



The new labor market segmentation: Labor market dualism in the new economy [☆]

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Abstract

Dual labor market theory asserts that the American labor market is sharply divided between good jobs and bad jobs, and that mobility between these two segments of the market is severely restricted. The new labor market segmentation thesis argues that, as the practice of allocating workers to inferior jobs on the basis of race and sex has declined, employers have turned to nonstandard work arrangements and immigrants to supply labor for low-wage jobs. This paper presents a new method for measuring labor market dualism and identifying discrete labor market segments. This method allows us to examine the distribution of workers across these segments over the life course and to estimate the effects of nonstandard work and citizenship status on creating and placing workers into bad jobs. Three major findings are evident from this research. First, since the early 1970s the level dualism in the American labor market has increased substantially. Second, most workers who begin their careers in the secondary (bad) jobs eventually leave this labor market for better jobs. After young adulthood, most of the workforce is roughly divided between primary (good) intermediary (mediocre) jobs. Finally, results from the multivariate analysis support the new segmentation hypothesis. Combined, nonstandard work and citizenship now play a greater direct role in allocating workers to secondary and intermediary jobs than race or sex.

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1. Introduction

Dual labor market theory asserts that the American labor market is sharply divided between good jobs and bad jobs. Because a substantial portion of American workers are trapped in bad jobs, without any realistic chance of getting or having a better job in the future, they are consigned to a lifetime of poverty. These claims are old and controversial. Yet, in spite of the counter-claims by critics, dual labor market theory continues to influence research on labor markets and inequality. Dual labor market theory first emerged in the late 1960s from [Doeringer and Piore's \(1971\)](#) work on firm internal labor markets. It received support from critics of human capital and marginal productivity theory who argued that the War on Poverty manpower programs had failed to produce a substantial reduction in poverty and underemployment, especially among minorities. The critics argued these programs because they failed to address structural deficiencies in the creation and allocation of jobs ([Bluestone, 1968a,b, 1970, 1971](#); [Bluestone et al., 1973](#); [Harrison, 1970, 1971, 1972](#); [Gordon, 1972a,b](#); [Reich et al., 1973](#)).

Since then dual labor market theory has continued to inform our understanding of the American labor market. Its utility has been underscored by a number of developments: First, much of the recent research on nonstandard and contingent work arrangements ([Appelbaum, 1992](#); [Barker and Christensen, 1998](#); [Belous, 1989](#); [Blank, 1998](#); [Carré, 1992](#); [Callaghan and Hartmann, 1991](#); [Gonos, 1998](#); [Morse, 1998](#); [Polivka, 1996](#); [Polivka and Nardone, 1989](#); [Tilly, 1996](#)) has relied on concepts and ideas from dual labor market theory ([Freeman, 1999](#); [Harrison, 1997 \[1994\]](#); [Kalleberg et al., 2000](#); [Noyelle, 1987](#); [Reid and Rubin, 2002](#)). Nonstandard jobs are more likely than traditional work arrangements to pay low wages and less likely to provide health insurance and pensions ([Hudson, 1999, 2001](#); [Kalleberg et al., 1997, 2000](#); [Spalter-Roth et al., 1997](#)). Second, the tremendous influx of foreign workers into the United States since the 1980s has caused the labor market to become increasingly stratified on the basis of national citizenship ([Ehrenreich, 2002](#); [Hochschild, 2003](#); [Hondagneu-Sotelo, 2001](#); [Massey, 1995](#); [Phillips and Massey, 1999](#)). Finally, the decline in union membership, the historical guarantor of good wages and benefits for blue-collar workers ([Freeman, 1999](#); [Freeman and Medoff, 1984](#)), has contributed to the wage and benefit bifurcation in the service sector ([Harrison and Bluestone, 1988](#)). During the last three decades these forces have combined to dramatically increase the level of income inequality in the United States ([Bernhardt et al., 1995](#); [Morris et al., 1994](#)). The analysis presented in this paper will show that this increase in income inequality has been accompanied by an increase in the level of dualism in the labor market.

This paper examines the evidence for dual labor market theory by addressing four specific questions: (1) What is labor market dualism and does it exist in the American labor market, (2) Does the labor market consist of discrete segments, (3) Is there mobility between labor market segments, and finally, (4) What are the mechanisms that allocate workers to good jobs and bad jobs beyond young adulthood? This article presents a multivariate measure of labor market dualism. This measure allows us to determine the extent to which the American labor market is divided into discrete primary (good job) and secondary (bad job) segments. It also permits us to compare the level of labor dualism in the American labor market over and to examine the distribution of workers across labor market segments over the life course. Through the use of synthetic cohorts, we can determine if workers who begin their careers in bad job are likely to continue working in these jobs beyond their young adult years. Finally, we examine the impact of job, worker, and occu-

pational characteristics on the probability of working in a particular labor market segment. This part of the analysis examines the evidence for the new segmentation hypothesis, which states that nonstandard work and citizenship status now rival sex and race as important mechanisms for allocating workers into discrete segments of the labor market.

2. Dual labor market theory

Doeringer and Piore provide the classical formulation of dual labor market theory. They write,

the labor market is divided into a *primary* and a *secondary* market. Jobs in the primary market possess several of the following characteristics: high wages, good working conditions, employment stability, chances of advancement, equity, and due process in work rules. Jobs in the secondary market, in contrast, tend to have low wages and fringe benefits, poor working conditions, high labor turnover, little chance of advancement, and often arbitrary and capricious supervision (1971, p. 165).

Implicit in this description is the idea the good job characteristics are “bundled” with other good job characteristics, and that bad job characteristics are “bundled” together in the same way (Tilly, 1996, p. 56). The early proponents of dual labor market theory recognized, however, that many jobs fall somewhere in between this description of the primary and secondary markets. Both Piore (1973, 1975) and Osterman (1975)¹ divided the primary market into upper and lower tiers. Reich et al. (1973) made a similar distinction, differentiating the primary independent from the primary subordinate segment (see also Edwards, 1979; Edwards et al., 1975). Bluestone (1970) stratified the secondary market, noting important differences between workers employed in low-wage jobs and individuals engaged in informal work and illegal activities.

Models of dualism in the American labor market vary widely regarding the number of labor market segments that exist or the basis on which they should be identified (Kalleberg et al., 1981; Kaufman et al., 1981). Subsequent research has also expanded Doeringer and Piore’s (1971) original list to include other important job quality characteristics such as autonomy, complexity, and opportunities for advancement (Tomaskovic-Devey, 1993a,b). Nevertheless, while these models of dualism differ, they all retain the key insight of dual labor market theory—that primary and secondary characteristics covary with other primary and secondary characteristics respectively. It is this insight that forms the core of the model presented in this analysis.

Another important tenant of dual labor market theory states that there is limited mobility between labor market segments. The issue here is not the existence of secondary jobs per se, but rather the inability of secondary workers to obtain jobs in the primary labor market over the life course (Doeringer and Piore, 1971, p. 167; also see Freedman, 1976). The term “secondary” reflects the assumption that workers in the secondary labor market live in families with a primary labor market breadwinner. Families relying on secondary labor market earnings as their sole source of support are very likely to experience

¹ Osterman used Blauner’s (1964) research on alienation to assign certain detailed level occupations to the upper and lower tiers of the primary labor market.

poverty and economic hardship. Early work on labor market dualism suggested that workers who begin their careers in the secondary labor market are likely to continue working in this market over their life course (Gordon, 1972a; Piore, 1970).

3. The new labor market segmentation

Over the last three decades, three events have increased the level of segmentation in the American labor market: deindustrialization and the decline of organized labor, a large increase in the relative size of immigrant workforce, and the growing prevalence of non-standard work arrangements. Since the 1950s, the proportion of wage and salary workers affiliated with a labor union has declined from 33% of the workforce in 1955 to 12.9% in 2003 (Chang and Sorrentino, 1991; U.S. Department of Commerce, Bureau of the Census, 2005). A substantial proportion of this decline has been produced by the shift in the United States from manufacturing to a service based economy. While union representation in the workforce has been declining, noncitizen-immigrants have become an increasing and substantial proportion of the American workforce. Using data from the March Current Population Survey, the Pew Hispanic Center reports there were approximately “7 million undocumented workers for 2004—representing about 5% of US Workers” (Passel, 2005, pp. 3–4). Noncitizen and immigrant workers have great difficulty obtaining jobs in the primary labor market (Catanzarite, 1998, 2000, 2002; Catanzarite and Aguilera, 2002; Chiswick, 1988; Chiswick and Sullivan, 1995; Funkhouser and Trejo, 1995, 1998; Tienda, 1989; Tienda and Singer, 1996). Finally, increasing labor market dualism in the new economy has been explicitly linked to corporate restructuring and the use of contingent and non-standard work arrangements (Harrison, 1997 [1994], pp. 11, 248; Kalleberg et al., 2000, pp. 256, 261).

Historically, both race and sex have been used to allocate workers to specific labor market segments (Dickens and Lang, 1985; Sakamoto and Chen, 1991a). Over the last four decades, however, the cost of this practice has risen substantially. This has occurred for two reasons. First, the cost of female and black labor has increased; both women and black workers command wages that are significantly greater (in constant dollars) than those of women and blacks in the 1960s.² Second, firms and employers that engage in overt race and sex discrimination now risk incurring significant legal and social sanctions. Consequently, nonstandard and noncitizen labor have come to play an important role in meeting the demands of both public and private employers for low-wage, low cost workers.

Nonstandard work is integrally related to the organizational changes that have characterized the new economy. At the heart of these changes is a fundamental restructuring of the employer–employee relationship in which many jobs, and the workers who fill them, have become increasingly contingent (Kalleberg, 2001; Osterman, 1999). Organizational boundaries have become fluid and diffuse. The result is that organization membership is no longer a dichotomy but a matter of degree. Workers are attached to work organizations at various levels and through various forms of affiliation.

² See Current Population Survey, Historical Income Tables–People, Table P38A Full-Time, Year-Round White Workers by Median Earnings and Sex 1967–2001, and Table P38B Full-Time, Year-Round Black Workers by Median Earnings and Sex 1967–2001, US Census Bureau, Housing and Household Economics Division.

While migrant and noncitizen labor have always been a part of the American workforce, the new economy is now dependent on their labor in a way that was not true in the past. According to the National Foundation for American Policy, restricting legal immigration would greatly exacerbate the projected shortfalls in the Social Security trust fund, while increasing legal immigration would have the opposite effect (Anderson, 2005).³ Research has also shown that noncitizen workers have an increased risk of being employed in nonstandard work arrangements. The employment of undocumented immigrant workers as contract laborers by large private retailers and public agencies illustrates how both forms of the new segmentation combine to disadvantage these workers (CNN, 2003; Moseley, 2004).

Finally, it is important to understand that while worker and job characteristics (e.g., race, sex, immigration status, and type of work arrangement) increase the probability of being employed in a “bad” or “secondary” job, it is not appropriate to use these characteristics to identify or define labor market segments. The fallacy of this approach is evidenced by the existence of counter-factual cases—white male noncitizen workers employed in secondary jobs. By utilizing job quality characteristics to identify labor market segments, the model presented here preserves the stochastic relationship between cause and effect and avoids the circularity that marked some of the early work on labor market dualism (Hodson and Kaufman, 1982).

4. Measuring labor market dualism

In spite of dual labor market theory’s intuitive appeal, developing empirical measures of labor market dualism and identifying discrete labor market segments has proved difficult (Althausser and Kalleberg, 1981, p. 120; Boston, 1990, p. 100; Bulow and Summers, 1986, p. 411; Graham and Shakow, 1990, p. 223). Researchers have used a wide variety of variables to represent labor market segments, including industry (Beck et al., 1978, 1980; Hodson, 1978),⁴ occupation (Andrisani, 1973; Osterman, 1975; Rosenberg, 1975, 1980), a combination of industries and occupations (Bibb and Form, 1977; Rumberger and Carnoy, 1980), the race and sex of workers (Bergman, 1974, 1986; Bluestone et al., 1973; Bonacich, 1972, 1976; Gordon et al., 1982; Hannan, 1979; Leigh, 1976; Reich, 1971; Wilson, 1978), occupational skills (Boston, 1990), and the characteristics of jobs (Bluestone et al., 1973; Doeringer and Piore, 1971; Gordon et al., 1982). Others have demarcated the labor market on the basis of differential returns to investments in human capital (Bluestone et al., 1973; Dickens and Lang, 1985, 1988, 1992; Harrison, 1971, 1972; Osterman, 1975; Rebitzer and Robinson, 1991; Rumberger and Carnoy, 1980; Sakamoto and Chen, 1991a,b).

Critics of dual labor market theory have insisted that the wage differential between primary and secondary workers is an artifact of using wages to define labor market segments (Cain, 1975, 1976; Kruse, 1977; Taubman and Wachter, 1986; Wachter, 1974). Secondary

³ Based on data from the Social Security Administration Office of the Chief Actuary, Stuart (2005) reports, “The size of the actuarial deficit would be *reduced* over 50 years by 10% if legal immigration increased 33% (an additional 264,000 immigrants a year).”

⁴ Oster (1979); Tolbert et al. (1980); Hodson (1984); Leon (1985); and Gordon et al. (1982) used factor analysis to assign industries to the core or periphery. Reich (1984) extended this approach combining core-periphery industry sectors with aggregate occupational categories.

workers who increase their level of education are likely to get better jobs in the primary labor market. Sørensen and Kalleberg (1981, p. 79; see also Althausen and Kalleberg 1981) concluded that dual labor market theory is simply a way of saying there are good and bad. Critics (Hardesty et al., 1988; Hodson and Kaufman, 1982; Wallace and Kalleberg, 1981) have also challenged the claim that dualism in the labor market is linked to dualism in the economy, between core and periphery industries (Averitt, 1968; Beck et al., 1978; Bluestone, 1970, p. 24; Doeringer and Piore, 1971, p. 163; Bibb and Form, 1977). Studies have found considerable variation in job quality within specific firms and industries (Baron and Bielby, 1980; Baron, 1994; Hardesty et al., 1988; Hodson, 1984). Others have questioned the existence of discrete labor market segments. Wachter (1974) insisted that differences in job quality constitute a continuum and that these differences result from variation in human capital and productivity (Becker, 1964; Mincer, 1974, 1993). Finally, the criteria used to demarcate labor market segments have often been highly subjective and arbitrary (Boston, 1990; Graham and Shakow, 1990).

Past attempts to measure labor market dualism and identify labor market segments have faced two related obstacles. First, most of the research on labor market dualism has been forced to rely on a single job quality indicator, such as earnings; multivariate job quality data has rarely been available. Second, because multivariate job quality data has not been available, dualism researchers have been forced to rely on labor market covariates, such as industry or occupation, to represent specific labor market segments. The result has been a confounding of cause and effect (Hodson and Kaufman, 1982). Nevertheless, in spite of limitations and challenges, dual labor market theory has produced a large and informative body of research on the nature and workings of the American labor market.

5. Prior research

Much of the previous research on labor market dualism found that jobs cluster into good and bad segments and that mobility between the segments is restricted. But the degree of measured mobility depends, in large part, on how they are demarcated. Contrary to initial expectations, some research found that significant numbers of workers do indeed transition from the secondary to the primary labor market (Boston, 1990; Griffin et al., 1981; Osterman, 1975). Not all groups of workers, however, appear to transition at the same rate. Black workers are less likely to move from secondary to primary jobs than their white counterparts (Freedman, 1976; Rosenberg, 1980; Rumberger and Carnoy, 1980). Tolbert (1983) also found that, as workers get older, mobility between core and periphery industry sectors tends to decline. In response, critics of dual labor market theory have attributed these differences in mobility to differences in education and other forms of human capital (Kruse, 1977; Leigh, 1976).

Estimates of the effects of human capital on earnings within a given segment vary substantially, depending on the methods used to identify the segments and the particular variables used in the model (Zucker and Rosenstein, 1981). We also find that the difference in returns to education across labor market segments (when defined by industry sectors) is not always as expected. Hodson (1984) found that workers in periphery industries actually had higher returns to education than workers in core industries. Women and racial and ethnic minorities tend to derive fewer benefits from investments in human capital than their white male counterparts, regardless of industry sector or occupation (Rumberger

and Carnoy, 1980; Hardesty et al., 1988).⁵ Finally, union membership increases earnings, net of the workers measured human capital (Dickens and Lang, 1985, 1988, 1992). In contrast, individuals employed in nonstandard work arrangements incur a pay penalty net of their level human capital (Kalleberg et al., 2000).

6. Methods and data

Past research has used a variety of methods to identify specific labor market segments. These include discriminant analysis (Graham and Shakow, 1990; Lowell, 1978), cluster analysis (Anderson et al., 1987; Boston, 1990; Gittleman and Howe, 1995), and maximum likelihood switching models (Dickens and Lang, 1985; Sakamoto and Chen, 1991a). In each case the application of these methods has yielded results indicating some degree of positive covariation among secondary labor market characteristics (and by inference among primary characteristics). The method for measuring labor market dualism and identifying discrete labor market segments presented here builds on this finding and uses several of the job characteristics employed in recent research on nonstandard and contingent work (Kalleberg et al., 2000).⁶

If we regard Doeringer and Piore's description of the labor market as an ideal type, labor market dualism can be understood as the extent to which the actual labor market conforms to their description of the ideal. It represents the degree to which the labor market is polarized into two segments—jobs that have only primary labor market characteristics and jobs that have only secondary labor market characteristics. We know, however, that labor market dualism is not absolute; there are many jobs that combine primary and secondary characteristics. Moreover, the level of dualism in a given labor market varies over time. The magnitude of labor market dualism is reflected in the formation of discrete primary and secondary labor market segments. The *marginal distribution* of secondary labor market characteristics and the level of *covariation* among them determine the degree of discrete labor market segmentation. Stated simply,

$$\sum = f(p_1 \cdots p_q, \Delta),$$

where \sum is the level of discrete segmentation in the labor market, $p_1 \cdots p_q$ is the marginal probability distribution of q secondary labor market characteristics across all jobs, and Δ is the variance–covariance matrix of the q secondary characteristics. Labor market dualism reflects the extent to which jobs possess good job or bad job characteristics and the extent to which these different type of characteristics cluster in exclusive sets of jobs.

Measuring labor market dualism must take into account both the marginal distribution of job quality characteristics and the covariation of these characteristics with one another. Because the number of job characteristics used in a given model is limited in number, estimating the covariation between them is relatively straightforward. However, assessing the

⁵ One exception is Boston (1990), who found that black women have greater returns to education in the secondary labor market than workers in other race-sex groups.

⁶ The measure of “bad jobs” presented here is superior to the count variable employed by Kalleberg et al. (2000) in several respects. First, the count variable used in the “bad jobs” study does not consistently convey the same information from case to case. For example, using the count of bad job characteristics as the dependent variable, a job with poverty level earnings and lacking a pension has the same count as a job without health insurance or a pension. Second, count models (Poisson and negative binomial regression) typically assume that the “events” comprising the counts are independent. Dual labor market theory predicts, and the analysis presented here shows, that bad job characteristics covary.

extent to which like characteristics cluster in discrete sets of jobs is more difficult. The solution to this problem lies in recognizing that the clustering of job characteristics in discrete segments of jobs is reflected in the distribution of jobs across the combinatorials of these characteristics. The more like characteristics covary, the more jobs will cluster in the combinatorials with like characteristics. Because the number of characteristics relative to the number of jobs is small, estimating the magnitude of dualism in the labor market is tractable.

In this analysis, characteristics are selected for inclusion in the model by using confirmatory factor analysis (Bollen, 1989). Job characteristics that load on a single latent variable are selected for inclusion in the model. By using these observed characteristics to estimate a loglinear model of independence and examining the residuals, we can then compare the observed and expected distribution of jobs across the different combinations of characteristics. If there are positive residuals in the combinatorials that have several secondary characteristics and positive residuals in the combinatorials that have no secondary characteristics, then we have evidence of dualism in the labor market. In other words, when dualism is present in the labor market, we find positive residuals at both ends of the job quality continuum, in jobs that are “bad” on multiple dimensions and in jobs that are “good” on multiple dimensions. A comparison of the proportion of jobs falling into these categories relative to the proportion expected under the condition of independence is used to construct a scalar index of labor market dualism. This index allows us to measure the level of dualism in any given labor market with reference to the two extremes, independence and perfect dualism. The positive and negative residuals also permit us to identify discrete labor market segments without imposing arbitrary thresholds or cut points.

The analysis that follows uses data from the February 1995, 1997, and 1999 Current Population Survey (CPS) Contingent Work Supplements. These data are supplemented with wage data from the March 1995, 1997, and 1999 Current Population Surveys. The longitudinal comparison of labor market dualism also uses data from the 1972–1973 Quality of Employment Survey (QES) and the 1999 CPS.⁷ Data from these particular surveys are very useful because they include information on at least three important job quality characteristics: earnings, employer provided health insurance, and employer provided retirement benefits. Data from the CPS also include measures of nonstandard work and job contingency (defined here as limited or uncertain job duration).⁸ In the analysis that

⁷ The CPS is based on a monthly household survey sampling design. In any given month the CPS sample includes 50,000–60,000 households. The Bureau of the Census, which conducts the CPS, reports that in any given month approximately 5% of housing units included in the sample are not interviewed. The Data included in the QES were based on a survey of households within the United States. Respondents include individuals employed 20 or more hours per week. Approximately 70% included individuals who met the criterion for inclusion in the survey. Of the 1982 individuals eligible to be interviewed, 75.5% (1496) were interviewed. All data sources used in this analysis are listed in the Reference section (Quality of Employment Survey, 1972–1973; U.S. Department of Commerce, Bureau of the Census, 1995, 1996, 1997, 1998, 1999, 2000).

⁸ While all contingent work arrangements are nonstandard, not all nonstandard work arrangements are contingent (Kalleberg et al., 2000; Polivka, 1996). Contingent work encompasses all jobs that are of limited or uncertain duration. Nonstandard work refers to any type of work arrangement other than full-time wage and salary employment. Nonstandard work arrangements include day laborers, on-call workers, independent contractors, self-employed workers, workers who work part-time, temporary workers hired directly by firms, and workers who work for a temporary help agency. While some nonstandard work arrangements are by definition contingent (e.g., day labor, working for a temporary help agency), others are not (e.g., part-time work). All forms of contingent work represent a departure from the norm of regular full time employment and are therefore, nonstandard. Jobs are not classified as “contingent” if the workers indicated they were in temporary jobs for personal reasons.

follows, earnings information is used to create a dummy variable indicating whether or not the respondent's annual earnings were less than or equal to 120% of the federal poverty threshold for a family comprised of two children and one adult.⁹

The second part of the analysis uses synthetic cohort analysis to assess the mobility between labor market segments. The cohort graphs show the cohort's distribution across labor market segments and employment categories at every year of the cohort's age. The synthetic cohort are similar to population pyramids, the number of people alive in specific age group intervals within a given population, and to life tables, the rates of mortality and life expectancy for people in different age groups (Smith, 1992). While both population pyramids and life tables can be calculated using data from an actual cohort, collected over the actual life of the cohort members, the use of period life tables and population pyramids are more common. These methods rely on cross sectional data collected from multiple birth cohorts at a single point in time, or within a limited interval of time, such as one year. This information is used to estimate the proportion of a synthetic birth cohort who, having survived to that age, will live or die during the next year. Such estimates assume that the age specific death rates are relatively similar for different birth cohorts. Similarly, the synthetic cohorts assume that the pattern of mobility between labor market segments is similar for each of the birth cohorts used in the analysis. Information regarding association between the workers age and their length of employment in their current job is used to assess the degree of job stability within specific labor market segments.

The final part of this analysis employs multinomial hierarchical logistic regression to estimate the extent to which race-ethnicity, sex, citizenship status, and nonstandard work arrangements affect the allocation of workers across specific labor market segments, net of the effects sex, race-ethnicity, education, tenure in the current job, union affiliation, industry sector, and occupational status.¹⁰ A hierarchical model is used to estimate measure the impact of occupation at the detailed (3 digit) level, which allows us to take into account the clustering of jobs within occupations and appropriately incorporate occupational level measures into the model (Haberfeld et al., 1998).

7. Analysis

7.1. *Dualism and segmentation*

To gauge the extent to which the actual labor market conforms to Doeringer and Pioré's ideal type, secondary labor market characteristics are selected for inclusion in the analysis. Initially, four variables were considered: poverty level earnings, the absence of employer provided health insurance, the absence of an employer provided retirement or pension plan, and employment in a job that is limited or uncertain in its duration (contingent work). Confirmatory factor analysis indicated that, while all four variables loaded a

⁹ Kalleberg et al. (2000) used low wages as a key indicator of secondary employment. This measure, based on the bottom quintile of the wage distribution, constrains the marginal distribution for this variable. In contrast, the poverty measure, used in this analysis, does not require that a certain proportion of the sample fall within the low-earnings category.

¹⁰ Because race-ethnicity, sex, and citizenship status are exogenous to the other variables, as well as selection into the workforce, the coefficients for these variables represent only their direct influence on the labor market outcomes under consideration.

single latent variable, only a small proportion of the variance in the contingent work variable is explained by the latent variable.¹¹ Consequently, this variable is not included in the remainder of the analysis. Results from the confirmatory factor analysis are presented in [Appendix Table A](#).¹² The fit indices indicate that the model fits the observed data quite well. Except for the contingent work variable, the loadings in the model are similar in their magnitude, and most of the variance in each of the indicators is explained by the latent variable.

Next, a loglinear model is used in order to determine the extent to which the secondary characteristics and primary characteristics cluster together in exclusive sets of jobs. The model residuals indicate the extent to which the observed number of jobs exceeds or is less than expected for each combination of characteristics. Estimates are obtained for wage and salary workers age 16 and older using data from the February 1999 CPS. The results are displayed in bar graph in the top half of [Fig. 1](#). The bars represent residual proportions, the difference between the number of observed jobs and the number of expected jobs, based on the assumption of independence, expressed as a proportion of the total number of jobs. The negative proportions represent combinations of characteristics that have fewer than the expected number of jobs.

The over and under representation of jobs in certain combinatorials reveals three discrete groups of jobs. The large positive bar on the left side of the top graph represents jobs that have none of the secondary characteristics considered in this analysis. These jobs conform to Doeringer and Piore's description of the primary labor market. The bar on the right side of the graph represents jobs that have all three of the secondary labor market characteristics included in this analysis. These jobs conform to Doeringer and Piore's description of the secondary labor market. Finally, there are a large number of jobs that combine secondary and primary characteristics, which are represented by the six negative bars in the middle of the graph. These combinatorials have negative residuals and are referred to in this analysis as the intermediary labor market.

The identification of intermediary jobs demonstrates that the labor market can be further differentiated beyond the primary–secondary dichotomy, albeit in a manner that is different than the models postulated in previous research (see [Bluestone, 1970](#); [Edwards, 1979](#); [Piore, 1973, 1975](#)). The bulk of jobs in the intermediary market lack either pensions or health insurance, or both. The data shows that the workers in this market are also “intermediary” with respect demography. Those who labor in these jobs are less likely to be white and male than workers in primary jobs but more likely to be white and male than workers in the secondary market. The proportion of workers in the intermediary market who belong to unions and work in nonstandard jobs also falls in between the proportions found in the primary and secondary market segments.

¹¹ The measure of contingent work used in the latent variable analysis is a modified version of the measure developed by the Bureau of Labor Statistics ([Polivka, 1996](#)). Wage and salary workers are classified as having contingent jobs if they reported their jobs were temporary or, if they could not work in their jobs as long they wished. Those who reported their jobs were temporary for personal reasons were not coded as contingent. Respondents that indicated that their jobs were temporary but who anticipated working more than one year, were not asked why their jobs were temporary. These respondents are coded as contingent. Self-employed workers were classified as contingent if they expected their jobs to last for less than one year.

¹² Because the observed variables are dichotomous (coded 0,1), the latent variable measurement model is estimated with a polychoric correlation matrix using weighted least squares ([Bollen, 1989](#)).

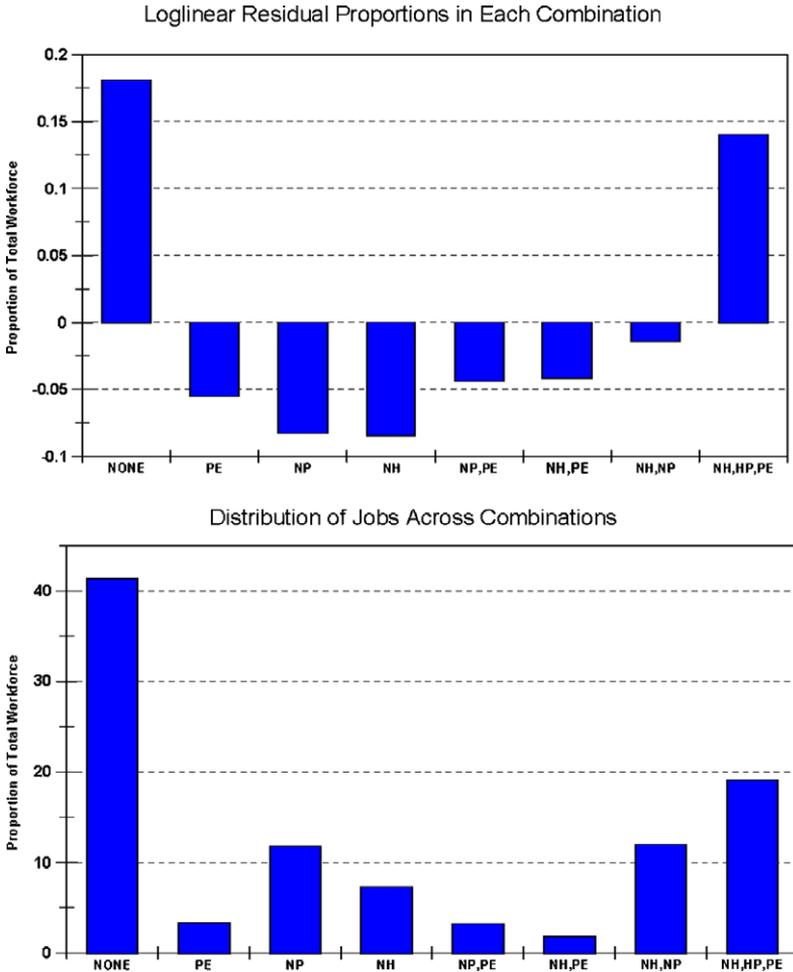


Fig. 1. Proportion of wage and salary workers in jobs with poverty earnings (PE), no health insurance (NH), no pension (NP) February 1999, Current Population Survey.

In interpreting the loglinear model represented in top bar graph, two points are noteworthy. First, under conditions where dualism is completely absent, the value of each bar would be 0. In contrast, under conditions of perfect dualism, the absolute value of each of the bars would be much greater than what we observe. Second, in the absence of labor market dualism, the number of jobs we expect to find in each combinatorial has a binomial probability distribution, where the parameter p is the joint probability of each combinatorial. This means that even when the characteristics being considered are orthogonal, there will still be some jobs in the “all” and “none” and combinatorials. While it is very unlikely that either independence or perfect dualism will be observed in empirical analysis, they represent useful benchmarks in gauging the degree of dualism present in the labor market. The actual distribution of jobs across the eight combinations of the three job characteristics is shown in the graph located in the bottom half of Fig. 1. In February of 1999 nearly one out of five American workers was employed in a job that

paid poverty level earnings, that did not provide pension benefits, and that did not provide health insurance. An additional 12% were in jobs that provided no health and no pension benefits. This last group of jobs also paid lower average wages than other jobs in other combinatorials where the wages were not constrained by inclusion of the poverty earnings variable variable.

The bar graph in the top part of Fig. 2 shows the results from two loglinear models where the sample is restricted to wage and salary workers employed 20 or more hours per week. Estimates of the residual proportions using data from February 1999 CPS are

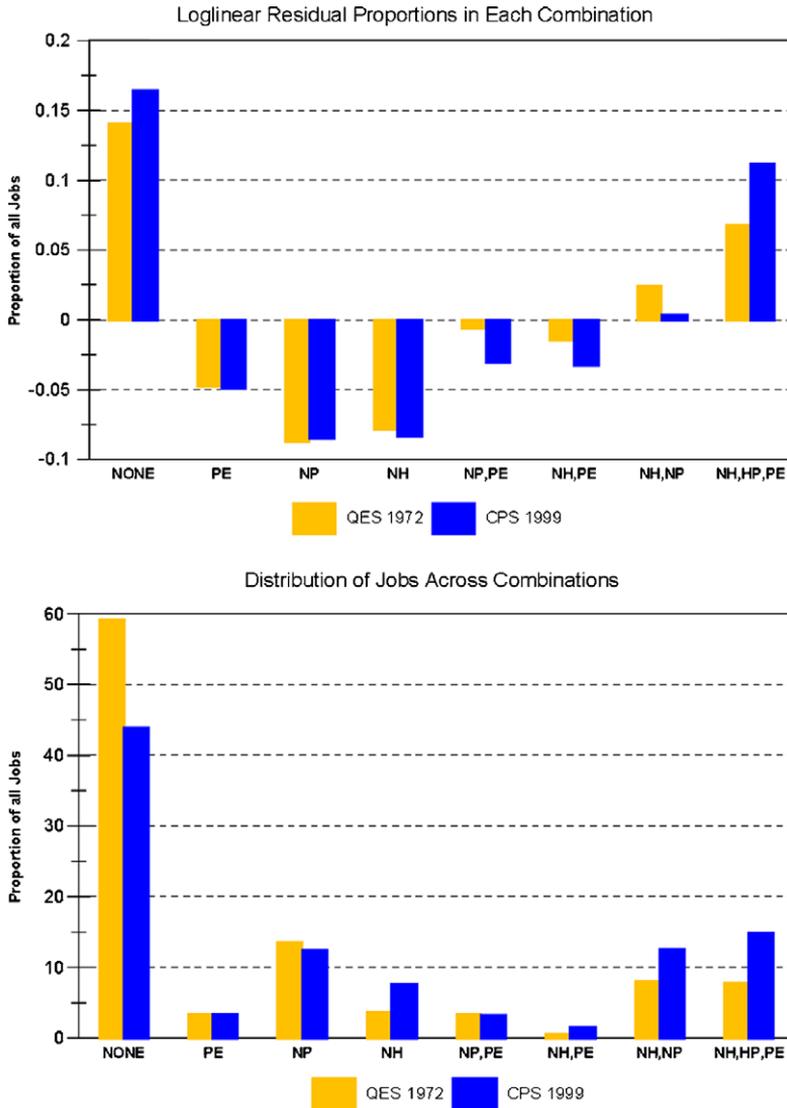


Fig. 2. Wage and salary workers, 20 or more hours with poverty earnings (PE), no health insurance (NH), no pension (NP) February 1999, Current Population Survey 1972 Quality of Employment Survey.

compared with estimates of the residual proportions using data from the 1972 Quality of Employment Survey (QES). The overall pattern of the bars indicates that in 1999 the labor market was much more polarized than in 1972. The bar representing the combinations with none of the secondary characteristics and the bar for the combination with all three are both greater in 1999 than in 1972. The bar graph in the bottom part of Fig. 2 shows the proportion of jobs held by workers employed 20 or more hours per week in each of the eight combinatorials for both 1972 and 1999. The contrast between the two years is striking, showing a substantial redistribution of workers from the primary to the secondary labor market. By the end of the twentieth century, a large proportion of jobs that had once provided good wages, health insurance, and pensions to American workers had been replaced by jobs that did not provide any of these things.

While the bar graphs in Figs. 1 and 2 provide a visual indication of the level of dualism in the market, a more precise measure is needed in order to measure change in the level of labor market dualism over time. In addition to allowing us to identify the formation of discrete primary and labor market segments, the loglinear models also provide the information we need to construct a scalar measure of labor market dualism. A formula for measuring the level of dualism, referred to here as the dualism index (DI), is given in Eq. (1)

$$DI = \frac{(P_o - P_e) + (S_o - S_e) - |(P_o - P_e) - (S_o - S_e)|}{\left(\frac{1}{C}\right)(C - 2)} (100), \quad (1)$$

where P_o represents the observed proportion of workers in primary market, P_e represents the expected proportion of workers in the primary market, S_o represents the observed proportion of workers in the secondary market, S_e represents the expected proportion of workers in the secondary market, C is the number of combinatorials, and where the primary and secondary labor market segments consist of those jobs in combinatorials with positive residuals. The first part of the dualism index equation, $(P_o - P_e) + (S_o - S_e)$, represents the clustering of jobs at the extremes of the job quality distribution,¹³ while subtracting the second part of the dualism index equation, $|(P_o - P_e) - (S_o - S_e)|$, corrects for skewness between the primary and secondary clusters. Using the residuals from the loglinear model to identify the primary and secondary segments allows the inclusion of combinatorials that do not have all secondary or all primary characteristics.¹⁴ The denominator adjusts the formula for the number of characteristics used in estimating the index. Under labor market conditions where job quality characteristics are orthogonal, the dualism index will be 0. Under conditions where there is perfect labor market dualism, the dualism index will be 100. Perfect dualism implies that the primary and secondary labor market characteristics are evenly distributed (e.g., half of all jobs have health insurance and half do not), and that there are no jobs that mix primary and secondary characteristics. The *DI* provides a precise measure for comparing the level of dualism in the American labor market at different points in time.

Table 1 presents the dualism indices for the select years in the late 1990s and for 1972. The indices displayed in the first panel show that the level of dualism declined slightly

¹³ The combinatorials depicted in Fig. 1 are ordered on the basis of their associated factor scores. These scores were estimated from the CFA model.

¹⁴ Using the only the first and last combinatorials would reduce the relative size primary and secondary segments as additional characteristics are added to the model.

Table 1
Dualism indices for selected years Current Population Survey and Quality of Employment Survey

	<i>DI</i>
<i>Wage and salary workers</i>	
CPS 1995	40.82
CPS 1997	39.27
CPS 1999	37.36
<i>Wage and salary, twenty hours or more per week</i>	
QES 1972	24.82
CPS 1999	30.88
<i>All workers (including self-employed)</i>	
CPS 1999	36.01

between 1995 and 1999. The second panel presents dualism indices for wage and salary workers employed 20 or more hours per week. While both indices in the second are much lower than the indices in the first panel, the level of labor market dualism for workers employed 20 or more hours per week increased by 6 points between 1972 and 1999, a 24% increase. The last panel presents the dualism index for all workers, including those who are self-employed. Inclusion of the self-employed produces only slight reduction in the magnitude of the index.

While both primary and secondary labor market segments are each represented in Fig. 1 by a single combinatorial, this is less likely to be true as additional job characteristics are added to the model or as we restrict the sample to select groups of workers (see Fig. 2). Because the formation of the segments is stochastic, jobs in the secondary or primary segments may not possess all of the defining primary or secondary characteristics, especially if the number of characteristics is large, i.e., greater than three. Nevertheless, the precision with which these discrete segments are identified is expected to increase with the sample size and the number of labor market characteristics employed in the model. This raises an important theoretical point. Dual labor market theory postulates that negative job characteristics covary with one another. To the extent that this is true, secondary labor market characteristics not included in this model should also covary, both with the measures included in this analysis and with one another. Thus the analysis presented here represents only a partial test of the theory. Future analysis using other and additional job characteristics can be used to conduct additional tests of dual labor market theory.

7.2. Mobility

A second major tenant of dual labor market theory states that mobility between labor market segments is restricted, especially mobility from the secondary to the primary segments. There are two strategies that can be used to assess the degree of mobility between labor market segments. One approach is to estimate the hazard of individuals entering or exiting particular labor market segments using longitudinal employment data. This approach requires highly detailed longitudinal data for a large number of individuals over their life course. Alternatively, in absence of longitudinal data we can construct and analyze a synthetic cohort, described earlier in the methods section. Fig. 3 shows four synthetic cohorts, which simulate the labor market location of white men, black men, white

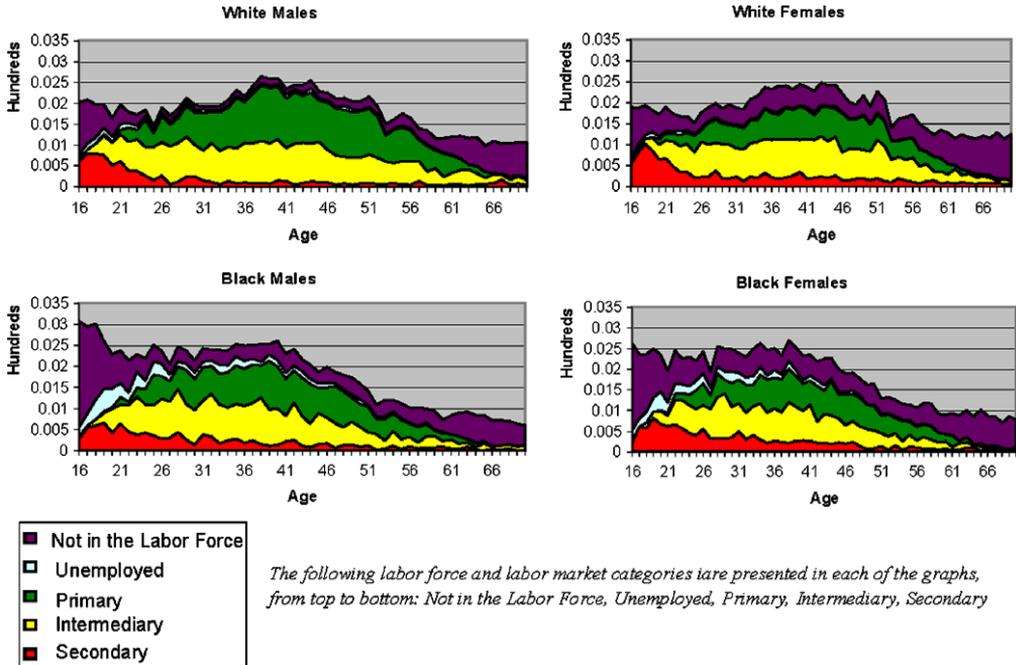


Fig. 3. Distribution of wage and salary workers across employment categories and labor market segments February Current Population Surveys 1995, 1997, and 1999.

women and black women over the life course (see Boston, 1990). These distributions reveal several important findings.

First, the synthetic cohorts allow us to infer with some confidence that a substantial portion of workers transition over their life course from the secondary to either the primary or the intermediary labor markets. Contrary to the predictions of some dual labor market theorists (Doeringer and Piore, 1971; Edwards, 1979; Gordon, 1972a; Piore, 1970), most workers who begin their careers in the secondary labor market do not remain there. The large majority of workers in secondary jobs enter this market when they are very young and exit this market by the age of 30.¹⁵ However, the rate of transition from

¹⁵ Because, the synthetic cohort uses a cross-sectional sample of all age groups to simulate a cohort moving through time, we know that all of the jobs (secondary, intermediary, and primary) used in its construction exist simultaneously. The distributions of workers across the three segments at different ages suggest a process in which younger workers initially work in secondary jobs and move into either primary or intermediary jobs in their late twenties and early thirties. Successive cohorts of younger workers fill the vacated secondary jobs or new secondary jobs are created to offset those positions that have been abolished. While the analysis in the previous section shows that the relative size of secondary market has increased over time (between 1972 and 1999), the relative proportion of jobs in each segment is fairly stable in the short term (between 1995 and 1999). Like population pyramids and life tables, the synthetic cohorts assume a relatively stable process over time. While it possible that today's young secondary workers will remain in the secondary segment and that older workers were never employed in the secondary labor market, this seems highly unlikely. Age-specific historical effects are likely to be present where catastrophic events, such as a flu epidemic or a major economic collapse, have occurred. The impact of the relative cohort size of the baby boom cohorts (a cohort effect) on the synthetic cohorts evidenced by the bulge in each of the four graphs. The primary historical (period effect) present in this analysis is addressed in the comparison of the 1972 and 1999 labor markets.

the secondary to the primary and intermediary markets appears to be lower for blacks and women than it is for white men. A substantial proportion of black workers who begin their careers in the secondary labor market appear to remain there over their working life. Second, as the majority of workers enter their thirties, they are allocated in roughly equal portions to the primary or intermediary labor markets, with a residual portion remaining in the secondary market. Third, after an initial sorting in young adulthood, the distribution of workers across the three labor market segments appears to remain fairly stable. Fourth, the black cohorts have lower rates of employment over the life course than whites. White males also have rates of labor force participation that are greater than each of the other groups. This suggests that the measured unemployment rates for blacks and women may actually underestimate their true rate of unemployment (Western and Beckett, 1999).

We can be less certain, however, about the amount of mobility between the intermediary and primary labor markets, and the amount of circulation in and out of the paid workforce. The amount of circulation between the primary and intermediary segments is limited, however, by the differences in their rate of job turnover. The line graphs in Fig. 4 shows that older workers have greater levels of average job tenure than younger workers. Not surprisingly, workers tend to stay in their jobs longer as the quality of their jobs gets better. Because good jobs turnover less frequently than bad or mediocre jobs, the opportunity for workers to experience upward mobility is limited. For older secondary workers, however, this restriction is offset somewhat by the larger relative size of the primary and intermediary segments. While the synthetic cohort analysis shows there is a high level of mobility out of the secondary segment in young adult hood, the job tenure data suggest that inter-segment mobility after age 30 is more limited. Finally, because workers in the primary jobs are more likely than other workers to participate in occupational internal labor markets (Althausen and Kalleberg, 1981), the actual differences in job stability (as measured by job tenure) between the segments is likely to be greater than depicted in Fig. 4.¹⁶

Doeringer and Piore (1971) used job tenure to measure employment stability (job turnover), which they argued was a central feature of secondary labor market employment. The unstable employment patterns observed in the secondary labor market have sometimes been attributed to the unstable behavior of secondary workers (On Point, 2005; Piore, 1970).¹⁷ There is little reason, however, for workers to make long-term commitments to jobs that pay poorly and provide no benefits. The actual level of human capital that can be acquired in low-skill, low-wage jobs is also likely to be limited. The synthetic cohorts in Fig. 4 provide new information that is relevant to this debate. Because the majority of secondary workers become either primary or intermediary workers over their life course, the argument that workers are in secondary jobs because of behavioral problems is not supported. While some workers may experience radical changes in their

¹⁶ An examination of age-earnings profiles reveals that workers in the intermediary sector have a flatter profile than workers in the primary segment and that workers in the secondary segment have a profile that is flatter than either of the other segments. Cain (1975, 1976) has shown that the truncated earnings function for workers in secondary jobs is a consequence of using low earnings as criteria for inclusion in this segment. Similar reasoning would also apply to workers in the intermediate segment rendering comparisons of earnings across segments tautological.

¹⁷ Mead attributes poverty to unemployment, which he links to the unstable behavior of poor workers.

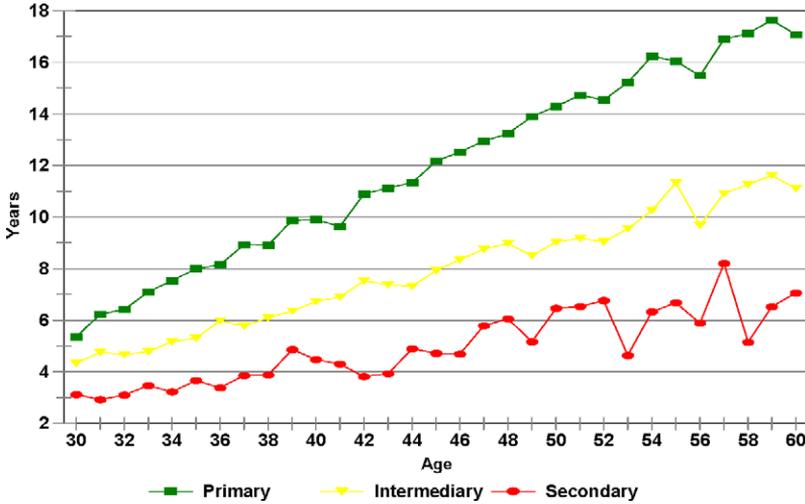


Fig. 4. Average length of time worked in current job by age and labor market segment.

behavior and habits as they transition from young adulthood into their early thirties, this is not likely to be the case for a majority of the workforce.

7.3. Nonstandard work and citizenship

This last section of the analysis tests the new labor market segmentation hypothesis by comparing the effects of nonstandard work and citizenship with the effects of human capital, sex, race-ethnicity, and union representation, variables that have long been known to influence the allocation of workers into specific segments of the labor market. Table 2 presents the effects of nonstandard work and citizenship status, net of other variables (including sex, race-ethnicity, and human capital) on the likelihood that workers age 30 through 61 will be employed in the either the primary, the intermediary, or the secondary labor market. Multinomial hierarchical logistic regression is used to estimate the impact of both individual and occupational level variables on the likelihood¹⁸ that workers will be employed in a specific labor market segment. Separate models are estimated for women and men. The models are represented with the following set of equations.¹⁹ The individual (Level 1) model is given in Eq. (2)

$$\ln \left(\frac{P(Y_{ij} = m)}{P(Y_{ij} = M)} \right) = \beta_{0j(m)} + \sum_{q=1}^{Q_m} \beta_{qj(m)} X_{qij}, \tag{2}$$

where the term $P(Y_{ij} = m)/P(Y_{ij} = M)$ is the probability that the i th worker within the j th detailed level occupation is employed in labor market m (secondary or intermediary) relative to labor market M (the primary labor market, which is the reference category). The multinomial estimations insure that probabilities of being in any particular labor market

¹⁸ Likelihood is estimated here in terms of the log odds. The logit metric is retained in order to facilitate the comparison of positive and negative effects. Odds ratios can be obtained by exponentiating the coefficients.

¹⁹ The model notation is from Raudenbush and Bryk (2002).

Table 2

Multinomial hierarchical logistic regression secondary and intermediary vs. primary labor market employment age 30–62, wage and salary workers by sex February Current Population Surveys, 1995, 1997, and 1999

	Female		Male	
	Secondary	Intermediary	Secondary	Intermediary
<i>Individual level variables^a</i>				
Intercept	-3.1395***	-0.4217*	-2.9045***	0.1796
Black	0.0232	0.0565	0.7388***	0.2926***
Hispanic	0.3169*	0.0783	0.7907***	0.2546***
Native American	0.2568	0.4319*	0.5359*	0.2426
Asian	-0.1377	0.1251	0.2776	0.2596**
Union membership or contract	-2.0385***	-0.6488***	-2.3696***	-0.7576***
Nonstandard work arrangement	3.1693***	1.3121***	2.5155***	0.9854***
Non-citizen	0.4365**	0.2831**	0.4544**	0.3999***
Less than high school	0.8439***	0.5345***	0.8891***	0.5355***
Some college	-0.3481***	-0.1267*	-0.2805*	-0.1373**
Associate degree	-0.4426***	-0.1819**	-0.5943***	-0.2446***
College degree	-0.7676***	-0.3595***	-0.6666***	-0.4134***
Advanced degree	-1.2021***	-0.6346***	-0.7414***	-0.5263***
Tenure in current job	-0.1695***	-0.0732***	-0.1682***	-0.0783***
Age 30–39	-0.0634	-0.0882*	-0.0450	-0.0403
Age 50–61	0.3247***	0.1653***	0.5442***	0.2481***
Employed spouse	0.5895***	0.3970***	-0.3871***	-0.0183
Unemployed spouse	0.4780***	0.2547***	-0.2654*	-0.1229*
Children	0.3242***	0.1568***	-0.1955*	-0.1014*
South	0.1075†	0.0032	0.0339	0.0474
Rural	0.4148***	0.0749†	0.3051***	0.1297**
<i>Occupational level variables^b</i>				
Occupational skill	-0.4267**	-0.1839*	-0.5873***	-0.1715**
Proportion female	1.0779***	0.5643***	1.2210***	0.2385†
Proportion black	-0.7574	-1.3526†	0.4960	-1.2554†
Proportion hispanic	7.5881***	4.0943***	4.9916***	1.9972**
<i>Occupational variance-covariance components^b</i>				
Variance (unconditional model)	2.9470	0.7125	2.6724	0.6481
Variance (conditional model)	0.8879	0.1932	0.6064	0.1479
Covariance (unconditional model)		1.3555		1.1517
Covariance (conditional model)		0.3572		0.2724
Occupational level <i>N</i>	392	392	464	464
Individual level <i>N</i>	22181	22181	21157	21157

^a Models include fixed effects for 22 industry categories and year of survey (not shown).

^b Random intercepts are used to model variance between detailed level occupations.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

† $p < .10$.

segment sum to 1 across the three segments (Long, 1997). The equation intercept $\beta_{0j(m)}$ is a random variable that varies across detailed level occupations, $\beta_{qj(m)}$ is the set of individual level regression coefficients, and X_{qij} represents the set of individual level predictors.

In Eq. (3), the intercept, $\beta_{0j(m)}$, is expanded in order to specify the level 2 covariates and an occupational level error term. Thus, we have

$$\beta_{0j(m)} = \gamma_{00(m)} + \sum_{s=1}^S \gamma_{0s(m)} W_{sj} + u_{0j(m)}, \quad (3)$$

where $\gamma_{00(m)}$ represents the grand mean of the dependent variable across all occupations when the value of each of the level 1 and level 2 variables is 0, W_{sj} represents occupational level variables, and $u_{0j(m)}$ is an occupational level error term. The term $u_{0j(m)}$ represents the residual effect of occupation after controlling for the occupational level covariates. The effects of the individual predictors in Eq. (3) are fixed across all occupations. This implies that,

$$\beta_{qj(m)} = \gamma_{q0(m)} \quad (4)$$

for all q . In both Level 2 equations, the subscript m refers to the m th labor market.²⁰

In addition to the variables for nonstandard work, citizenship status, sex, race-ethnicity, union membership, and human capital, these models also control for the effects of geography, occupation, and industry. Measures of human capital include a set of dummies representing the worker's highest level of educational attainment, the worker's tenure in their current job, and the workers age. Age group intervals are used capture nonlinear the nonlinear effects without introducing excessive multicollinearity into the model. The geographic measures identify workers who reside in the South and in rural areas, two covariates that have been historically associated with lower earnings and job benefits.

Occupational attainment is modeled as a random effect by allowing the intercept to vary across detailed level (3 digit) occupational categories. Occupational level variables include the proportion of workers in a detailed level occupation that are female, black, or Hispanic and an occupational level measure of skill. The skill measure is a composite of skill measures taken from the *Dictionary of Occupational Titles*.²¹ Prior research has shown that these occupational level variables have a significant effect on wages, net of individual worker characteristics (Catanzarite, 2000, 2002; England, 1992; England et al., 2000). Finally, (2 digit) industry categories are represented in the models with 21 fixed effect dummies.²²

Several important findings are evident in the results. First, the estimates provide strong support for the new labor market segmentation hypothesis. Nonstandard work is the single greatest predictor of employment in both the secondary and the intermediary (versus the primary) labor markets. This is true for both women and men. The coefficients for nonstandard work are actually larger than the coefficients for union membership or affiliation. While the size of the coefficient for nonstandard women reflects the large proportion of nonstandard workers that are employed part-time (more than 70% of female nonstandard workers are employed part-time, about half of whom report they are working part-time for family related reasons), only a little more than a quarter of the male nonstandard workers are employed part-time (about 26%, of which more than 40% report they are

²⁰ Multilevel models allow for the estimation of occupational covariates and the residual effects of worker membership in a given occupational category. Separate estimates for these effects are not possible when using fixed effect dummies for occupational categories. Including occupational covariates in a single level model is likely to result in omitted variable bias of the coefficients (Haberfeld et al., 1998).

²¹ This measure is based on general educational development, specific vocational preparation, complexity in dealing with people and data, numerical and verbal aptitude, and the level of reasoning required by the occupation.

²² The coefficients for the fixed effect industry dummies are not shown. These coefficients, as well as descriptive statistics for the variables included in the model are available upon request.

employed part-time for economic reasons). All workers in the secondary labor market are also employed in jobs that provide neither health insurance nor benefits. The estimates also reveal large and significant effects for both citizenship status and Hispanic ethnicity. Hispanic men and women are more likely than any other race-ethnic group to find employment in the secondary labor market, especially those who are not citizens. More than half of noncitizen Hispanic women and more than quarter of noncitizen Hispanic men have secondary jobs.

The second set of major findings pertains to race-ethnicity and sex. Hispanics of both sexes and Black and Native American men have an increased risk of employment in the secondary labor market, net of other variables. Hispanic, Black, and Asian males and Native American women are also more likely than whites to find employment in intermediary than primary jobs. Estimates obtained from a pooled sample of women and men (not shown) indicate that women are more likely than men to work in both the secondary and the intermediary (versus the primary) labor market. While the direct effects of race and sex are not as large as those for nonstandard work, they continue to play an important role in allocating workers to different labor market segments.

Third, as expected, affiliation with a labor union greatly reduces the likelihood that workers will be employed in the secondary or intermediary labor market. There is evidence, however, that the new labor market segmentation is offsetting the beneficial effects of unionization. During the period in which union membership has been declining, the prevalence of nonstandard and noncitizen workers has increased, even in the 30–60 age group. Workers in nonstandard arrangements are much less likely to belong to unions than standard workers and there are now more nonstandard than union workers. The same pattern is evident for noncitizen workers, who are also much less likely than citizen workers to belong to unions. When combined, nonstandard and noncitizen workers comprise about 28% of the wage and salary workforce aged 30 through 60.

The effects of the other covariates on labor market outcomes are generally as expected. All levels of educational attainment beyond high school reduce a worker's chances of being employed in either the secondary or the intermediary labor market. The risk of working in these markets declines as workers increase their educational credentials.²³ Workers in late middle age are less likely than younger workers occupy primary jobs. Marriage and children increase the likelihood of secondary and intermediary employment for women but have the opposite effect for men. Workers in rural areas are more likely to be employed in the secondary market, but the effect of living in the South, which is typically associated with lower wages and fewer benefits, is only marginally significant in one of the models.

7.4. *Occupational covariates*

The occupational level analysis indicates that workers in highly feminized and low skill occupations are more likely to work in the secondary or intermediary than the primary labor market. The greatest occupational composition effect, however, is associated with Hispanic ethnicity. As the proportion of workers in occupations that are Hispanic increases, so does the probability that all workers in that occupation will be employed in a sec-

²³ The findings from the synthetic cohort analysis suggest that an age * education interaction is likely to occur between workers in young adulthood and workers age 30 and older. This is addressed by restricting the multinomial logit models to workers aged 30 through 61.

ondary or intermediary labor market job. This reflects the working conditions of immigrant workers, many of whom are undocumented, that make up a large proportion of the Hispanic workforce. The crowding of immigrant Hispanic workers into a limited number of occupational titles produces downward pressure on the wages of all workers in those occupations (see Bergman, 1974, 1986; Catanzarite, 1998, 2000, 2002).

An analysis of the variance components (not shown) indicates that over 75% of the unconditional variance in the secondary (versus primary) models occurs between occupations; for the intermediary (versus primary) models, occupations account for about 40% of the variance. The occupational variance–covariance information, shown in Table 2, indicates that the conditional models account for about 70% of variance between occupations among male workers and more than three fourths of the occupational variance for female workers. These findings support early dualism researchers (Andrisani, 1973; Osterman, 1975) who relied heavily on occupations to demarcate labor market segments.

8. Discussion

Labor market dualism is the extent to which the labor market is polarized between jobs that are very good and jobs that are very bad. As the labor market becomes more polarized, discrete identifiable segments emerge, and the real world labor market moves closer to Doeringer and Piore's ideal type. The level of dualism present in the labor market is a function of the marginal distribution of secondary characteristics and the extent to which these characteristics positively covary with one another. This paper presents a scalar measure of labor market dualism and a method for identifying discrete labor market segments. While there is evidence of dualism in the American labor market, many jobs actually combine primary and secondary labor market characteristics. This intermediary segment currently makes up about 42% of labor market for wage and salary workers. A little more than a third of American wage and salary workers have jobs in the primary market while almost one in five is employed in the secondary labor market.

A longitudinal comparison of adult wage and salary workers shows that between the early 1970s and the late 1990s labor market dualism in the United States increased substantially. There was also a substantial redistribution of jobs from the primary to the secondary labor markets. These changes reflect both an increase in the covariation of secondary labor market characteristics and an increase in the prevalence of jobs without employer provided benefits and with poverty level wages.

Synthetic cohort analysis is used to examine the extent to which workers migrate from the secondary labor market to other segments over the course of their careers. Contrary to the predictions of some early dual labor market theorists, the data show that most workers who begin their careers in the secondary labor market leave this segment by the time they reach their early thirties. By the end of young adulthood most American wage and salary workers are distributed in roughly equal proportions between the primary and intermediary segments. The rate of transition from the secondary segment into high quality jobs, however, appears to be much lower for minorities and women than it is for white men. While the exact amount of inter-market mobility is not known, differential rates of job tenure for each of segments suggest that mobility between the three segments is limited.

Multivariate analyses provide strong support the new segmentation hypothesis that nonstandard work arrangements and citizenship now rival sex and race as important mechanisms for allocating workers to inferior jobs, net of worker's human capital charac-

teristics. The substitution of nonstandard work for traditional wage and salary employment in full time jobs and restrictions on worker mobility due their citizenship status serve as important mechanisms for creating and channeling workers into bad jobs. By creating two-tiered labor markets within the same firm, industry, or occupation, these mechanisms enable employers to provide some workers good wages, benefits, and working conditions while denying them to others. While the new economy promised to attenuate the vicissitudes of the business cycle, its most enduring legacy to date has been an increase in the level of dualism in the American labor market.

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Appendix A

Confirmatory factor analysis secondary labor market characteristics February 1999 Current Population Survey

	Factor loadings	Squared multiple correlations
<i>Observed variables</i>		
No health insurance	1.00	0.70
No pension benefits	0.97	0.66
Contingent work	0.45	0.14
Poverty level earnings	0.89	0.55
Factor variance	0.70	
<i>Fit statistics</i>		
χ^2	281.36, df = 2	
GFI	1.00	
NFI	1.00	
RFI	0.99	
IFI	1.00	
NNFI	0.99	
CFI	1.00	
RMSEA	0.03	
<i>N</i> = 18,074		

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