3%	2.5%			
	1992	1992	1992-200			
1st	31.7%	5.3%	13.2%			
2nd	16.7%	2.8%	7.6%			
3rd	8.2%	1.4%	4.6%			
4th	15.6%	2.5%	19.2%			
5th	27.7%	5.0%	22.2%			
total	100.0%	3.4%	16.1%			

FINANCE, INSURANCE, REAL ESTATE

Job Quality Quintiles	Percentage FIRE jobs that are in each quintile	Percentage of jobs in each quintile that are in FIRE	Percentage of total job expansion for each quintile that occurred in FIRE	1963	1963	1963-1970
1st	5.9%	1.6%	-2.0%			
2nd	52.4%	13.6%	27.8%			
3rd	3.4%	0.8%	0.1%			
4th	15.2%	4.3%	3.4%			
5th	23.1%	6.2%	8.8%			
total	100.0%	5.3%	7.2%			
	1992	1992	1992-200			
1st	11.2%	4.0%	-0.2%			
2nd	22.6%	8.0%	-4.3%			
3rd	19.1%	7.0%	0.7%			
4th	24.9%	8.4%	6.2%			
5th	22.2%	8.6%	13.3%			
total	100.0%	7.2%	5.2%			

Table 5
**Distribution of Jobs and Job Expansion in Business Services and FIRE,
 1960s and 1990s**

HIGH TECHNOLOGY DOMAIN

Job Quality Quintiles	Percentage HIGH TECH jobs that are in each quintile	Percentage of jobs in each quintile that are in HIGH TECH DOMAIN	Percentage of total job expansion for each quintile that occurred in HIGH TECH DOMAIN
	1992	1992	1992-200
1st	1.6%	1.4%	3.4%
2nd	10.4%	8.8%	1.1%
3rd	17.5%	15.5%	-57.5%
4th	23.1%	18.7%	13.3%
5th	47.4%	43.9%	51.3%
total	100.0%	17.3%	18.6%

Table 6
Distributions of Jobs and Job Expansion in the High Technology Domain
1990s

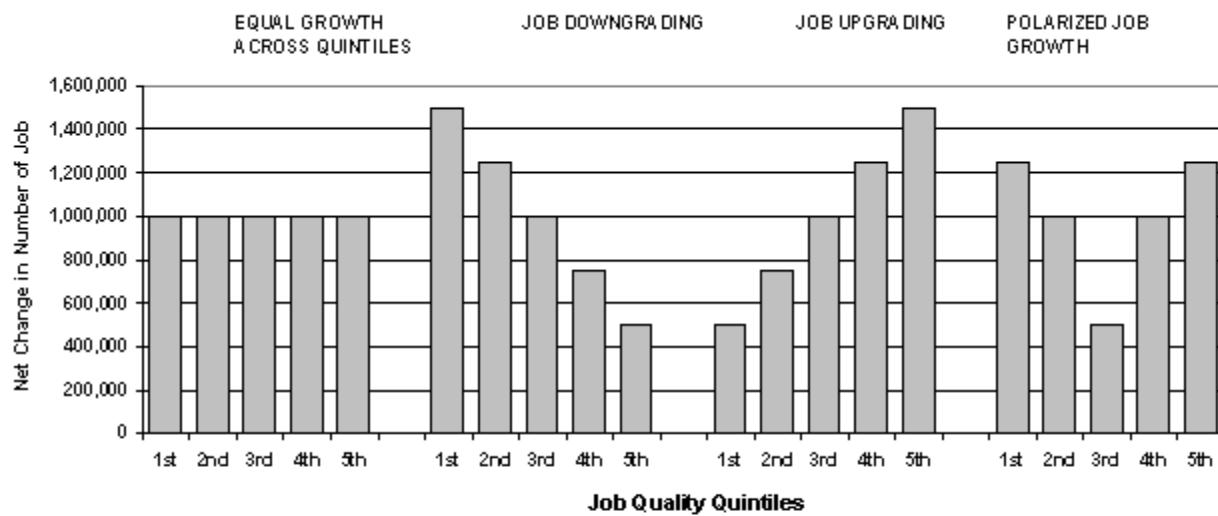


Figure 1
Hypothetical Patterns of Net Job Expansion

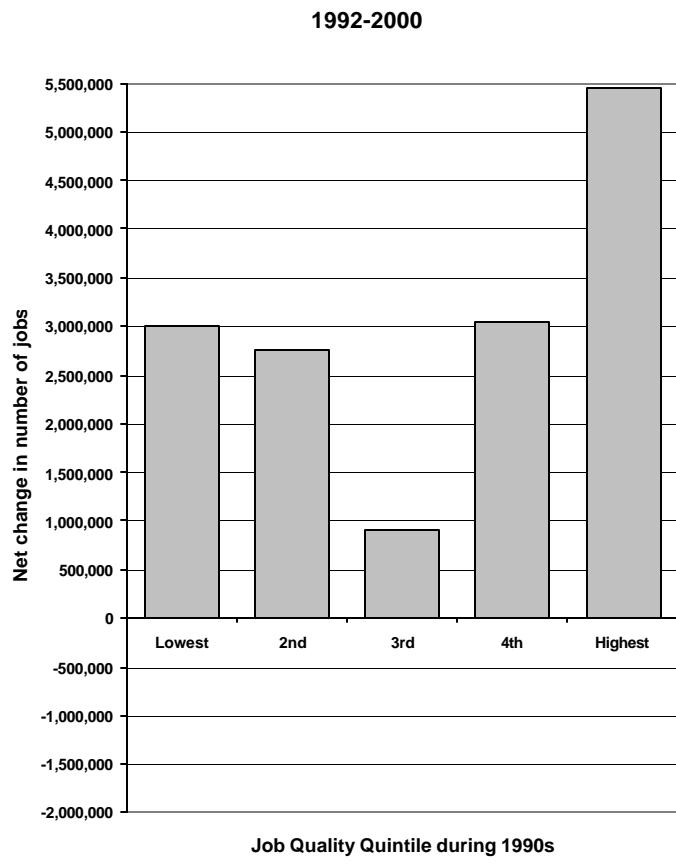


Figure 2.
Pattern of Job Change, 1992-2000

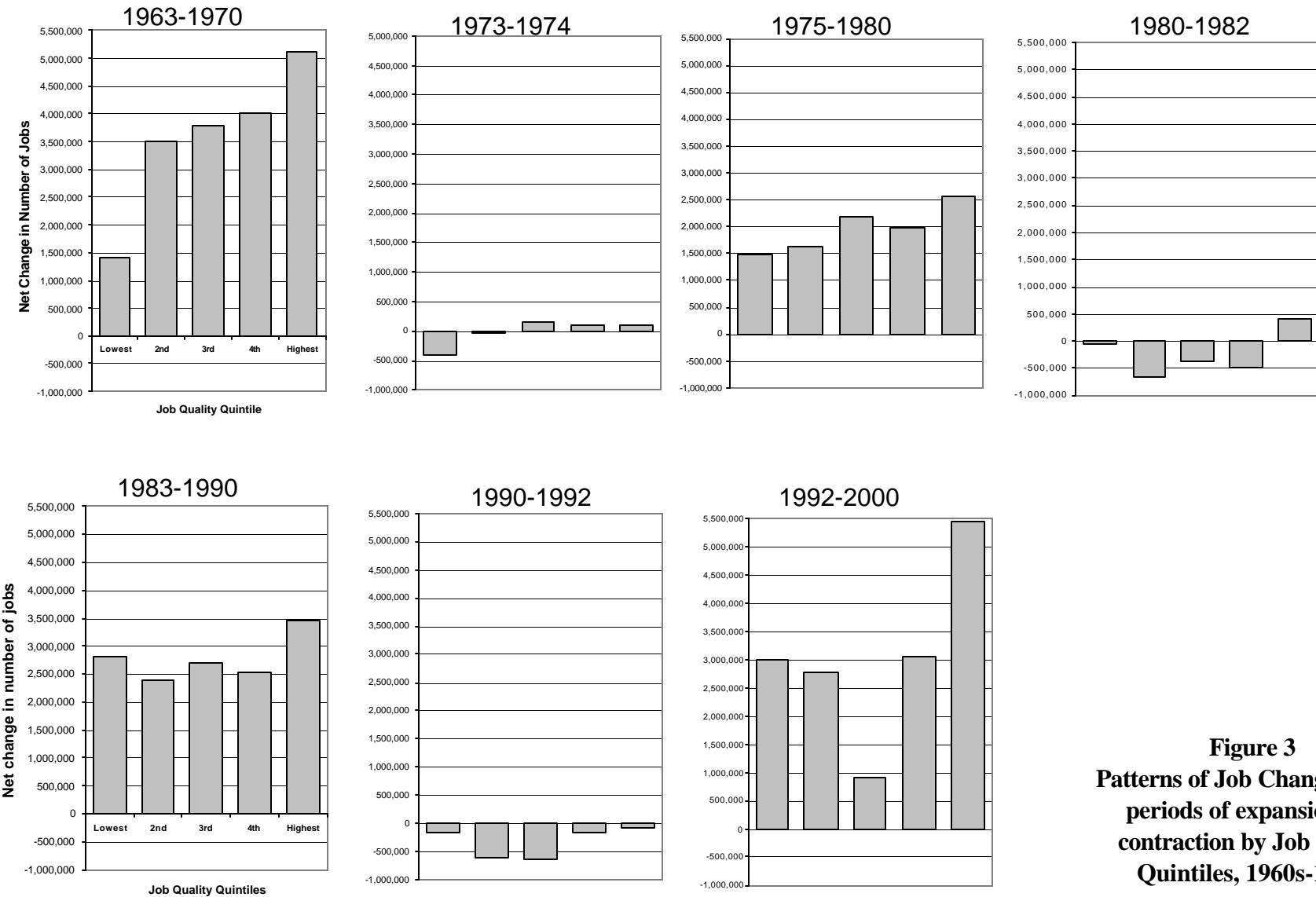
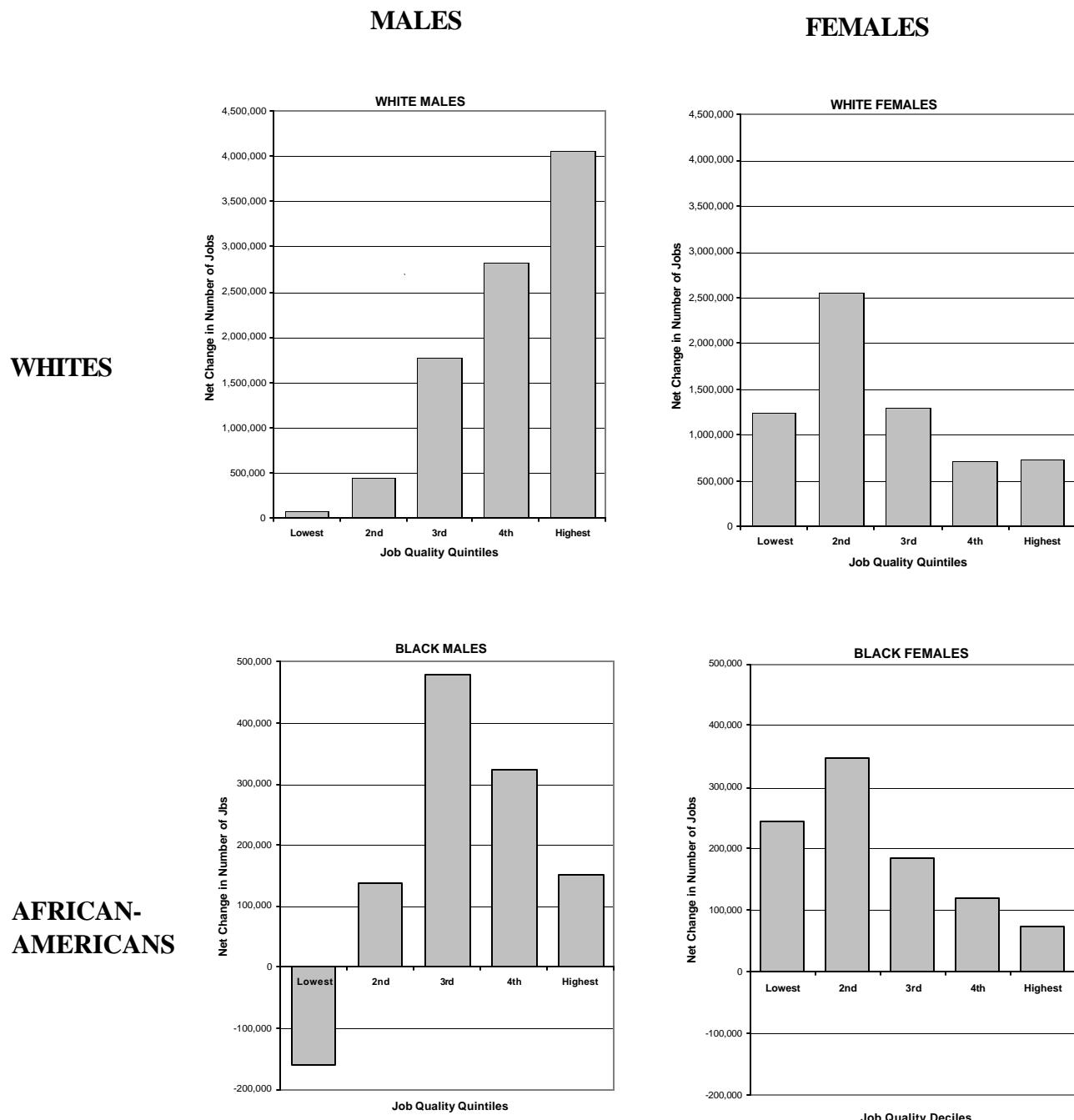


Figure 3
Patterns of Job Change during
periods of expansion and
contraction by Job Quality
Quintiles, 1960s-1990s

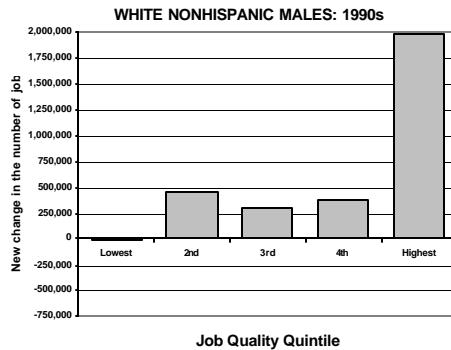


Note: the scales for number of jobs have been adjusted for each racial group in order to facilitate comparing the profiles of the patterns of job growth across categories.

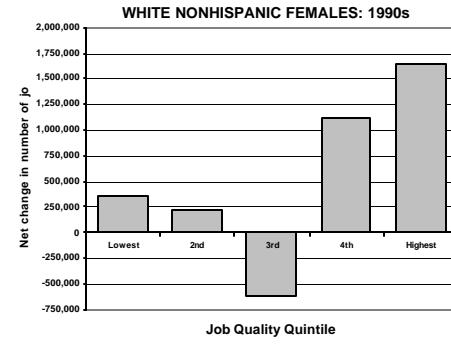
Figure 4.
Patterns of Job growth in race by gender categories in the 1960s

**WHITES,
NON-
HISPANIC**

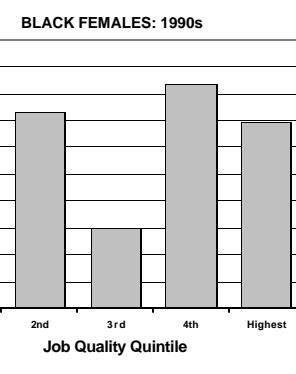
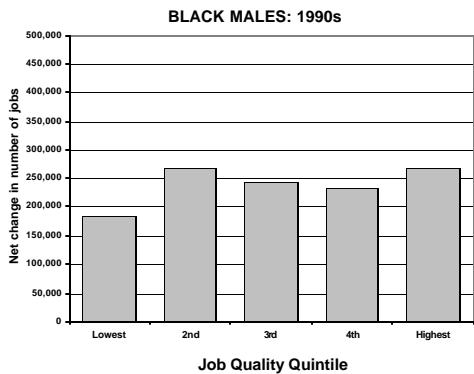
MALES



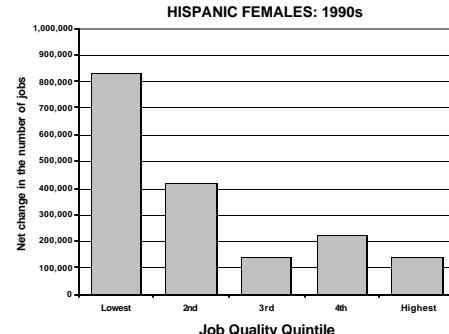
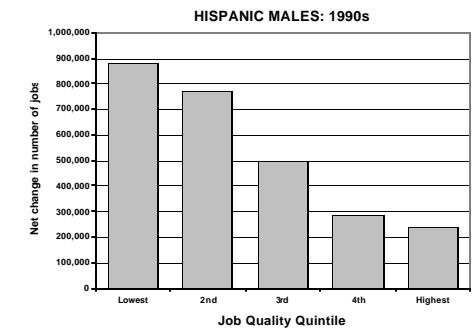
FEMALES



**AFRICAN-
AMERICAN**



HISPANIC



Note: the scales for number of jobs have been adjusted for each racial group in order to facilitate comparing the patterns of job growth across categories.

Figure 5.
Patterns of Job Growth among race-gender categories, 1990s

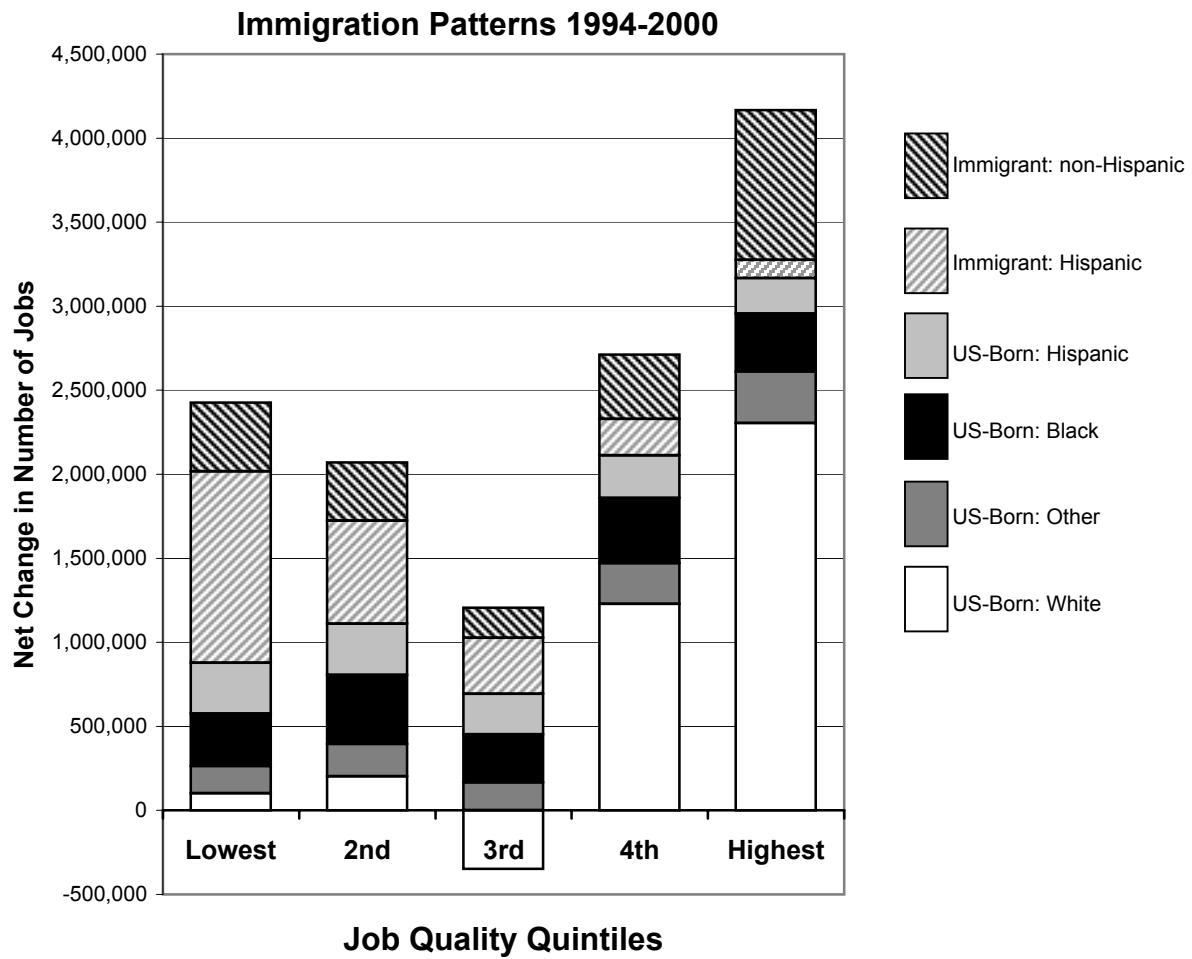


Figure 6
Immigration, Race and Job Expansion, 1994-2000

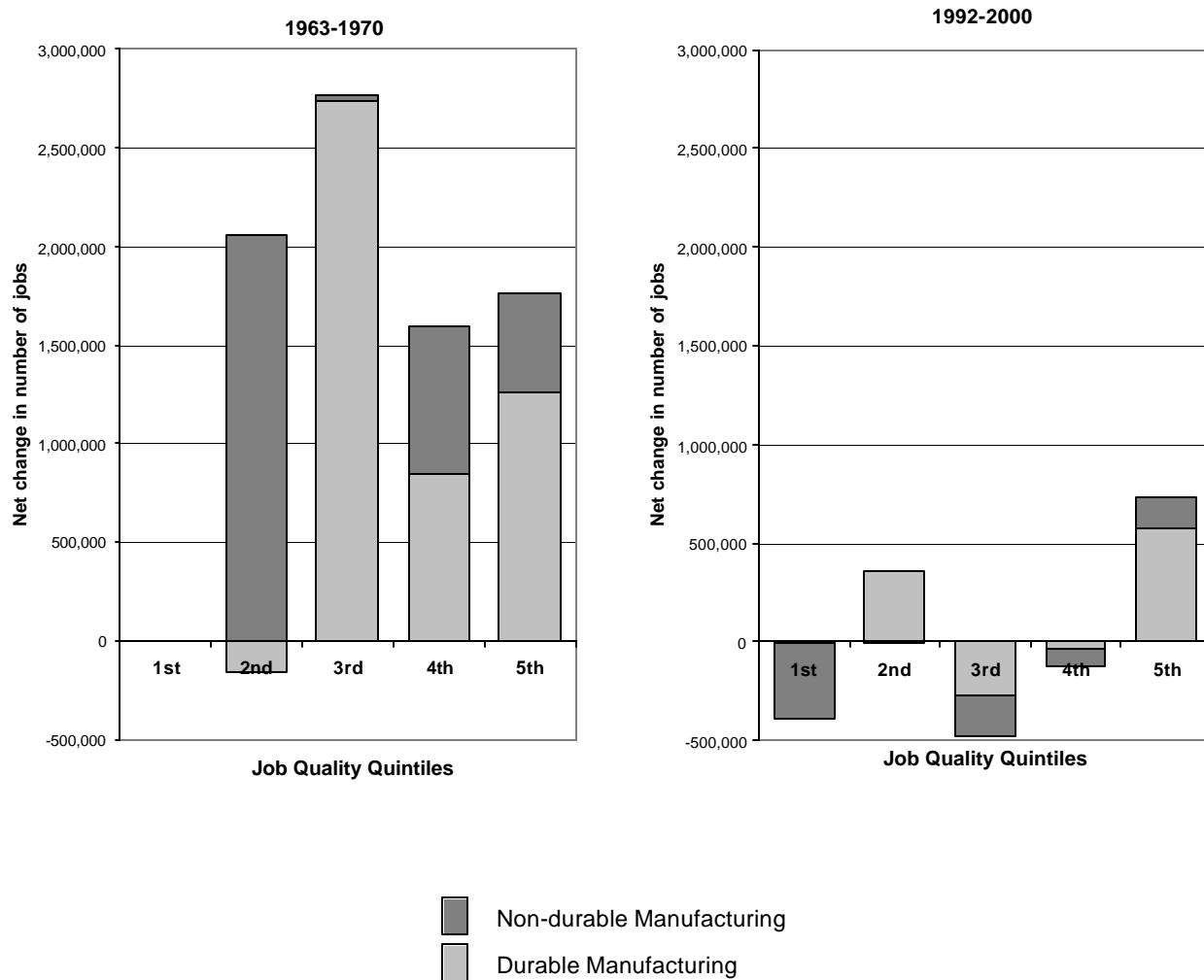


Figure 7
Net Change in numbers of Jobs in Manufacturing
by Job Quality Deciles, 1960s and 1990s

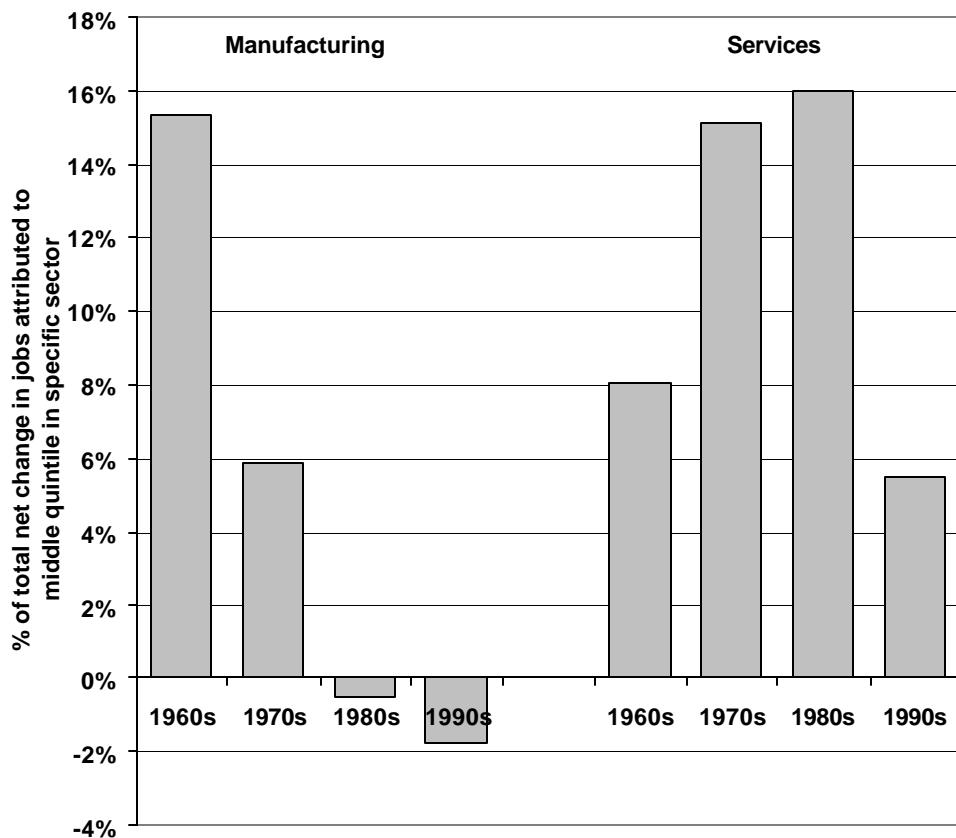


Figure 8
Contributions of Middle Job Quality Quintiles
in Manufacturing and in Services to total Net Job Growth
1960s-1990s

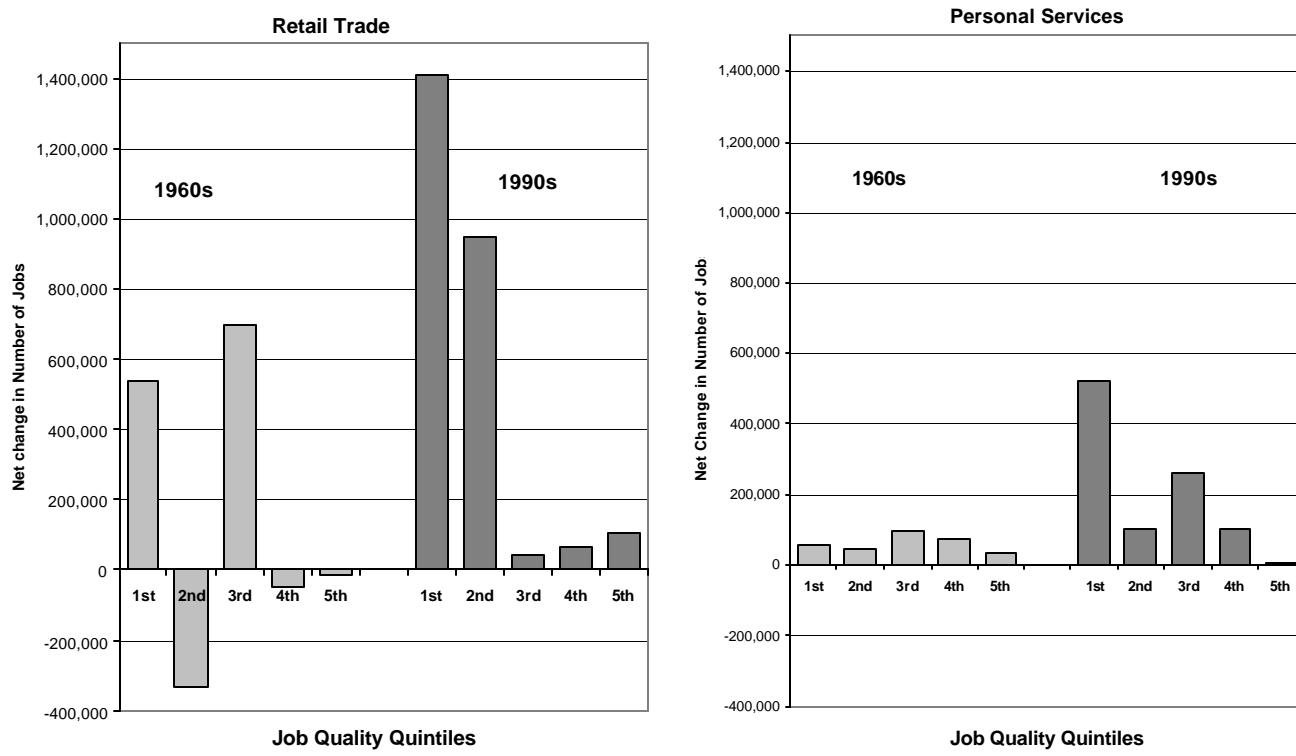


Figure 9
**Patterns of Job expansion in retail trade and personal service sectors,
 1960s and 1990s**

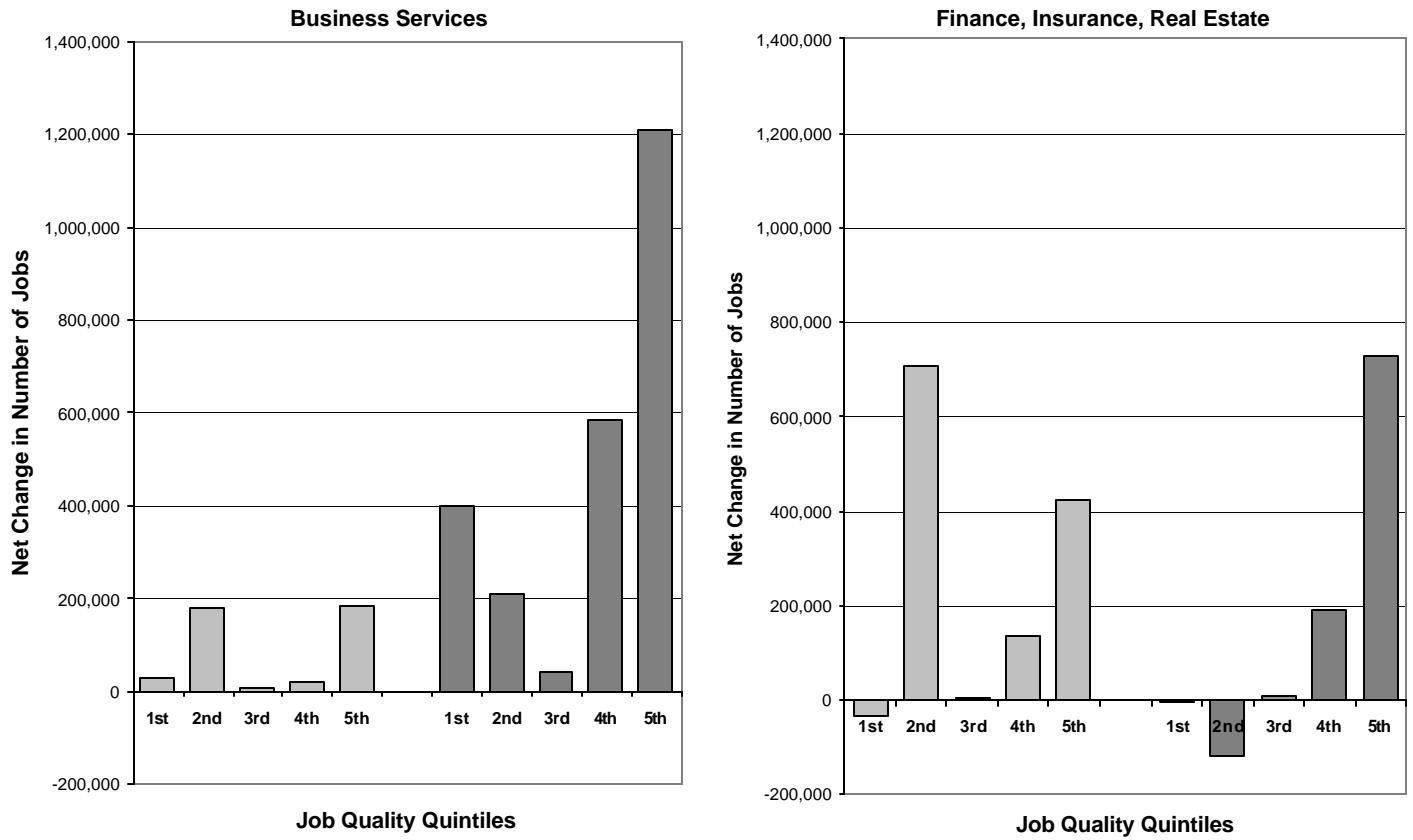


Figure 10
**Patterns of Job Expansion in Business Services and FIRE,
 1960s and 1990s**

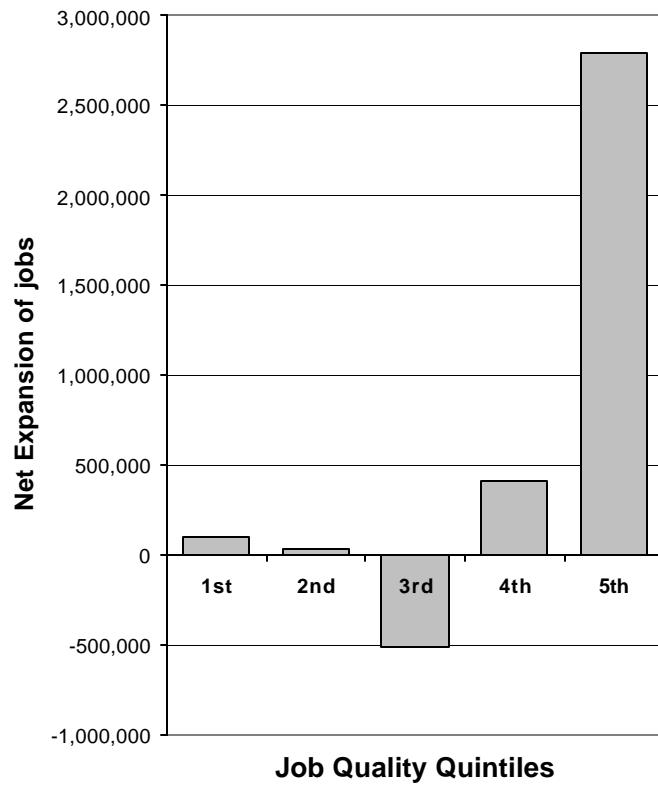


Figure 11
Job Expansion in the High Technology Domain, 1992-2000

METHODOLOGICAL APPENDICES TO

The Patterns of Job Expansions in the United States: a comparison of the 1960s and 1990s (published in *The Socio-Economic Review*)

by Erik Olin Wright and Rachel E. Dwyer

APPENDIX A: DATA AND MEASURES

A.1. The Current Population Survey

We use the *Current Population Survey* (CPS), sponsored by the Bureau of the Census for the Bureau of Labor Statistics, for the entire 1963-2000 period. The CPS is the best available dataset for this analysis because it has the relevant variables, a substantial sample size, and annual data back to the 1960's. The CPS is the major source of labor force data in the U.S., used to calculate the federal unemployment rate, among other important statistical series. The CPS is conducted monthly on a sample of about 50,000-60,000 non-institutional households in the U.S. All 50 states and the District of Columbia are represented in each monthly sample. Each month a series of questions called the "basic labor force survey" are asked; these provide the basis for the calculation of the unemployment rate. Since 1979, every month a sub-sample of the respondents are asked a series of questions about earnings (details on these data are provided below). In addition, in some months, detailed data about special topics are collected, called "supplements", in that they supplement the basic labor force questions that make up the core of the CPS. The most important supplement is the "March annual demographic supplement", which collects a very extensive set of data about the demographic circumstances of the sample households, including annual earnings, which we use before 1979.

No useable CPS microdata is currently available before 1962. In addition, the CPS data files that are available for the early 1960's are lower quality than those used in later years in part because of the difficulties of data collection and storage in that period and in part because the CPS has been improved over the years. For example, employment level estimates in various years in the 1960s are appreciably different than those reported by other sources. The 1962 data is particularly problematic therefore we decided not to use that year. Later years become progressively better. We decided to begin the analysis in 1963 as a compromise between the quality of the data and our need to include as many years of the economic expansion as possible. This means that our analysis begins two years after the 1961 start date of the expansion. We did run the analysis using different years as our starting point, and the broad patterns of our conclusions were maintained. Despite the problems with the data, there are no other sources of employment data for the 1960's as comprehensive and appropriate for our purposes as the CPS.

The methodology we use requires the following data:

1. operational definition of a job in an occupation-by-industry matrix;

2. measure of the median wages of each job that contains at least one person in both of the end-point years of the time period of interest;
3. measurement of the important demographic characteristics of workers which are sources of variation in position in the employment structure, including age, sex, race and nativity.

We restrict the sample to full-time employees aged 18-64. While a few of the concepts used in this analysis are measured in exactly the same way in the CPS from the 1960s to 2000, most undergo some change in definition. The operationalization of each of these concepts is described below, including changes over time. Age and sex have a straightforward operationalization and there are no changes in the way they are measured in the CPS, so we will not discuss them.

A.2. Occupation and Industry Coding.

Until 1967, the CPS used a two-digit coding regime as the most disaggregated coding of occupation and industry. After 1967, the CPS used the Census 3-digit occupation and industry classifications. These classifications are redone after every Census. The CPS use of these regimes is as follows:

1967-1970	1960 classification
1971-1982	1970 classification
1982-1991	1980 classification
1991-2000	1990 classification

The classifications for industry change less than the codes for occupation. We code industries into 23 categories and these 23 categories can be created for each expansion, except for one category in the 1960s when the code for “utilities and sanitary service” cannot be separated from a general “utilities” code. Appendix Table 1 lists the 23 industries.

We also created two more aggregated categories. The first, “personal services”, consists of 4 sectors from the full typology: private household service; repair services; entertainment and recreation services; and assorted personal services (which includes hotels; laundry; barber and beauty; and miscellaneous personal services). The second, the “high technology domain” consists of all jobs in high technology sectors plus all high technology-using occupations in non-high technology sectors. We use Chris Benner’s (1998 and personal communication) classification of high technology industries, which includes the following Census 3-digit industries: drugs; ordnance; office and accounting machines; computers and related equipment; radio, TV, and communications equipment; electrical machinery, equipment, and supplies, not elsewhere classified; aircraft and parts; guided missiles, space vehicles, and parts; scientific and controlling instruments; medical, dental, and optical instruments and supplies; communications; radio and television broadcasting and cable; telephone communications; telegraph and miscellaneous communications services; professional and commercial equipment and supplies;

electrical goods; and computer and data processing services. We added to Benner's classification, all high technology occupations regardless of the sector in which they were located, which includes the following Census 3-digit occupations: engineers; mathematical and computer scientists; natural scientists; health diagnosing occupations; health assessment and treating occupations; technicians and related support occupations; computer equipment operators; and communications equipment operators.

The occupation classifications do change significantly over the years. The 1960 and 1970 classifications are very similar to each other as are the classifications for 1980 and 1990. The biggest change is between the 1970 and 1980 classifications. Procedures for coding occupations changed for our analysis of each expansion as a result of the changes to the Census classification scheme.

1960's expansion. We used a revised version of the 2-digit 1963-1967 CPS occupation and industry coding scheme for the entire expansion. The original 2 digit coding is somewhat revised in order to use codes that can be created using the 3 digit coding scheme based on the 1960 Census categories that are in use in 1968-1970. The final coding scheme is 30 occupational categories. One further complication results from CPS use of a somewhat different coding scheme for the occupation of job held last week versus occupation of the longest job last year in 1963-1970. As we will explain in the next section, the job last week is used to calculate the counts of people in the job at the beginning and end of the period, whereas the job last year is used to calculate the median wages of jobs (because of the way the earnings data was gathered). Where possible, we recoded job held last year into the job held last week categories. In the few cases where this was not possible, the median wages for the job are calculated using only 1968-1970 data, based on the 3-digit 1960 Census occupational classification.

There are some discontinuities between the estimates of occupation and industry produced by the change in the coding scheme in 1968. For example, the estimate for retail trade appears to be somewhat inflated in the earlier period compared to the later period. In order to test for the effect of this and any other discontinuities between the 1963-1967 and 1968-1970 coding scheme, as well as for the higher aggregation of the 1963-1967 classification, we did the analysis for 1968-1970 only and the patterns remained similar, including the patterns for retail trade. The total number of possible jobs in this 1960s is 30 occupations times 22 industries, making possible 660 jobs. Appendix Table 2 lists the 30 occupations.

1970's expansion. We use a 2 digit coding based on the 1970 occupational classification system. We use the standard 45-category coding scheme for occupations, based on the CPS/Census 2-digit occupational classification. The total number of possible jobs is 45 occupations times 23 industries, making 1035 possible jobs. Appendix Table 3 lists the 45 occupations.

1980s and 1990s expansions. Since the 1980s and 1990s occupational classifications are very similar, we create the same coding scheme for the two expansions. We begin our analysis

of the 1980's expansion in 1983 instead of at the beginning of the expansion in 1982 since the CPS starts using the 1980 Census occupational classification in 1983 and the changes between the two schemes could lead to spurious results if comparisons are made using counts based on different classifications. In the 1980s and 1990s we use a 104 category occupational scheme, attempting to make the categories as homogenous in pay as possible without sacrificing too much aggregation. The total number of possible jobs is 104 occupations times 23 industries, making 2392 possible jobs. Appendix Table 4 lists the 104 occupations.

A.3. Median hourly wages of jobs

The way earnings data is collected in the CPS has changed over the years in several important ways that affect this analysis. Before 1979, data on earnings were not collected as a part of the basic labor force survey, but rather were collected only once per year in the "March annual demographic supplement" as a measure of annual earnings in the year previous to the survey. Starting in 1979, earnings data began to be collected once a month from a sub-set of the sample, called the "outgoing rotation groups". The CPS uses a rotating sample with a somewhat complicated structure. Sample members are surveyed for four consecutive months, and then they are *not* surveyed for four consecutive months, after which they are brought back into the survey and interviewed for a last series of four consecutive months. In any given month of the survey, the sample is composed of people at various stages of their rotation. The "outgoing rotation groups" are composed both of people ending their 4th month in the survey, "outgoing" into their 4 month hiatus, and of people in their last month of the survey, "outgoing" from the survey entirely. Roughly 1/4 of each month's basic CPS sample is in the outgoing rotation group. The ORG data is released as an annual file, which, containing roughly 1/4 of each month's sample, has a sample 3 times the size of a single month. An entire year's sample of outgoing rotation group interviews of workers is substantial, around 150,000 (including both full and part time workers). The sample for earnings data before 1979 is substantially smaller, containing only one month's sample, than that for 1979 and later.

In addition to the difference in sample size, there are differences in the procedures for collecting data on jobs and earnings in the March versus ORG files. In the ORG files, all relevant data including weekly or hourly earnings and usual hours worked is collected for the main job worked in the week before the interview. In the March data, annual earnings are collected for the longest job held in the previous year but there is no data on the earnings for the job held at the time of the interview. We use the earnings only of people who did not change jobs in the past year to calculate median wages for jobs. Industry and occupation of the job is collected for the main job worked in the week prior to the interview is collected, so that data is used to count the number of people in the job cells at the beginning and end of the period under analysis.

The calculation of hourly wage relies upon a measure of hours worked. This measure also changes between the March and ORG data. In the March supplement, the only measure of hours available before 1976 is a measure of *usual* hours worked per week at all jobs at the time of the interview. This measure has two drawbacks: it is a measure for all jobs worked, and it

applies to the respondent's current situation rather than to the situation last year, the reference for the earnings data. We restrict the calculation of hourly wage to people who worked in the same industry and occupation at the time of the interview as they did last year, attempting to select for people with the same job with the assumption that the hours worked per week for people working the same job will not be as likely to change as for people who change jobs. Starting in 1976 in the March files hours worked last year at the main job is collected. In the ORG files, the hourly wage is collected directly for workers paid hourly. For salaried workers, weekly earnings are collected, which we then divide by usual hours worked per week at main job to calculate an hourly wage. Starting in 1994, the CPS allowed respondents to indicate that their hours of work "varied". These cases are excluded from the calculation of hourly wage, however the cases are included in the counts of the number of people in each job when usual full- or part-time status could be determined, feasible for the majority of the respondents.¹

We use the same hours variables discussed above to assign full-time/part-time status, with one exception. In the March demographic supplement, there is a CPS-created variable for usual full or part time status, which we use in selecting full-time workers to calculate the hourly wage. To identify full-time workers in calculating the number of people in the cells, we use the usual hours worked per week variables — in March, referring to all jobs, and in the ORG, referring to the main job.

In order to test for whether the differences in these methods affect our results, we did several experiments. We compared the results for weekly earnings to those for hourly wage in the 1960s since a weekly earnings variable required fewer restrictions because it does not require a measure of hours worked (except to identify full and part time workers). We also used the March annual demographic supplement and those methods in the 1980s and 1990s. In all cases, the patterns of our results were not substantially affected.

A. 4. Coding of Race and Ethnicity

From 1962-1988 the race variable has three codes: white, black and other. From 1989 on, the race variable is a little more detailed, including codes for American Indian and Asian. In 1996, the category "other race" is dropped. There is no item for Hispanic ethnicity until 1979. After 1979, we divide workers into 3 racial and ethnic categories: non-Hispanic White, Hispanic White, and all Black. Before 1979, we simply divide workers into the two categories Black and White. Workers of other races, including American Indian, Asian and "Other" are included in the analyses for all workers, but not in the analyses focused on specific racial and ethnic groups.

¹ Workers who answered that their hours varied and worked more than one job, whose hours at all jobs totaled more than 35 hours a week cannot be assigned full or part time status and are excluded from the analysis. Thanks to Robert McIntire of the Bureau of Labor Statistics for clarifying the status of the hours vary cases.

A.5. Changes in the CPS sampling and weighting procedures

There have been a couple of additional changes in the CPS that affect our analytic strategy and the comparability of our results. Changes in the CPS sampling and weighting procedures affect the estimates of employment levels and their comparability over time. There was also a major reorganization of the CPS in 1994 that could potentially affect our results.

Changes in the sampling and weighting procedures are periodically made to the CPS to ensure that it remains representative of the ever-changing population of the United States. For example, since the CPS weights are based in part on the Decennial Census description of the population, after every Census, the CPS weights are changed. These adjustments to the sample and weights of the CPS could introduce shifts in the numbers of people in jobs that do not reflect changes in employment levels, but rather improvements in the CPS measurement. Major changes over the time period of this study include 1) a series of changes made from 1971 to 1973, including a shift to Census 1970 population controls; 2) changes made in the mid-1980s both to shift to Census 1980 population controls and to improve the weights, which had its greatest impact on measures of the numbers of Hispanic workers; 3) substantial changes to the sample design and shift to Census 1990 population controls in 1994. The CPS has adjusted the 1990-1993 data to include the same population controls as the 1994 on data.² With the exception of the 1971-1973 changes, we tested the impact of these changes on our results by comparing analyses done before and after the change in sampling and weighting procedures and found that these changes do not threaten our conclusions. Since the 1971-1973 changes occur over the entire period of an economic expansion, we cannot test for their impact on our results for that expansion and we decided not to include an analysis of that expansion.

In 1994 very substantial changes were instituted in the design of the questionnaire and interviewing techniques in an overarching redesign of the CPS. We tested for the impact of this change in design and find that it does not substantially affect our results³.

² See the Current Population Survey “Technical Paper 63RV: Design and Methodology” for more details on these changes and the current sampling and weighting procedures.

³ See Mishel et al 1998 for a more detailed discussion of the 1994 design change and similar findings that this change does not have a large effect on measures of inequality.

APPENDIX B: ALTERNATIVE JOB QUALITY INDICES

We created three alternative job quality indices based on different aspects of job quality than median hourly earnings for the 1990s expansion in order to assess whether the pattern of job expansion we observe for earnings holds for other job attributes. We developed indices based on 1) the job Duncan SEI score; 2) job unemployment rate; and 3) job education. In each case, we followed the same procedure as for earnings where we calculate a single measure of job quality for each job, then rank jobs from the lowest quality to the highest quality, and finally split them into quintiles. For the Duncan SEI score, we use a Hauser and Warren-constructed SEI score for occupations (Hauser and Warren 1997) for the 1990s for both men and women. Since these scores are available only for occupations, in this analysis, all cells with the same occupation have the same job quality with no variation across industry. To calculate the job unemployment rate, we pool all the CPS data from both the 1990s recession and 1990s expansion and calculate an unemployment rate for each cell in our occupation-by-industry matrix. For job education, we follow Hauser and others (Hauser and Warren 1997) and calculated the percentage of people in each job in our occupation-by-industry matrix who completed at least one year of college.

Appendix figure B1 shows the analysis of the 1990s expansion using each of the three alternative job quality indices, together with the earnings index for comparison. There are, of course, differences across these alternative ways of indexing the job structure. However, a striking similarity is that each shows a trough in the middle. Further, both the SEI and education graphs also demonstrate versions of the asymmetrical polarized job growth that we observe in the earnings analysis. The unemployment rate analysis shows more growth at the bottom and less growth at the top than the others. This is likely in part because jobs with the highest unemployment rates are more cyclical than others, so that workers are let go during recessions and brought back in force during expansions. These results demonstrate that polarized job growth is not limited only to earnings, but also to other important features of jobs.

Appendix Table A1. Industry Codes for all Expansions

Industry Name

1	Agriculture
2	Mining
3	Construction
4	Manufacturing, durable goods
5	Manufacturing, non-durable goods
6	Transportation
7	Communications
8	Utilities and sanitary services
9	Wholesale trade
10	Retail trade
11	Finance, insurance, and real estate (FIRE)
12	Private household services
13	Business services
14	Assorted personal services, except private household
15	Entertainment and recreation services
16	Hospital service
17	Other medical service
18	Educational services
19	Social services
20	Other professional services
21	Forestry and fisheries
22	Public administration
23	Automotive and repair services

Appendix Table A2. Occupation Codes for the 1960's Expansion

Occupation Name	
1	Engineers
2	Medical and other health workers
3	Teachers, except college
4	Other professional, technical and kindred
5	Farmers and farm managers
6	Managers, officials and proprietors except farm
7	Stenographers, typists, secretaries
8	Other clerical and kindred workers
9	Sales workers: retail trade
10	Sales workers: not retail trade
11	Carpenters
12	Construction, craftsmen, except carpenters
13	Foremen, not elsewhere classified
14	Machinists and job setter
15	Mechanics and repairmen: Automobiles
16	Mechanics and repairmen: Not automobiles
17	Metal craftsmen except machinists and mechanics
18	Other craftsmen and kindred workers
19	Drivers and deliverymen
20	Mine operatives and laborers
21	Operatives, manufacturing
22	Operatives, non-manufacturing
23	Private household workers
24	Protective service workers
25	Waiters, cooks and bartenders
26	Other service workers
27	Farm laborer and foremen:
28	Laborers: construction
29	Laborers: manufacturing
30	Laborers: other industries

Appendix Table A3. Occupation Codes for the 1970's Expansion

Occupation Name	
1	Administrators and officials, public administration
2	Other executive, administrators and managers
3	Management related occupations
4	Engineers
5	Mathematical and computer scientists
6	Natural scientists
7	Health diagnosing occupations
8	Health assessment and treating occupations
9	Teachers, college and university
10	Teachers , except college and university
11	Lawyers and judges
12	Other professional specialty occupations
13	Health technologists and technicians
14	Engineering and science technicians
15	Technicians, except health engineering , and science
16	Supervisors and proprietors, sales occupations
17	Sales representatives, finance , and business service
18	Sales representatives , commodities , except retail
19	Sales workers, retail and personal services
20	Sales related occupations
21	Supervisors-administrative support
22	Computer equipment operators
23	Secretaries, stenographers , and typists
24	Financial records, processing occupations
25	Mail and message distributing
26	Other administrative support, including clerical
27	Private household service occupations
28	Protective service occupations
29	Food service occupations
30	Health service occupations
31	Cleaning and building service occupations
32	Personal service occupations

- 33 Mechanics and repairers
- 34 Construction Trades
- 35 Other precision production occupations
- 36 Machine operators and tenders, except precision
- 37 Fabricators, assemblers, inspectors, and samplers
- 38 Motor vehicle operators
- 39 Other transportation occupations and material moving
- 40 Construction laborer
- 41 Freight , stock and material handlers
- 42 Other handlers, equipment cleaners and laborers
- 43 Farm operators and managers
- 44 Farm workers and related occupations
- 45 Forestry and fishing occupations

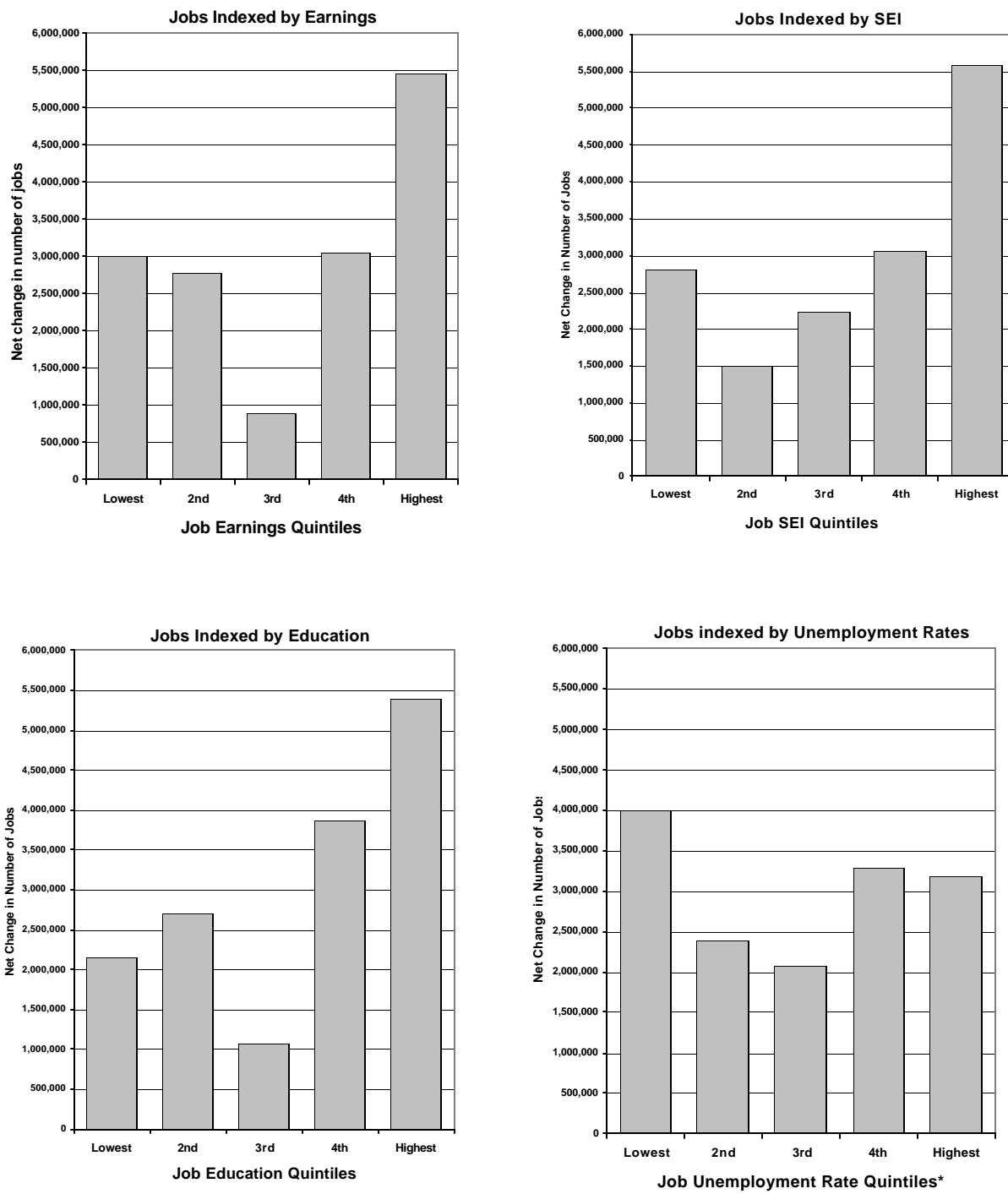
Appendix Table A4. Occupation Codes for the 1980's and 1990's Expansions

Occupation Name

- 1 Public administration
- 2 Managers, food services
- 3 Managers, other services
- 4 Managers, health services
- 5 Managers, corporate miscellaneous
- 6 Financial managers
- 7 Managers, education
- 8 Managers, marketing and other specialty
- 9 Management related, lower tier
- 10 Management related, middle tier
- 11 Accountants, auditors, underwriters
- 12 Management related, upper tier
- 13 Engineers, lower tier
- 14 Engineers, upper tier
- 15 Math and computer scientists
- 16 Natural scientists
- 17 Physicians and other health diagnosing
- 18 Health treating, lower tier

- 19 Registered nurses
- 20 Health treating, upper tier
- 21 College and university teachers
- 22 Kindergarten and pre-k teachers
- 23 Elementary school teachers
- 24 High school teachers
- 25 Lawyers and judges
- 26 Arts and recreation occupations
- 27 Religious occupations
- 28 Social workers
- 29 Other professional specialties
- 30 Health technicians, lower tier
- 31 Licensed practical nurses
- 32 Health technicians, upper tier
- 33 Engineering and scientific technicians lower tier
- 34 Engineering and scientific technicians upper tier
- 35 Other technicians, miscellaneous
- 36 Computer programmers and miscellaneous
- 37 Sales supervisors/ proprietors
- 38 Sales reps, finance and business
- 39 Securities and financial services sales
- 40 Sales reps, commodities
- 41 Cashiers
- 42 Retail sales: non-durables
- 43 Retail sales: durables and miscellaneous
- 44 Supervisors: administrative support
- 45 Computer operators
- 46 Secretaries, typists, stenographers
- 47 Financial records processors
- 48 Mail clerks
- 49 Postal workers
- 50 Lower tier clerks
- 51 Lower middle tier clerks
- 52 Upper middle tier clerks
- 53 Upper tier clerks
- 54 Top tier clerks
- 55 Private household services
- 56 Private security
- 57 Correctional officers
- 58 Police and fire, public service
- 59 Waiters, servers
- 60 Cooks
- 61 Health services (aides)
- 62 Maids

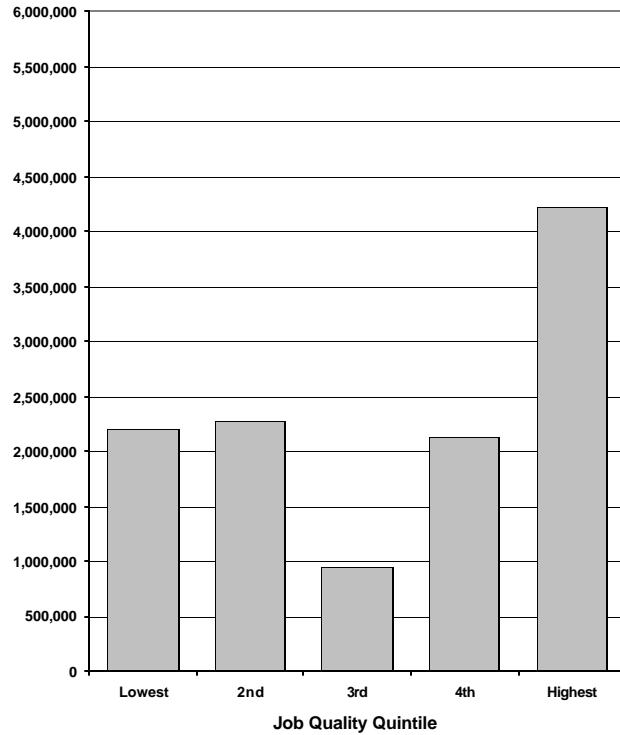
- 63 Janitors
- 64 Other cleaning occupations
- 65 Child care workers
- 66 Ushers, attendants, misc. lower tier personal services
- 67 Barbers and hairdressers
- 68 Upper tier personal services
- 69 Automobile mechanics and repairs
- 70 Other lower tier repair occupations
- 71 Middle tier repair occupations
- 72 Upper tier repair occupations
- 73 Lower tier construction
- 74 Carpenters
- 75 Middle tier construction
- 76 Plumbers & electricians
- 77 Upper tier construction
- 78 Lower tier precision production
- 79 Lower-middle tier precision production
- 80 Machinists and other middle tier precision production
- 81 Supervisors, production occupations
- 82 Upper tier precision production
- 83 Textile and garment workers
- 84 Lower tier operators
- 85 Misc. machine operators, middle tier
- 86 Upper tier machine operators
- 87 Lower tier assemblers
- 88 Assemblers
- 89 Inspectors, production
- 90 Welders
- 91 Taxis and miscellaneous motor vehicle
- 92 Bus and truck drivers
- 93 Industrial truck and tractor
- 94 Lower tier transportation
- 95 Upper tier transport operators
- 96 Construction laborer
- 97 Stock handler
- 98 Miscellaneous freight handlers
- 99 Other handlers, cleaners
- 100 Laborers and other misc.
- 101 Farm operators/ managers
- 102 Farm workers
- 103 Other agricultural workers
- 104 Fisherman and forestry



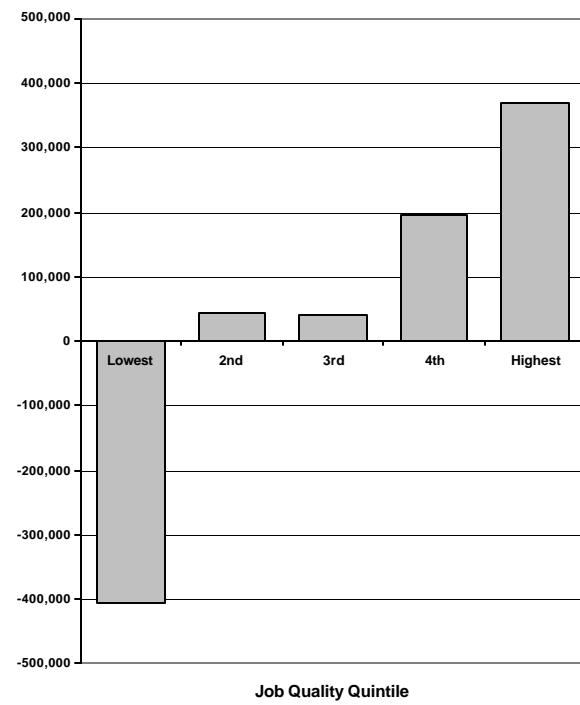
* The lowest quintile of jobs in the unemployment index have the highest rates of unemployment

Appendix Figure B1
Distribution of net job growth using Alternative measures of job quality, 1992-2000

Full-Time employees Ages 30-55



Part-Time Employees



Appendix Figure C1
**Comparison of Job Growth of Full-Time jobs for all ages,
full-time times for prime-age labor force, and Part-time jobs**