The Impact of Structural Dynamics on Job Mobility Rates
in the United States

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Abstract

This paper examines the job mobility of young American workers in the turbulent labor market of the 1980s and 1990s. To study how structural dynamics affect job mobility, I test hypotheses on major structural changes such as industrial shifts and corporate merger movement. Event history analysis using the National Longitudinal Survey of Youth 1979 suggests that structural changes played an important role in determining job mobility outcomes. Industrial expansion decreases the rates of employment exits and between-industry mobility, both upward and downward, net of demographic and human capital variables. Mergers decrease all kinds of job mobility rates, including employment exits and directional moves. This paper demonstrates that research in job mobility, industrial restructuring, and labor market inequality are complementary to one another in studying the connection between structural changes and individual behaviors.

Keywords: job mobility, industrial changes, corporate merger, event history analysis

This paper examines the effect of structural dynamics on individual job mobility in the 1980s and 1990s U.S. labor market, and the divergent outcomes of job mobility that these structural forces generated. The goal of this paper is threefold. First, structural factors are discussed, measured and analyzed. This paper reviews recent changes in the economy and the labor market, and analyzes the data that measure industrial distribution, corporate mergers, and workers' individual characteristics. Second, structural changes are considered dynamic rather than static. In this paper, longitudinal job history data allow a dynamic, continuous-time event history analysis for the period of 1985-1998. Finally, model and measures in this paper address the issue of inequality. To distinguish desirable outcomes of shifts from others that are less desirable, one should consider the vertical direction of job mobility. In this paper I discuss four job mobility directions: upward, downward, lateral and employment exit either into unemployment or out of the labor force.[1] Furthermore, I distinguish within- and between-industry mobility to test hypotheses on the effects of structural forces on the direction of job changes.

Using job history data from the National Longitudinal Survey of Youth 1979 (NLSY79), I analyzed the effects of various structural forces on job mobility outcomes for young workers aged 20-41. The results show that structural dynamics had significant effects on individual job shifts of American workers during the 1980s and 1990s. Shifts in industrial distribution and

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[1] A few different dimensions of job mobility can be studied; internal/external mobility, in terms of whether a worker changes his employer or gets a new position with the same employer (Carroll and Mayer 1986; DiPrete 1993; Haveman and Cohen 1994; DiPrete and Nonnemaker 1997); voluntary/involuntary mobility (Hachen 1988, 1990, 1992); upward/downward/lateral mobility, in terms of the relative rewards offered by the pre- and post-mobility jobs (Sørensen and Tuma 1981; Carroll and Mayer 1986; Shavit, Matras, and Featherman 1990). In this study all job shifts are defined as external moves, i.e., changes of employers. Internal mobility has different dynamics (Stewman and Konda 1983; Rosenbaum 1984; Barnett and Miner 1992) and is beyond the scope of this paper. In this study I do not distinguish between voluntary and involuntary moves. Although this is an important distinction, they are relatively difficult to discern, and there is a concern about the validity of self-reports on the reasons for job shifts.

mergers and acquisitions were important factors in determining job mobility rates, net of individual characteristics. Although the findings are consistent with the idea that a worker's position in the labor market matters, there are significant implications that go beyond the structuralist argument. Individuals are not fixed in unchanging, predetermined positions; workers move in and out of jobs, organizations, and sectors, and the distribution of jobs and the structure of the labor market constantly change. This paper underscores not just the differences across fixed positions of workers, but the forces that change the structure of these positions and opportunities.

Structural Changes and Job Mobility

Changes in the U.S. Economy

Recent developments in the American labor market call for serious reconsideration of structural effects on job mobility and stratification. The past few decades witnessed a structural transformation in industrial distribution. Table 1 illustrates these changes. The top part presents the changes in industrial structure during the period of 1983 to 1997, as measured by level and percentage distribution of employment by industry. The bottom panel shows the level and percentage distribution of GDP by industry. The manufacturing sector showed the greatest decline in its share in the total labor force and in the economy. By contrast, employment in service industries grew over the fifteen-year period, both in absolute and relative terms. The finance, insurance, and real estate (FIRE) industry grew in GDP in the 1990s, but employment in the industry declined in relative terms in the early 1990s. The net changes presented in Table 1 are likely to underestimate the turbulence in occupational and industrial structures created by

dynamic inflows and outflows of workers and resources (DiPrete and Nonnemaker 1997). Still, when summarized, these net changes paint a clear picture of a changing economy, which might have affected the underlying opportunity structures and job mobility patterns of workers who entered the labor market during this period.

(Table 1 about here)

Changes in the share of employment in industry are first of all the direct result of the aggregation of individual workers' movements in and out of these industries through new hires, job shifts, quits, layoffs, and retirements. A direct evidence of this is found in the shift-share analyses of occupational and industrial change (Browning and Singelmann 1978; Singelmann and Browning 1980; Tienda, Smith, and Ortiz 1987; Elesh 2002). This approach shows that changes in industry structures and composition of occupations in industries are directly attributable to the shifts in employment in each occupation. In a recent analysis of American workforce between 1980 and 1990, Elesh (2002) demonstrated that a significant degree of employment change was due to the shift between and within industries.

However, there are more than simple accounting relationships between the macro changes and the micro behavior. Occupational and industrial shifts affect decisions about how resources are distributed across groups and activities. Firms and workers adapt to the changing environments of the product market and the labor market. Firms' decisions about hiring, training, and firing are all dependent upon critical changes in the market. Behavior of current workers and job applicants is also responsive to the changing signals of the labor market and to hiring opportunities. Key institutions that affect the labor market, such as government policies and

4

training institutions, not only shape the structural changes in the first place, but also respond to these industrial changes, which in turn affect the behavior of firms and workers. In general, shifts in industrial distributions reflect changes in opportunity structure, which in turn affect perceptions, decisions, and behavior of the actors in the labor market. Job mobility should reflect the consequences of the actor's adjustment and adaptation to the changing opportunity structure. Therefore, industrial shifts, as measures of changes in opportunity structure, are an important factor in studying the mechanism of job mobility. This is particularly true for the 1980s and 1990s, the period of economy-wide turbulence. Decline of the manufacturing sector, proliferation of low-wage service sector jobs, and emergence of lucrative professional occupations in the finance and business service industries are familiar characteristics of this period.

Changes in American Corporations

During this period, there was also an important change in the way that corporations managed their workforces. Technological changes, competition in the product market, and the increased volume and competitiveness of trade drove big corporations to abandon their traditional models of secure employment for core workers (Pfeffer and Baron 1988; Cappelli et al. 1997; Osterman 1999). As a result, corporate restructuring and downsizing became more frequent and more extensive than ever before (Baumol, Blinder, and Wolff 2003). The emergence of a new conception of control, which directed managers to maximize shareholder value, is illustrated by the corporate merger movement of the 1980s (Sterns and Allan 1996) and the 1990s (Andrade, Mitchell, and Stafford 2001). Figure 1 shows the number of merger deals from 1983 to 1998. As reported in Stearns and Allan (1996, p.700), the number of mergers

reached a peak in the mid 1980s. It then dropped to its lowest level in 1991. The number of mergers grew steadily again during the 1990s, reaching its highest ever level in 1998 (also see Andrade, Mitchell, and Stafford 2001, p.105). This trend can be characterized as a merger movement over the two decades.

(Figure 1 about here)

Of the many different ways in which American corporations restructured in this period, mergers and acquisitions are the most directly linked to the mobility of workers. The restructuring of corporate assets is usually reported to involve reductions in staffing, which result in employee job mobility through layoffs and attrition. Media reports on big merger deals often cover speculations and announcements of mass layoffs to reduce redundant workforce following the merger. Beyond the movement of workers across organizational boundaries induced by the shifts in the organizational demography, mergers also represent significant changes in how corporations reward workers. A revolutionary characteristic of the recent merger movement was not only the extent and scale of the transactions, but also how they fundamentally altered the conception of the firm (Fligstein 2001). The conception of corporations as social entities consisting of real human actors and responsible to the stakeholders was abandoned. A new conception of corporation viewed the firm as nothing more than a nexus of contracts, free to be bought and sold, and existing for the sole purpose of maximizing the wealth of its shareholders (Davis 2005). This new conception allowed the actors to justify any organizational action that maximized shareholder value (Davis and Stout 1992; Davis and Thompson 1994). Mergers and

acquisitions were the most representative of these new corporate strategies.[2] Firms under this

new conception and strategies are most likely to restructure the work organization and to divert

resources away from the training and empowering of workers (Appelbaum and Berg 1996).

These firms often adopt human resource management practices that encourage flexibility, avoid

long term commitment, and require workers to be mobile across the organizational boundaries

(Osterman 1999; Kalleberg 2003). Mergers and acquisitions, therefore, can be a useful measure

of how corporate practices affect workers' mobility between firms. Particularly, recent changes

in organizational strategy and employment relations call for greater attention to the impact of

structural dynamics on job mobility.

Impact on the Labor Market and Job Mobility

Recent changes in the American labor market reflect the transformation of both the

economy and corporations. A remarkable phenomenon in the labor market is the rise in wage and

earnings inequality. Scholars have argued that changes in the economy during this period,

including technological innovations, the changing composition of the labor force, globalization,

immigration, deunionization, and stagnant minimum wages, all contributed to this phenomenon

(Morris and Western 1999; Katz and Autor 1999). The earnings and wage gap between skilled

and unskilled workers has been growing since the late 1970s. Another consequence of the

transformation was the erosion of long-term job security and the externalization of the

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[2] Besides shareholder value maximization, there may be other significant motives of mergers and
acquisitions discussed in the literature, such as technological changes, which can create excess capacity
and the need for market expansion, empire-building behavior by managers, and deregulation, which
removed long-standing barriers to merging (Morck, Shleifer, and Vishny 1988; Jensen 1993; Mitchell and
Mulherin 1996). For the period that this paper is studying, i.e. the 1980s and 1990s, conglomerate
mergers became much less popular than so-called "bust up" takeovers, and thus causes such as market
expansion and empire building lost much of its relevance (Scherer 1988; Davis, Diekmann, and Tinsley
1994).

workforce. The decline in job security was more salient for less educated workers than it was for those with greater labor market resources (Farber 1997; Monks and Pizer 1998; Neumark, Polsky, and Hansen 1999). This reflects a more fundamental change in American corporations during this period. A large number of American firms have abandoned the traditional model of long-term employment relations and increasingly adopted a more flexible work organization. The use of temporary and contract workers has increased among corporations aiming to increase numerical flexibility, in order to buffer the operation of the core workforce. At the same time these corporations have externalized the others who do not share the benefits of the innovative work organizations (Pfeffer and Baron 1988; Smith, 1997). Consequently, opportunities for wage growth and career advancement have become more unequal than before (Bernhardt, Morris, Handcock, and Scott 2001). Since individual job mobility became vulnerable to structural forces during the same period, the outcome of job mobility –a key mechanism in generating occupational attainment and wage growth– could have become more unequal. The structural effects mediated through the mobility process could have contributed to the growth of overall inequality in the labor market.

Pulling all of this evidence together, the picture of the U.S. labor market in the 1980s and 1990s can be characterized as one of changing opportunity structures that affected job mobility, with the consequence of labor market inequality. Many studies have looked at three distinct aspects –growth in wage and income inequality, structural effects on job mobility, and industrial restructuring— treating them as separate issues. Few have investigated the three topics together.[3]

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[3] Several studies have investigated the effect of organization's vital processes (Haveman and Cohen 1994), organizational size diversity and inequality (Fujiwara-Greve and Greve 2000), and macroeconomic dynamics (DiPrete 1993; DiPrete and Nonnemaker 1997) on job mobility. However, these studies did not examine the unequal impact on individuals by analyzing the consequences of job shifts—whether the next job pays better or not. Using the same data as in this study, Bernhardt, Morris, Handcock, and Scott

Research in wage and income inequality has been mostly limited to comparison of cross-sectional measures of distribution at different time points, and has lacked an explanation for the dynamic mechanism that created the inequality (Levy and Murnane 1992; Morris and Western 1999; Katz and Autor 1999). Although the literature extensively reviewed the sources of cross-sectional inequality, some of which are structural in nature, the actual mechanism of how structural forces generate individual-level inequality is not yet clear. This is because the process of dynamic change in individual attainment is left unspecified. Sociological studies in job mobility criticize the earlier studies' tendency to focus on individual characteristics and instead highlight the structural explanations of job mobility (Stinchcombe 1979; Sørensen and Tuma 1981; Carroll and Mayor 1986; Hachen 1988, 1992; Haveman and Cohen 1994). Despite the theoretical contributions, the empirical relevance is limited in light of the recent development of the U.S. economy, which is characterized by structural turbulence and transformation. Research in industrial relations and business strategies has documented the changes in fundamental principles of how firms are managed and how the work system is organized (Pfeffer and Baron 1988; Appelbaum and Berg 1996; Gordon 1996; Osterman 1999). However, this research only hints at the consequences for inequality and job mobility (Harrison and Bluestone 1988; Harrison 1994). The purpose of this paper is to overcome the limitations of each approach in explaining the structural sources of inequality through job mobility. It brings together the lines of inquiry that have been studied separately: research in labor market inequality, sociological studies in stratification and mobility, and corporate restructuring and deindustrialization.

Job mobility, a dynamic process of people's movements between different jobs and organizations, is a crucial concept for the study of changes in labor market attainment. The link

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(2001) found that opportunity for upward mobility has deteriorated for a recent cohort of young workers. But they did not directly measure and test the impact of structural variables.

between macro changes and individual behavior can be explored by studying the job mobility process. Sociological studies on the impact of structural changes on job mobility were developed first by the proponents of the vacancy chain model, and then by labor market structuralists and organizational ecologists. The ways in which opportunity structure determines individual mobility outcomes has been studied in the tradition of the vacancy chain model (White 1970; Sørensen 1975, 1977). This model assumes that the system of opportunity is fixed in such a way that workers cannot make a job shift unless a vacancy is created. Later, labor market segmentation theory and organizational ecology attempted to explain job mobility patterns in terms of structural characteristics, such as labor market segmentation and the vital processes of organizations. Segmented labor market theory argues that the structure of the labor market determines the mobility patterns of individual workers. The theory posits that the labor market has multiple segments, and that legal, institutional, and economic barriers limit a worker's mobility among them (Beck, Horan, and Tolbert 1978; Althauser and Kalleberg 1981). Finally, organizational ecology studies vital processes of organizations—founding, growth, decline, dissolution, and merger—that may affect patterns of job mobility by altering the opportunity structure (Carroll, Haveman, and Swaminathan 1992; Haveman and Cohen 1994; Carroll and Hannan 2000, p.429). In this paper, rather than propose a new theory of the structural determinants of job mobility, I draw on useful elements from each of the above theories and formulate hypotheses.

Hypotheses

I formulate hypotheses to test the effects of structural changes on job mobility, focusing on the specific outcome (i.e., upward, downward moves or employment exit) of job shifts. Considering the major changes in the U.S. economy during the past few decades, I investigate two aspects of structural changes: shifts in industrial distribution, and corporate merger movement.

The outcome of job shifts are considered in a two-stage way. First, a worker may leave the job *and* stay out of employment, either into unemployment or completely out of labor force. Not everyone who changes the job exits employment; some of them may simply move to a new job. Thus, the second stage is pertinent to those who change jobs without moving out of employment. For those who move from one job to another, the direction of the movement could be either upward, downward, or lateral. The distinction is important if one is interested in the question of inequality in the mobility outcomes, i.e., how different workers fare as a result of job mobility. An aggregate measure of the overall rate of job mobility cannot distinguish "good" job changes from "bad" ones, nor answer the question of whose job change is more successful than others.

Shifts in Industrial Composition

The first kind of change in the U.S. economy that concerns job mobility is the shift in industrial composition, often known as deindustrialization. The 1970s and 1980s witnessed a shift toward service industries and away from manufacturing (Harrison and Bluestone 1988; Meisenheimer II 1998). While occupational shifts represent demographic changes in the labor market, industrial shifts reflect changes in the product market and adaptation of firms to changing market situations. Changes in the product market are the direct source of industrial

shifts. Market and non-market factors that affect the cost, processes, and procedures of production also change constantly. These changes affect firms' outputs, sales, and revenues. A common environmental adaptation that allows a firm to expand production is to hire more workers and reduce staff turnover. Employers that hire workers in expanding industries should be less likely to fire workers and more likely to attract workers by offering greater job rewards, more training opportunities, and better prospects for career advancement. The vacancy chain model and organizational ecology are useful in formulating hypotheses about the impact of industrial dynamics on job mobility (White 1970; Carroll, Haveman, and Swaminathan 1992). Applying the logic of the theories, one can predict that expanding industries should generate more vacancies, more new entrants, and fewer quits and layoffs. It is these industries where there are more firm foundings and less firm dissolutions, which should have a large-scale impact on the rates at which workers move out of employment, either through quits or layoffs. I use the term "employment exit" below to refer to a movement out of employment that does not lead to another job for a sufficiently long period of time (14 weeks, see Data and Method), that it cannot be confused with a temporary layoff. Therefore, one expects that the rates of employment exits should be lower in an expanding industry than in a contracting industry.

Hypothesis 1. Industrial expansion decreases rates of employment exit for these workers in the industry. Conversely, industrial contraction increases rates of employment exits for these workers in the industry.

Upward job mobility may occur as a result of industrial expansion when new employers offer wages that are higher than the wages at the current job. This is because firms in a growing

12

industry are more likely to have the capacity to expand their workforce, as well as the willingness to pursue an expansion strategy in order to maximally exploit their operational capacity and to meet the market demand. It may be also the case that the competition within a growing industry tends to drive employers to overwhelm their competitors by hiring more workers and offering higher wages to them.

The impact of industrial shifts on workers' movements between jobs depends on whether the movement is within the same industry or between different industries with different growth rates. From the worker's perspective, the advantage of job shifts in an expanding industry is limited to the within-industry mobility. The outcome of mobility within an expanding industry should be the opposite of mobility out of it. This logic is an application of the labor market segmentation theory (Beck, Horan, and Tolbert 1978; Althauser and Kalleberg 1981), which posits that the mobility between segments have significant implication on the worker's job rewards, working conditions, and chances for career advancement. When we assume that the segments are identified by differential rates of industrial growth, workers who move from a job in a growing industry to another job in the same industry are continuously employed in the very same, prosperous industry. Workers in an expanding industry are more likely to recognize better opportunities for advancement and relative advantages within the industry than outside the industry. If they changed jobs within the industry, the new job should be more likely to offer greater job rewards than the previous job; otherwise the workers would have little incentive to change jobs. The reverse is true for those who move out of an expanding industry. If someone moves out of an expanding industry, it is not likely that the move is a voluntary shift seeking better career prospects. Rather, it is more likely that the worker is "pushed" out of the industry, either because of individual disadvantages such as demographic and human capital

characteristics, or because of some organizational attributes such as flexible, contingent employment relations. For these workers, it is likely that the outcome of the job change would be downward mobility. The following hypotheses add the predictions for industry contraction as well.

Hypothesis 2. Industrial expansion increases upward mobility rates for these workers moving within the industry. Conversely, industrial contraction decreases upward mobility rates for these workers moving within the industry.

Hypothesis 3. Industrial expansion decreases downward mobility rates for these workers moving within the industry. Conversely, industrial contraction increases downward mobility rates for these workers moving within the industry.

Hypothesis 4. Industrial expansion decreases upward mobility rates for these workers moving out of the industry. Conversely, industrial contraction increases upward mobility rates for these workers moving out of the industry.

Hypothesis 5. Industrial expansion increases downward mobility rates for these workers moving out of the industry. Conversely, industrial contraction decreases upward mobility rates for these workers moving out of the industry.

Corporate Merger Movement

During the period examined in this study, the United States has experienced a wave of corporate merger activity. The recent merger movement reflects the emergence of a market for corporate control, and a transformation of the way corporations manage their workforces. Increased competition in the global market, slow economic growth, high inflation, low corporate

profits, and deregulation of the financial market all contribute to the increase of shareholder influence on corporate management. Finance-based theories support the rationale for shareholder power and provide shareholders and investors with tools for exercising clout (Jensen and Meckling 1976; Jensen 1989). Maximizing the shareholder value, measured by share price, became the prime goal of firms (Useem 1993; Fligstein 2001). Fligstein (2001) argued that a new conception of the firm emerged during the 1980s, characterized by a shared understanding that a firm's only legitimate purpose is to maximize shareholder value. Corporate takeovers emerged in the 1980s as powerful means of holding corporate managers accountable to shareholders and assuring shareholder value. Management that failed to maximize shareholder value was punished in the market by becoming a takeover target (Davis and Stout 1992).

When one studies the impact of mergers on employment exits, the vacancy chain model (White 1970) and organizational ecology (Carroll, Haveman, and Swaminathan 1992) provide useful theories. A corporate merger tends to be followed by a set of other events: selling off assets, cutting research and development, and laying off large numbers of employees. An industry where many firms are merger targets should have a high rate of organizational dissolution. The organizational mortality should have a direct impact on the individuals whom the firms had hired. A direct effect of a merger on job mobility is an increase in the rate of employment exits.

This paper uses data on mergers measured at the level of the industry. The hypotheses and the analysis in the paper refer to the industry-average level of merger activity. At the level of the industry, mergers may have both direct and indirect effects on job mobility (see Haveman and Cohen 1994). On the one hand, there may be workers who were forced out of employment as a direct consequence of mergers. Controlling for industry growth rate, industries with more

merger targets should have fewer vacancies to hire those workers who are displaced due to mergers than industries with less merger targets. One can thus expect that an industry where there are many merger targets is likely to have a higher rate of employment exits than an industry with less merger targets. On the other hand, there may still be a number of workers at non-merged firms in the same industry where mergers are active, who became less likely to leave their employers to compete with other people searching for jobs. One can predict that the indirect effect of the organizational turmoil in the industry may decrease rates of employment exit for workers in the industry where mergers are active. It is an empirical question as to which of the direct and indirect effects is dominant at the industry level.

Hypothesis 6a. Merger increases rates of employment exit for workers in the industry.
Hypothesis 6b. Merger decreases rates of employment exit for workers in the industry.

To investigate the impact of mergers on mobility outcomes, one needs to go beyond the demographic consequence of mergers and consider the substantive implication of mergers as an organizational strategy. If one can consider mergers as an indicator of the degree to which the shareholder value conception of a firm dominates in the organizational field (Davis and Stout 1992; Fligstein 2001), managing a firm according to the principle of maximizing the interests of shareholders rather than stakeholders can have an indirect effect on job security and mobility (Shleifer and Summers 1988). Confronting the challenges of the market, the shareholder value conception of a firm provides justification for prioritizing financial performance over the creation of innovative production systems. At an organization where the shareholder value conception is dominant, resources are diverted away from the creation of a high-performance

work system where front-line workers are empowered and provided with opportunities for occupational and organizational learning (Appelbaum and Berg 1996). The consequence of the dominance of the shareholder value conception is the corrosion of the opportunity structure for employees. Shleifer and Summers (1988) argue that shareholder gains from takeovers come largely from extracting rents from stakeholders, including employees.

If mergers represent deterioration of opportunity structure for employees, workers in an industry where many firms are being bought or acquired (and thus coming under new, shareholder-value-maximizing management) should fare worse when they move within the industry. Therefore, within-industry upward mobility rates for workers in an industry with more merger deals should be lower than for workers in an industry with fewer mergers. Conversely, within-industry downward mobility rates are likely to be higher for workers in an industry with more mergers. The opposite is the case for those workers who exit the industry; workers moving out of an industry with more mergers are likely to have higher upward mobility rates and lower downward mobility rates. The hypotheses are as follows.

Hypothesis 7. Merger decreases upward mobility rates for workers moving within the industry.
Hypothesis 8. Merger increases downward mobility rates for workers moving within the industry.
Hypothesis 9. Merger increases upward mobility rates for workers moving out of the industry.
Hypothesis 10. Merger decreases downward mobility rates for workers moving out of the industry.

Data and Method

The data for this paper come from the National Longitudinal Survey of Youth 1979 (NLSY79), a study of the National Longitudinal Survey program at the Bureau of Labor Statistics. The NLSY79 is a nationally representative sample of 12,686 young men and women who were 14 to 22 years of age when first surveyed in 1979. The NLSY79 chronicles the labor market experiences of these young people, tracking each individual until 2000, when the respondents reached an age between 35 and 43.[4] For this study I excluded the supplemental and military samples.[5] Since it is designed to be a longitudinal study, it has a unique advantage over cross-sectional samples that can only provide a snapshot of the labor market. The data contain information on the exact beginning and ending date for each job that each respondent worked at, as well as other information such as wage, occupation, and industry for each job.

Because the unit of analysis in this study is job spell, I reshaped the data so that each observation corresponds to one job spell. In this way, one individual can contribute more than one job spell, which allows for the analysis of multiple job changes. In this study, I used the job spells ending between 1985 and 1998.[6] The beginning of the job spells ranges from 1983 to 1998. I excluded job spells when the respondent's age was less than 18 at the beginning of the first job, less than 20 at the time of job shifts, the respondent worked less than 20 hours per

[4] The retention rate, defined as the percentage of respondents remaining eligible who were interviewed in a given survey year, was 84.4% for the 1998 survey and never below this for the other survey years. The response rate, defined as the percentage of respondents remaining eligible and not known to be deceased who were interviewed in a given survey year, was 86.6% for the 1998 survey and never below this for the other survey years (Center for Human Resource Research 2004).

[5] The NLSY79 consists of three disparate types of samples. First, it has a cross-sectional sample of 6,111 youths designed to be representative of noninstitutionalized civilian youths. Second, it has a supplemental sample of 5,295 youths designed to oversample civilian Hispanic, black, and economically disadvantaged nonblack/non-Hispanic youths. The third sample is a military sample of 1,280 youths enlisted in one of the four branches of the active military forces.

[6] Only the job spells ending after the year 1985 were analyzed because of the comparability of the occupation and industry codes used in the NLSY79 and the Current Population Survey (CPS). For the NLSY79, the 1980 Census codes were used in all surveys. For the CPS, the 1980 Census codes were not used until 1982. See below for the discussion of the CPS data.

week, or the respondent's tenure on the job was less than 12 weeks. Of the remaining 5,244 job spells, 147 had overlapping records, where the ending time of the previous job was later than the beginning time of the next job. This reflects the fact that some of these young people held more than two jobs simultaneously. Such observations were excluded from the analysis. The final dataset contains 3,500 individuals who contributed 5,097 non-overlapping job spells.

Each observation (i.e. job spell) contains information on the beginning and ending date of each job, along with other information pertaining to the job. The outcomes of job shifts are classified in two stages. Figure 2 presents a tree diagram of mobility outcomes. First, I identified the job spells where the respondent left the job and stayed out of employment, either into unemployment or out of labor force, for longer than 14 weeks. I defined these job spells as employment exits. Among the total of 5,097 job spells, 1,464 job spells (28.72%) ended with an employment exit. In this way I estimated models predicting the rate of employment exit. The 14 weeks cutoff value was obtained from Abraham and Shimer's (2001) calculation of the mean unemployment duration for men and women during the period of 1985 and 1998, adjusted for changes due to the demographic transition of baby boomers and changes in the measurement of unemployment in the Current Population Survey. For those who did not get a new job within the average unemployment duration of 14 weeks, we can say that these workers have a qualitatively different job history than those who were temporarily unemployed and then got a new job, or returned to the previous job, within 14 weeks.

(Figure 2 about here)

The second stage is a separate procedure for those who changed employers without becoming unemployed for longer than 14 weeks, or, in other words, job changes for which the intervening spell of unemployment did not exceed 14 weeks. Those who made an employment exit are not at risk of job change. In this stage, there are 3,633 job spells that did not end with an employment exit and thus are at risk to have a job change.

Among those at risk of having a job change, 2,622 job spells did not end with a job change; i.e., they were right-censored. For these job spells, the respondents were still employed at the time of the last interview and any job shift was not observed for this final job spell. Right-censored cases are included in the analysis. All right-censored cases were from the last interview in 1998, when the individuals in the sample were between the ages of 33 and 41 and were very likely to be employed continuously. Individuals who contributed right-censored job spells may have had previous job spells that were not right-censored. About a third (32.71%) of the individuals with censored spells also had previous job spells. For instance, one individual in the sample had her first job from November 1984 to February 1995. Her second job began in October 1989, and when she was interviewed in June 1998, she was still working at the same job. The mobility outcome for this last job spell is not observed, and the job spell is right-censored. This person contributed one non-censored spell and one censored spell. Both of the job spells are included in the analysis.

Those who were at risk of having a job change and were *not* right-censored did have a job change. There were 1,011 job changes in the sample. Each of the job mobility is broken down into within- and between-industry mobility. Among the total of 3,633 job shifts in this stage, 366 job shifts were within the same 2-digit industry, and 645 were between two different industries. The frequencies are presented in Figure 2.

Next, comparing the wage at the job the respondent had left and the wage at the next job, I distinguish three directions of job shift: upward moves, downward moves and lateral moves. Prior to the comparison of wages at different points in time, all dollar values were adjusted for inflation using the CPI index of corresponding years. Wages were calculated at the hourly wage rate of each job. I defined logged wage increases of 5% and greater as upward moves, any wage decreases as downward moves, and all other moves as lateral moves.[7] Among 366 within-industry job changes, there were 59 upward, 169 lateral, and 139 downward moves. Among 645 between-industry moves, there were 150 upward, 281 lateral, and 214 downward moves. I estimated separate models that predicted job mobility rates of upward within-industry, upward between-industry, downward within-industry, and downward between-industry moves. Lateral mobility is considered to be a possible outcome, but the results are not discussed. Lateral moves result from the mixed effects of gains and losses, as Sørensen and Tuma (1981, p.83) noted.

The dependent variable for the analysis is the hazard rate of job mobility. Hazard rate is defined as the instantaneous conditional rate that job shifts are occurring given that the job shifts have not yet occurred. Formally, hazard rate $h(t)$ is defined as

$$h(t) = \lim_{\Delta t \to 0} \frac{1}{\Delta t} P(t < T < t + \Delta t \mid T \geq t), \qquad \Delta t > 0 \tag{1}$$

where t is a point in time. I used continuous time variables to record the beginning and ending date of each job and discrete event variables indicating which type of job shifts the respondent experienced. At the first stage of the analysis, the event is recorded as a dichotomous variable

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[7] I also estimated the models using some alternative thresholds for defining the direction of mobility. When a 3% increase in logged wages for upward moves and 2% decrease for downward moves were considered, the results were qualitatively similar to the results presented in this paper. Alternatively, a 20% increase in raw wages for upward moves and any decrease for downward moves had similar results.

denoting the occurrence of employment exits. At the second stage, the overall hazard rate $h(t)$ is broken down into a set of type-specific hazard rates. I begin this stage of the analysis by considering two mutually exclusive and exhaustive types of mobility outcomes: within- and between-industry moves. If we denote J as the type of events, the type-specific rates $h_j(t)$ are defined as

$$h_j(t) = \lim_{\Delta t \to 0} \frac{1}{\Delta t} P(t < T < t + \Delta t, J = j \mid T \geq t), \qquad \Delta t > 0 \tag{2}$$

where $J=1$ when the job spell ended with a within-industry move and $J=2$ for a between-industry move. Next, I expand the mobility categories by considering whether the job change was an upward, lateral, or downward move. Now J has a set of 6 types of events. For the sake of simplicity, I present results from four of them: within-industry upward, within-industry downward, between-industry upward, and between-industry downward moves.

For the analysis of hazard rates, I employed the Cox regression model with multi-state, multi-episode events. The model specifies the hazard rate as

$$h(t \mid \mathbf{x}) = h_0(t) \exp(\mathbf{x'}\boldsymbol{\beta}) , \tag{3}$$

where $\mathbf{x}$ is a vector of covariates, $\boldsymbol{\beta}$ is a vector of coefficients, and $h_0(t)$ is an unspecified baseline hazard rate. At the first stage of the analysis, I estimated the hazard rate of employment exit in this manner. Similarly, the hazard rate for type j event, i.e., within-industry upward, within-industry downward, between-industry upward, and between-industry downward mobility, is specified as

$$h_j(t \mid \mathbf{x}) = h_{0j}(t)\exp(\mathbf{x'}\boldsymbol{\beta}_j). \tag{4}$$

The independent variables are listed in Table 2. Some of them, such as gender and race, remain constant over time. For other variables with values changing over time, the values at the time of the job change are entered in the equation. Among these, some record changes on a yearly basis. Age at interview, marital status, educational attainments, and local unemployment rates were among them. Other variables refer to information about specific jobs, such as wage, occupation, and industry. To control for the unobserved heterogeneity in propensity to change jobs, I include the number of job changes of an individual during his or her job history, divided by the length of labor market experience in years. Firm size and local unemployment rates are included in the NLSY79. Local unemployment rates were entered in the model to control for regional and cyclical heterogeneities that may affect job mobility. The source of the unemployment rate variable is the May issue of the Bureau of Labor Statistics' *Employment and Earnings* for the year following the respective survey year. Figures from March of each current survey year are used. This table provides unemployment rates for each state, and for selected metropolitan statistical areas within each state (Center for Human Resource Research 2004).

(Table 2 about here)

Industrial growth was measured by Gross Domestic Product (GDP) by industry. The industry data came from the Bureau of Economic Analysis internet data archive, a series "Gross

Domestic Product by Industry and the Components of Gross Domestic Income."[8] I calculated the

percentage change in GDP for each of 64 two-digit industries from year *t-2* to year *t-1*, and

attached the value to the individual job spells from the NLSY79 survey of year *t*. Impact of

structural dynamics on individuals' job mobility is not an instantaneous process. It is reasonable

to expect that the individual actor's perception of and adaptation to macro changes takes some

time before it results in behavioral changes. I lagged the variables for structural changes for this

reason. This also rules out the possibility of reverse causation, where individual job mobility

aggregates to drive changes in macro variables.

(Table 3 about here)

The variable for merger activities was taken from the yearly almanac of *Mergers and*

Acquisitions (various years) from 1983 to 1998. The industry of the target firm was coded using

the same industry classification as for the industry size measure. From this source, the number of

merger and acquisition deals in each industry for each year was plugged into the NLSY79

microdata, with a one-year lag. Table 3 shows the descriptive statistics of the data. For every

analysis presented here I used sampling weights from each respondent's final interview. The

results did not differ substantively when weights were not used.

Results

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[8] http://www.bea.gov/bea/dn2/gdpbyind_data.htm, accessed on October 3, 2005.

Table 4 presents the results from the partial likelihood estimation of Cox regression models. I begin by examining the determinants of the employment exit rates in the first column, testing hypotheses on the effect of two structural variables on the rate of employment exits (Hypotheses 1 and 6). Then I proceed to distinguish between specific outcomes of job shifts—within-industry upward, within-industry downward, between-industry upward, and between-industry downward moves. Parameter estimates for the coefficients for the variable "industrial growth" correspond to Hypotheses 2, 3, 4, and 5. Similarly, estimates for the coefficients for the variable "merger" test Hypotheses 7, 8, 9, and 10.

Employment Exit

The first column in Table 4 presents the parameter estimates for the model predicting the rates of employment exit. A job spell was coded as ending with an employment exit when the respondent left the job and stayed out of employment, either into unemployment or out of the labor force, for longer than 14 weeks. Individual characteristics show the effects that are reasonably predictable. Women, nonwhites, and younger workers are more likely to leave employment. Since the model specifies that the hazard rate is the exponent of the regression equation (see equations 3 and 4), the exponent of the coefficient shows the effect of each variable. For example, women's rate of employment exit is (exp(.451)-1)*100=57.0% higher than men's exit rates, controlling for other variables in the model. The number of prior job changes has particularly strong effects on the rate of employment exit. The more likely one is to have an unobserved propensity to exit from employment, the more frequently one leaves a job and stays unemployed for more than 14 weeks. Not surprisingly, workers with a longer tenure on the job are less likely to exit from employment. Workers with less education are more likely to

leave employment than workers with more education, but the difference is not significant between high school dropouts and those with some college education but without a college degree. Upper white-collar workers are less likely to exit employment than workers at other occupations. Higher wage at the origin job reduces the rates of employment exit, presumably because high-wage workers are less likely than low-wage workers to be displaced involuntarily and also because they are more likely to have secured stable employment. Finally, a high local unemployment rate increases the rate of employment exit.

(Table 4 about here)

The regression model has two variables for structural changes: industrial growth and corporate mergers. First, industrial growth has a negative effect on the rate of employment exit. This supports Hypothesis 1, which predicted that industrial expansion decreases the rate of employment exit for the workers in that industry. Conversely, workers in contracting industries would have higher rates of employment exit than workers in other industries. Expanding industries have fewer firm deaths, lower turnover rates, and fewer quits and layoffs than contracting industries. Therefore, workers in expanding industries have lower employment exit rates than workers in declining industries.

Turning to the effect of mergers on employment exits, the data supports Hypothesis 6b, which expected that mergers decrease the rate of employment exit. Industries where there are many firms bought and acquired by other firms see their employees leaving employment at a lower rate than workers in industries with fewer mergers. This indicates that the indirect effect of mergers may be stronger than the direct effect. There are two reasons why this might be the case.

26

First, considering the total number of firms in the industry, the number of firms that are actually involved in the merger deals is fairly limited. The number of workers directly affected by mergers might be much smaller than the number of workers who are only indirectly influenced but nevertheless respond to the turmoil in the industry. Second, the measure of the mergers was lagged one year, so that the regression model estimates the effect of merger activities on exit rates a year later. Therefore, the estimates are less likely to reflect the immediate impact of mergers than the individual workers' adaptation, which usually takes place some time after the occurrence of organizational changes.

Upward and Downward Moves

The next stage of the analysis is to restrict the sample to the job shifts which did not end with an employment exit. Table 4 shows estimates of competing risks models for the rates of within-industry upward, within-industry downward, between-industry upward, and between-industry downward wage mobility, conditional on staying employed. Results from the models for lateral mobility are omitted for the sake of clarity. Hypotheses 2 to 5 are tested by examining the effect of industrial growth on the rate of within-industry upward moves, within-industry downward moves, between-industry upward moves, and between-industry downward moves. The four outcomes are mutually exclusive. Similarly, Hypotheses 7 to 10 test the effects of mergers on the four mobility outcomes.

Before turning to the two structural variables of interest, it is useful to examine the effects of control variables and to check the model specification. Coefficient estimates for the controls show plausible patterns. Women are less likely to have an (between-industry) upward move and more likely to have a (within-industry) downward move. A nonwhite worker is more likely to

move downward, but the coefficient is marginally significant. Married workers are more likely to move upward, only when they change jobs within the same industry. Not surprisingly, older workers are significantly less likely to make a job shifts in any direction. Workers with frequent job changes in the past are significantly less likely to move downward within the same industry, or to move upward across different industries. Workers with a longer tenure on the job are less likely to change jobs in any direction. Difference by educational groups indicates the effect of human capital enhancing one's chance of upward mobility and preventing the chance of moving downwards. College graduates are significantly more likely to make an upward move and less likely to make a downward move than high school dropouts. Coefficient for the upper white-collar occupations is not significant. Workers whose wage at the current job is high are relatively less likely to move further upwards and more likely to move downwards. Conversely, workers whose current wage is low have better chances to move upwards. This is consistent with the vacancy chain logic; for the high-wage workers there might be relatively fewer positions above their current position to move into. Firm size is not statistically significant. When local unemployment rate is high, job changes are more likely to have a (within-industry) downward move than when the labor market is tight. Some of those workers seem to find better jobs in different industries; the coefficient for unemployment rate is positive in the equation for between-industry upward mobility.

The two industry-based measures—industrial shifts and corporate mergers— test hypotheses on structural effects. Coefficient estimates for industrial growth test Hypotheses 2 to 5. According to the prediction, industrial growth should increase within-industry upward mobility rates (H.2), decrease within-industry downward mobility rates (H.3) and between-industry upward mobility rates (H.4), and increase between-industry downward mobility rates

(H.5). Expanding industries should make it easier for workers to move upwards within the industry but harder for those who exit the industry.

The data provide little support for Hypotheses 2 and 3. Coefficients for industrial growth are not significant at the 5% level, although the signs correspond to the hypotheses. Consistent with Hypothesis 4, industrial expansion decreases the rate of between-industry upward mobility. In the fourth column of Table 4, the coefficient for industrial growth has a negative sign, and is significant at the 5% level. Workers who move out of an expanding industry are more likely to be pushed out of the industry and thus fail to make an upward move. Hypothesis 5 predicted that industrial expansion increases between-industry downward mobility rates. On the contrary, the analysis indicates that industrial growth *decreases* between-industry downward mobility rates. The coefficient estimate is significant at the 1% level. Note that the industrial growth had a negative but insignificant effect on within-industry downward mobility. Industrial expansion decreases downward mobility rates, particularly when the move is between industries. Industrial growth seems to benefit employees by preventing job changes into unfavorable positions.

Hypotheses on mergers are also tested in Table 4. Coefficient estimates for the variable "merger" test the predictions in Hypotheses 7 to 10. The result shows that workers in the industries with a high level of mergers are less likely to make a within-industry upward mobility following a job change. This supports Hypothesis 7. However, Hypotheses 8 and 9 are not supported. Contrary to the prediction, mergers *decrease* the rates of within-industry downward mobility. Mergers have little effect on the rates of between-industry upward mobility. Finally, there is evidence in support of Hypothesis 10. Mergers decrease the rate of between-industry downward mobility.

Mergers have negative effects on all four kinds of job mobility, regardless of the direction (upward versus downward) and whether the job change is within an industry or between industries. One exception is that mergers have little, or negative if any, effect on between-industry upward mobility. Indeed, mergers also have negative and significant effects on the rates of employment exits as well as within-industry lateral mobility and between-industry lateral mobility (not reported). As discussed in the above section on employment exit rates, this might suggest that the indirect consequences of mergers were greater than their direct impact on the industry. The number of firms involved in merger deals is fairly small, and the measure used in the analysis is lagged one year. The direct effect of mergers might have appeared in a more narrowly defined organizational field than "industry", and perhaps within a period shorter than one year. When there is a number of significant and visible merger deals in an industry, the responses of other firms and workers that are measured a year after those deals indicate that there is less job mobility of any kind in the industry. Repercussions of visible merger deals are such that other firms in the industry become reluctant to hire more workers, perhaps for the fear of criticism of bloated organization (i.e. overstaffing) which investors and shareholders often associate with inefficiencies. In addition to the reduced number of job openings, workers may become less willing to change jobs too. Through observing firms in the industry being merged and acquired and their employees being forced to seek employment elsewhere, employees at nonmerged firms may refrain from changing jobs and prefer to stay put with current employers.

The results suggest that structural changes affect job mobility in some specific ways. First, industrial growth decreases upward mobility rates, but only when the worker moves out of an expanding industry. Industrial shift does not affect mobility rates within industry. Why is a boundary-crossing move, rather than mobility within industry, more sensitive to industrial

expansion and contraction? This may be because between-industry mobility involves changes in employers and working environments that are greater and more drastic than is the case in a within-industry job change. For those who move out of an expanding industry, the continuation of the career may be disrupted, and this might give a negative signal to the new employer, who might have to pay for the training cost and potentially concern about the workers' propensity to change industry again in the future. These all could have a negative impact on the prospect of a job changer, only when the job shift is between different industries. Moving out of an expanding industry or within the industry, therefore, can result in divergent outcomes. Second, industry expansion decreases between-industry downward mobility rates. This is contrary to the hypothesis, which predicted that industry expansion increases between-industry downward mobility rates (H.5). The result suggests that those who move out of an expanding industry find a new job that is not particularly better or worse than the former job; industry growth does not increase either upward or downward mobility rates for between-industry moves. This implies that there may be two opposite forces that affect the workers who change industry. These workers might be disadvantaged due to the changes in skill requirements and working environments, which result in a smaller rate of between-industry upward mobility. On the other hand, they might be advantaged because they can carry some of the benefits from the expanding industry that they left, such as general skills and work experience. This might have prevented them from a downward move and thus lowered the rates of between-industry downward mobility. The third and final finding is that mergers reduce job mobility rates. This is the case for all types of job shifts as well as employment exits, except for between-industry upward mobility. This suggests that there is a significant degree of indirect effects that reflect the adaptation of firms and employees in those industries where the impact of mergers is diffuse.

To understand the significance of the impact of structural forces, it is useful to translate the estimates to multipliers. Hazard rate models are multiplicative, as in equation (4) above. For any continuous variable X, the average multiplier of the mobility rate is exp($\beta \overline{X}$), where β is the coefficient estimate and $\overline{X}$ is the mean of the variable. Multipliers tell us how much the hazard rate is multiplied at the mean level of the independent variable. Table 5 presents the multipliers for the effects of three structural changes. Only statistically significant effects are included in the calculation.

(Table 5 about here)

Table 5 lists the coefficient estimates (β, obtained from Table 4) and the multipliers (Mult). For instance, the coefficient for industrial growth in the model for employment exit is -.013 from Table 4. The mean value of industrial growth for job spells including employment exits is 7.55 from Table 3. The multiplier is exp(-.013 x 7.55)= .904. On average, industrial growth decreases employment exit rates by 9.6%. Although the coefficient for mergers is very small, the multiplier for mergers indicates a stronger effect. The multiplier for mergers is .845; merger decreases employment exit rates by 15.5%. Merger movement was indeed more dramatic and turbulent than any other events in the recent history of American business. Industrial shifts, by contrast, were gradual and less focused. Also, unlike industrial changes, mergers represent a direct change in organizational vital processes. A big merger can displace a number of workers out of an organization in a very short period of time. Thus job mobility rates might have been more sensitive to mergers rather than to other macro changes considered in this study.

Industrial expansion has effects mostly on between-industry mobility; industrial expansion decreases between-industry upward mobility by 24.6%, and between-industry downward mobility by 23.6%. Again, stronger effects are found in mergers. Mergers decrease within-industry upward mobility rates and within-industry downward mobility rates by 44.3% and by 58.8%, respectively. The effects of mergers on between-industry mobility are also substantial. On average, mergers decrease the rates of between-industry downward mobility by 41.9%.

To summarize these findings, changes in structural characteristics have a significant impact on job mobility outcomes, net of individual characteristics. More specifically, industrial expansion decreases the rates of employment exits and between-industry mobility, both upward and downward, after controlling for demographic and human capital variables. For workers in declining industries, the implication is the opposite. Industrial contraction increases employment exits and between-industry job changes. Mergers decrease all kinds of job mobility rates, including employment exits and directional moves. On average, the impact of mergers was greater than the effect of industrial shifts. Workers in industries where there is an average level of merger activities are 15.5% less likely to exit employment and 41.9% to 58.8% less likely to change jobs than workers in industries with no merger activities. This indicates that the impact of corporate mergers on job mobility was diffuse and substantial during the 1980s and 1990s.

Conclusion

This paper examined the job history of young American workers who spent their first 20 years in the turbulent labor market of the 1980s and 1990s. I used the structural account of job

mobility to study structural sources of individual mobility outcomes. Job mobility is a crucial process by which unequal consequences are generated, and cannot be explained by individual characteristics alone. Also, job mobility is a dynamic process that requires a method for the analysis of changes in opportunities and rewards over the life course.

The findings of this paper are as follows. Industrial expansion decreases the rates of employment exits and between-industry mobility, and mergers decrease all kinds of job mobility rates, including employment exits and directional moves. The results are mostly consistent with existing theories considered in this paper: vacancy chain model, labor market segmentation theory, and organizational ecology. Five of the ten hypotheses were supported in the analysis. Predictions about employment exits received the most support in the analysis. Vacancy chain models and organizational ecology were used in a straightforward manner to formulate hypotheses on employment exits, and the results were largely consistent with the predictions. Support for hypotheses on specific directions of job change was somewhat scattered; impact of mergers on job mobility was more consistent with the predictions than that of industrial expansion. This may be due to many factors, either theoretical or methodological. One of the possibilities is that the implication of segmented labor market theory, which was applied to the hypotheses on industrial expansion, remained ambiguous in terms of the directions of the job mobility. Even if the labor markets, or industries, could be clearly segmented and have differential growth rates, the results suggested that a number of workers managed to move either upwards or downwards. Future research needs to refine theories predicting the direction of job mobility.

The implication of this analysis is twofold. First, structural dynamics of industry and corporations played an important role in determining job mobility outcomes, net of demographic

and human capital factors. Changes in industry distribution and corporate merger activities altered opportunity structures in the labor market. Adaptation of firms and workers to changing opportunities and constraints resulted in divergent mobility outcomes. Considering recent developments in the U.S. labor market, which were characterized by structural turbulence and growing inequality, the effects of structural forces and their consequences deserve serious attention from scholars and policy makers alike. Second, the mechanism of job mobility varied by mobility outcomes. The pattern depended on the resources of individuals, the type of workplace they work in, and changes in the economic structure. In studies of job mobility as the core element of status attainment and inequality, one should therefore consider different outcomes of job mobility. A sequential modeling of job mobility, with the first stage separating out employment exits and the second stage distinguishing directional moves, revealed that for the young workers in this study employment exits, within-industry mobility, and between-industry mobility were crucial processes where the structural forces interfered with individual career opportunities.

This paper demonstrates that the fields that had been separately studied need to be incorporated and studied in a more integrated manner. Research in job mobility, industrial restructuring, and labor market inequality are complementary to one another. Sociologists studying job mobility have long been interested in the institutional and structural explanations for individual workers' mobility (Stinchcombe 1979; Carroll and Mayer 1986; DiPrete 1993; DiPrete and Nonnemaker 1997; DiPrete et al. 1997). For this research, industrial restructuring and other changes in work organizations should be considered relevant factors in analyzing the link between the macro changes and micro behaviors. On the other hand, it is natural to infer that the consequences of structural dynamics for individual workers are demonstrated through a

pattern of job changes (Carroll, Haveman, and Swaminathan, 1992; Carroll and Hannan 2000, p.425). Since job mobility is the crucial mechanism that generates unequal outcomes in life cycle attainment, the study of labor market inequality and industrial restructuring as one of its causes should include the process of job mobility.

Further research should investigate how the experience of the cohort analyzed in this paper differs from the experience of other cohorts. These are young people who spent their first twenty years in the workforce during the 1980s and 90s. How peculiar was their experience? Was it a typical experience of young workers at any time in history, or did this group experience something new and unique? A careful comparison of the NLSY79 cohort with the older cohort of the National Longitudinal Study can provide the answers. Bernhardt et al (2001) and Monks and Pizer (1998) demonstrated how this can be done, though their analysis was limited to individual level explanations. Future studies also need a more refined measure of how macro changes are linked to individual experiences. Measures on the organizational level can be useful for this purpose, since the organizations where individuals work at play an important role in mediating structural effects (Baron and Bielby 1980). Matching employer and employee information is a relatively undeveloped but a very promising area of research (Abowd, Haltiwanger, and Lane 2004). Linking organizational practices, which are responses to environmental and institutional changes, with individual-level outcomes can contribute significantly to our knowledge on how individuals, organizations, and social structure change and interact with one another.

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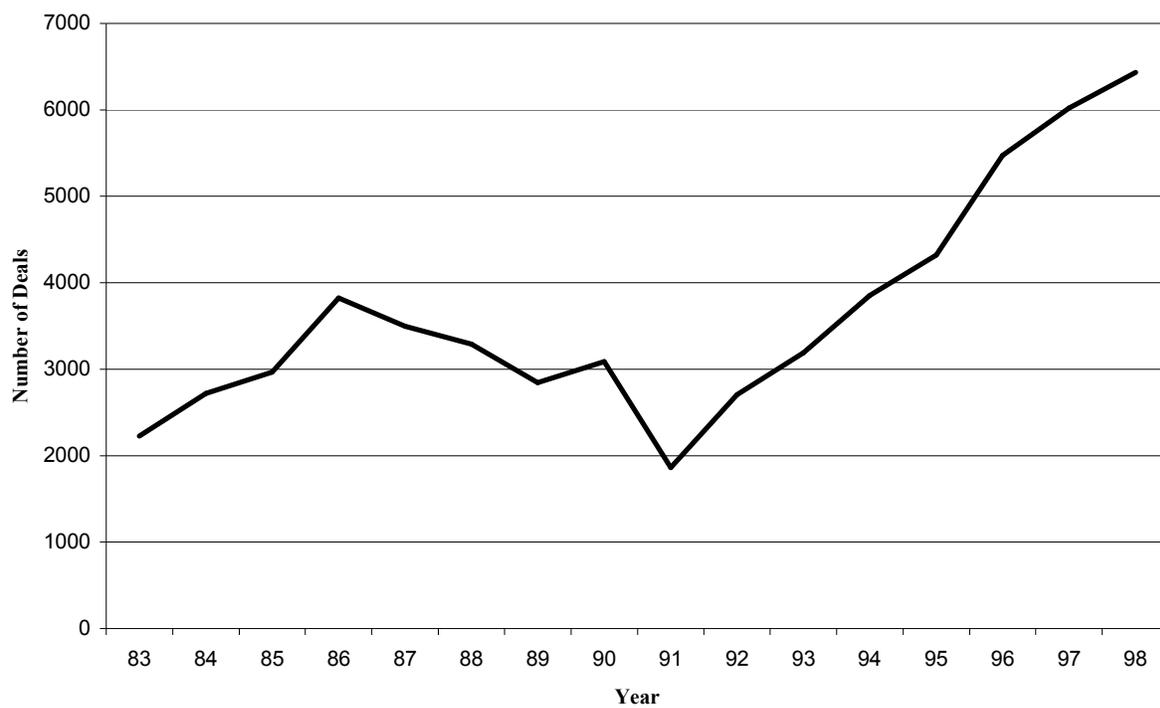
Figure 1. Number of Merger Deals, 1983-1998

Source: *Mergers and Acquisitions* (various years).

Non-overlapping job spells (N=5,097)

Employment exits (N=1,464)   Staying employed (N=3,633)

Job changes (N=1,011)   No job change, right censored (N=2,622)

Within-industry moves (N=366)
Within-industry upward moves (N=59)
Within-industry lateral moves (N=169)
Within-industry downward moves (N=138)

Between-industry moves (N=645)
Between-industry upward moves (N=150)
Between-industry lateral moves (N=281)
Between-industry downward moves (N=214)

Figure 2. Tree Diagram of Job Mobility

Table 1. Changes in Occupational and Industrial Composition, 1983-1997

	1983	1985	1990	1995	1997	change 83-97
Total employment by industry, in millions						
Mining	0.85	0.85	0.67	0.56	0.59	-0.25
Construction	4.03	5.00	5.78	5.53	6.21	2.18
Manufacturing	17.99	19.50	19.52	19.04	19.77	1.78
Transportaion, Communication, Utilitie	5.42	6.02	6.46	7.03	7.29	1.86
Trade	16.24	17.70	19.26	20.93	21.71	5.46
FIRE	5.37	6.10	7.05	6.89	7.22	1.85
Service	25.31	26.90	31.76	36.65	38.49	13.18
Total	75.21	82.07	90.50	96.63	101.28	26.08
Percentage in total employment by industry						
Mining	1.13	1.04	0.74	0.58	0.59	-0.54
Construction	5.36	6.09	6.39	5.73	6.14	0.78
Manufacturing	23.92	23.76	21.57	19.71	19.52	-4.40
Transportaion, Communication, Utilitie	7.21	7.34	7.14	7.27	7.19	-0.02
Trade	21.60	21.56	21.28	21.66	21.43	-0.17
FIRE	7.14	7.43	7.79	7.13	7.13	-0.01
Service	33.65	32.78	35.09	37.93	38.00	4.35
Total	100.00	100.00	100.00	100.00	100.00	
GDP by industry, in billion dollars						
Mining	137.30	142.35	115.84	97.27	118.70	-18.60
Construction	139.80	186.32	248.71	290.31	338.16	198.36
Manufacturing	693.31	804.38	1,040.59	1,289.07	1,379.61	686.30
Transportaion, Communication, Utilitie	324.04	379.04	490.90	642.59	688.41	364.37
Trade	559.27	683.45	883.92	1,147.43	1,307.35	748.08
FIRE	914.56	1,116.98	1,651.55	2,128.18	2,411.31	1,496.75
Service	476.81	590.58	979.18	1,322.93	1,507.19	1,030.39
Total	3,245.08	3,903.09	5,410.68	6,917.77	7,750.72	4,505.64
Percentage in GDP by industry						
Mining	4.23	3.65	2.14	1.41	1.53	-2.70
Construction	4.31	4.77	4.60	4.20	4.36	0.05
Manufacturing	21.36	20.61	19.23	18.63	17.80	-3.57
Transportaion, Communication, Utilitie	9.99	9.71	9.07	9.29	8.88	-1.10
Trade	17.23	17.51	16.34	16.59	16.87	-0.37
FIRE	28.18	28.62	30.52	30.76	31.11	2.93
Service	14.69	15.13	18.10	19.12	19.45	4.75
Total	100.00	100.00	100.00	100.00	100.00	

Table 2. Description of Independent Variables

Variable Name	Description	Characteristics regarding time
Woman	1 if woman; 0 otherwise.	Time-constant
Nonwhite	1 if nonwhite; 0 otherwise.	Time-constant
Married	1 if married with spouse present; 0 otherwise.	Year-specific
Age	Age at each interview.	Year-specific
Prior jobs	Number of prior job changes per year.	Job-specific
Job tenure	Duration of the job (i.e., tenure on the job) in weeks.	Job-specific
Education	Highest education attainment as of the interview. Omitted category: High school dropouts.	Year-specific
High school graduate	1 if high school graduate; 0 otherwise.	
Some college	1 if some college education; 0 otherwise.	
Bachelor's degree	1 if Bachelor's degree or above; 0 otherwise.	
Upper white-collar	1 if occupation at the origin job is managerial or professional occupation.	Job-specific
Wage	Logarithm of hourly wages at the origin job.	Job-specific
Firm size	Logarithm of size of the firm that respondent worked.	Job-specific
Unemployment rate	Local unemployment rate in percentage.	Job-specific
Occupational growth	Percentage change from year t-2 to year t-1 in employment of occupation that respondent worked.	Job-specific
Industrial growth	Percentage change from year t-2 to year t-1 in GDP of industry that respondent worked.	Job-specific
Merger	Number of mergers and acquisition deals in the industry that respondent worked.	Job-specific

Table 3. Descriptive Statistics

Total Job Spells (N=5,097)

	N	Mean	SD	Min	Max	%
Woman	5,097	0.56	0.50	0.00	1.00	
Nonwhite	5,097	0.19	0.39	0.00	1.00	
Married	5,096	0.57	0.50	0.00	1.00	
Age	4,994	22.39	5.47	20.00	41.00	
Prior jobs (per year)	5,097	0.06	0.12	0.00	1.47	
Job tenure (weeks)	5,097	223.51	253.42	12.00	1252.00	
Education						
High school dropout	630					12.37
High school graduate	2,329					45.75
Some college	1,110					21.80
Bachelor's degree	1,022					20.07
Total	5,091					100.00
Upper white collar	4,940	0.28	0.45	0.00	1.00	
Wage	4,940	6.72	0.39	5.75	10.19	
Firm size	4,784	3.88	2.32	0.00	11.51	
Unemployment rate	4,997	5.87	2.84	1.50	16.50	
Industrial growth	4,892	7.55	5.53	-28.59	55.80	
Merger	4,892	126.99	177.19	0.00	921.00	
Job shifts						
Employment exit	1,464					28.72
Staying employed	3,633					71.28
Total	5,097					100.00

Job Spells excluding Employment Exits (N=3,633)

	N	Mean	SD	Min	Max	%
Woman	3,633	0.50	0.50	0.00	1.00	
Nonwhite	3,633	0.17	0.38	0.00	1.00	
Married	3,633	0.58	0.49	0.00	1.00	
Age	3,568	13.99	4.96	20.00	41.00	
Prior jobs (per year)	3,633	0.05	0.10	0.00	0.80	
Job tenure (weeks)	3,633	266.09	273.14	12.00	1252.00	
Education						
High school dropout	354					9.75
High school graduate	1,637					45.10
Some college	790					21.76
Bachelor's degree	849					23.39
Total	3,630					100.00
Upper white collar	3,573	0.33	0.47	0.00	1.00	
Wage	3,555	6.79	0.40	5.75	9.16	
Firm size	3,471	3.93	2.27	0.00	11.51	
Unemployment rate	3,582	5.44	2.69	1.50	16.50	
Industrial growth	3,550	7.54	5.03	-28.59	53.41	
Merger	3,550	148.10	195.03	0.00	921.00	

Table 4. Parameter Estimates for Job Mobility Rates

	Employment exits		Within-industry mobility				Between-industry mobility			
			Upward		Downward		Upward		Downward	
Woman	.451	(.073) **	-.392	(.349)	.701	(.235) **	-.477	(.192) *	.280	(.176)
Nonwhite	.186	(.076) *	-1.168	(.740)	.466	(.253) +	-.340	(.271)	.318	(.187) +
Married	.029	(.065)	.843	(.345) *	-.284	(.235)	-.011	(.207)	.073	(.177)
Age	-.149	(.009) **	-.194	(.036) **	-.166	(.029) **	-.228	(.026) **	-.227	(.024) **
Prior jobs	-1.195	(.405) **	-1.261	(1.893)	-5.894	(2.476) *	-5.342	(1.895) **	-1.646	(1.293)
Job tenure	-.009	(.001) **	-.014	(.004) **	-.015	(.003) **	-.026	(.004) **	-.011	(.002) **
High school grad	-.313	(.086) **	.901	(.655)	-.165	(.287)	.228	(.336)	-.574	(.211) **
Some college	-.103	(.100)	1.613	(.685) *	-1.163	(.415) **	.349	(.369)	-.376	(.248)
Bachelor's degree	-.269	(.114) *	2.023	(.659) **	-.694	(.368) +	1.144	(.377) **	-1.108	(.371) **
Upper white-collar	-.225	(.079) **	-.368	(.398)	-.387	(.302)	.334	(.242)	-.291	(.281)
Wage	-.303	(.133) *	-.729	(.760)	1.767	(.269) **	-1.878	(.353) **	1.183	(.258) **
Firm size	.006	(.013)	-.079	(.077)	-.012	(.044)	-.031	(.046)	-.033	(.041)
Unemployment rate	.036	(.011) **	.004	(.055)	.082	(.031) **	.063	(.029) **	.023	(.028)
Industrial growth	-.013	(.005) **	.019	(.024)	-.020	(.017)	-.037	(.014) **	-.036	(.014) **
Merger	-.001	(.000) **	-.004	(.002) *	-.006	(.002) **	-.001	(.001)	-.004	(.001) **
Log likelihood	-6,282.49		-264.57		-469.95		-587.91		-859.91	
N of events	1,142		48		100		135		180	
N of persons	3,181		2,702		2,702		2,702		2,702	
N of job spells	4,380		3,238		3,238		3,238		3,238	

Standard errors are in the parentheses.
** p<.01, * p<.05, + p<.10, two-tailed tests.

Table 5. Multiplier Effects for Independent Variables

| | Employment exit | | Within-industry mobility | | | | Between-industry mobility | | | |
| | | | Upward | | Downward | | Upward | | Downward | |
	b	Mult	b	Mult	b	Mult	b	Mult	b	Mult
Industrial growth	-.013	.904	n.s.		n.s.		-.037	.754	-.036	.764
Merger	-.001	.845	-.004	.557	-.006	.412	n.s.		-.004	.581

Note: n.s. indicates that the paratemer estimate was not significant at the .10 level.