The Career Dynamics of Self-Employment

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The Career Dynamics of Self-employment *

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Revised and Retitled May 1987

Abstract

Although it might be considered the domain of many research areas, self-employment has not been studied vigorously. We draw upon the ideas of related areas to develop a sound design for the study of self-employment. Using retrospective career life-history data from West Germany, we model the process by which individuals move into and out of episodes of self-employment. Specifically, we examine: (1) the process of entry into self-employment at various stages of the career; and (2) the career differences between the self-employed and the conventionally employed. In general terms, the findings show that those factors which account for one stage of the self-employment experience do not necessarily account for others. More substantively, our findings point to the strong effects of social structural variables, especially those related to the family, as well as to the effects of previous self-employment experience.

Who becomes self-employed? What difference does it make? There are at least three reasons why social scientists should be better able to answer these questions:

1. Self-employment is not rare; it is experienced by many. In the U.S. in 1980, almost 12 percent of all native white males in the labor force were self-employed (Borjas, 1986). Britain, known for its entrepreneurial disinclinations, has approximately 2.5 million self-employed persons (Curran and Burrows, 1986).

2. Because it usually involves the operation of small firms, self-employment has a tremendous impact on organizational populations (see Carroll, 1984). As organizational ecology increases in theoretical importance, self-employment does as well.

3. Self-employment is also germane to the study of entrepreneurship and social class. The current lack of knowledge about self-employment means that researchers working in these areas often either neglect the phenomenon or rely on impressionistic evidence.

In addressing here the two opening questions about self-employment, we use data on the career histories of individuals. The analysis does not test any specific theories, but it does draw on a number of sociological and organizational research traditions to build an informed model of the self-employment career process. Coupled with a sound research design, the model in turn yields unanticipated findings of value for future research and theory on self-employment and related areas.

The data we use concern the economy of West Germany. Contrary to the impression of many Americans, West Germany has many small firms (Lawrence, 1980). In 1963, a year when comparable figures are available, there were 157,000 manufacturing establishments employing less than 10 persons in West Germany, compared to 121,000

in the United States (Prais, 1975). This represented 6.2% of the total manufacturing employment for West Germany and 2.4% for the United States. The abundance of small firms yields a considerable design advantage since the incidence of self-employment should be higher than that of an equivalent American data set.

RELATED RESEARCH AREAS

Four research areas have particular relevance to the study of self-employment: entrepreneurship, organizational behavior, social class and careers. We review briefly each area, focusing on the issues and findings of relevance to our research questions.

Entrepreneurship. Despite a large amount of research, there is still little agreement about how even to define entrepreneurship (Curran and Burrows, 1986). According to the International Encyclopedia of the Social Sciences, "there is agreement that the term includes at least a part of the administrative function of making decisions for the conduct of some type of organization" (Cochran, 1968:87). Frequently, the definition is further restricted to include only decision making about innovative activities or the founding of a new organization. There is thus some correspondence between entrepreneurship and self-employment, although it is not exact.

Previous theory and research on entrepreneurship have focused on either the characteristics of the individual entrepreneur or the social and economic conditions associated with entrepreneurship. Psychologists, for example, have examined the relationship between entrepreneurial behavior and personality characteristics such as creativity (Hagen, 1962) and the need for achievement (McClelland, 1967). Sociologists have identified group characteristics such as religion and sojourning status that have been linked with entrepreneurial behavior (Bonacich, 1973). And economists have attempted to explain entrepreneurship through the interaction of economic conditions

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and psychological factors (Knight, 1921; Penrose, 1959). In all three disciplines, researchers have typically asked either of two basic questions: Who is an entrepreneur? When does entrepreneurial behavior arise?

The answers to these questions have varied, depending on the discipline, but in most instances there has been a strong reliance on the assumption that entrepreneurship is associated with some stable set of individual characteristics. There is little appreciation of the possibly transitory nature of the entrepreneur's status. Hence, there has been little or no research of the sort we present here, on the process of becoming an entrepreneur and the sociological and organizational contexts in which it unfolds.

Empirical research on entrepreneurship shows the often implicit assumption of stable individuals quite clearly. The typical study draws its sample or selects its cases from those already engaged in entrepreneurial activities (e.g., Copeman, 1955; Kaplan and Huang, 1974; Pelzel, 1963; Jeremy, 1984; Singh, 1985). The characteristics of the sample or the case are then examined to ascertain those factors that might account for entry into entrepreneurship and for success as an entrepreneur. In one such study, for example, J. Carroll (1965) observed that the founders of Filipino manufacturing enterprises were often foreign educated, had previous experience as independent businessmen, and were disproportionately associated with certain regions and religions.

Studies such as these, which draw samples based on some value of the dependent variable, suffer from the serious methodological problem of sample selection bias (Heckman, 1979). In the previous research on entrepreneurship, two kinds of sample selection bias are prevalent. The first is an extreme bias against non-entrepreneurs, who are usually not included in samples, and who are at best compared to entrepreneurs only with the marginal distributions of basic variables (e.g., Nafziger, 1978). The second bias is against unsuccessful entrepreneurs, who are often under-represented by some flaw in the sampling scheme, such as the use of directories of established firms to define the sampling frame (e.g., Jeremy, 1984).

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Another serious methodological problem prevalent in studies of entrepreneurship is their static nature (e.g., Ahmed, 1977). Data on entrepreneurs are usually collected cross-sectionally and thus the untenable assumption of temporal equilibrium must be invoked when they are analyzed (Tuma and Hannan, 1984). Substantively, such designs reinforce the impression that entrepreneurship is a stable characteristic of individuals because these persons are examined at only one point in time. Observation over longer periods of time might yield a much different impression.

Finally, a third major methodological deficiency widespread in previous empirical research on entrepreneurship concerns scope. In the typical empirical study, entrepreneurs of only one type are studied, e.g., manufacturing entrepreneurs (see, Singh, 1985; Blok, 1974; Erickson, 1959; Mathias, 1963). While such studies may have design advantages for certain types of problems, they cannot adequately address the broader issue of who becomes an entrepreneur. And, they do not allow us to assess how the life experiences of entrepreneurs differ from non-entrepreneurs.

Organizational Behavior. Since most self-employment takes place in small and family firms, the relevant organizational behavior literature concerns these types of organizations. Both types have received considerable research attention, although most of it has focused on their structure and functioning. Small and family firms, for instance, are usually characterized as having flexible, informal structures with high levels of centralization in decision making. Typically, they are owner-managed and entrepreneurial in nature (Mintzberg, 1979). Thus it makes sense to think of the top officer as self-employed.

Because small firms are often the embodiment of their owner-managers, research conducted on them commonly emphasizes the characteristics of these individuals (see for example Miller and Dröge, 1987). Such analyses leave one with the impression that these types of individuals are more likely to become self-employed, or at least be

successful if they do. Again, selection bias contaminates this kind of logic because there is at best only an implicit comparison with those individuals who do not become owner-managers (see, for example, Bruchey, 1980).

Analyses of family firms sometimes avoid this problem because they frequently attend to the executive succession problem. In these firms, the pool of candidates available to assume the top position is clearly defined by family membership. The research question then becomes who among the family members will become the boss (see Boswell, 1973). Substantively, such processes highlight two important features about how some individuals become "self-employed." First, the owner-manager position is taken over within an existing firm rather than created as part of a new firm. Second, the process of assuming the owner-manager position is frequently a sequential one where holding a subordinate position in the firm is the necessary prior stage. Both features suggest a strong role of social structure in affecting who becomes self-employed.

Social Class. The best designed research on self-employment has been conducted by social class analysts, a group not known for its devotion to the free enterprise system. The self-employed represent a small but theoretically interesting social class, including both the petite bourgeosie and small employers. Many theorists see the analysis of these groups as crucial to understanding the class structure of the modern industrial world (Bechhofer and Elliot, 1981; Scase and Goffee, 1982).

Class-oriented research on self-employment treats the self-employed as a separate group and usually deals with them as it does all other classes. This means that intergenerational mobility flows into and out of the self-employed group are examined as a function of origin and destination classes (Goldthorpe, 1980). More recent research on intragenerational mobility has linked characteristics of individuals and jobs with movement into and out of self-employment. Hachen (1986), for instance, finds that those persons with long job durations, with jobs in the state sector, and who are

non-white are less likely to move from conventional to self-employment. Mayer and Carroll (1987) find that entry into self-employment upon entering the labor force is positively affected by father's socio-economic status.

The deficiencies of these analyses arise from the treatment of self-employment as any other class. Most of the variables examined in social class analysis come from theories developed by considering the other, more prevalent classes. There is thus an ad hoc quality to the analyses of self-employment (Curran and Burrows, 1986). This is, of course, unfortunate because, as even class theorists recognize, the self-employed are sufficiently different from other classes so as to deserve separate substantive treatment. Even obvious issues, such as the role of parentally owned firms and the effect of prior self-employment experience, fail to figure into most class analyses of the self-employed.

Research on the returns to self-employment is more straight-forward and therefore does not have the same problem. However, only income has been seriously studied as an outcome variable and, although it has now become accepted that the self-employed earn more (Wright and Perrone, 1977), it would be helpful to study other outcomes as well. Self-employment, for instance, is often associated with risk (Knight, 1921) -- does this show up in the 'job' stability of the self-employed?

Careers. With almost 12 percent of the labor force so engaged, it is obvious that self-employment affects many careers. Yet labor economists, organizational behaviorists, and sociologists alike usually fail to take self-employment into account in their analyses of careers (Borjas, 1986; see, for example, Hall, 1976; Sørensen, 1975; Spilerman, 1977). Instead, the focus falls almost exclusively on mobility patterns within and across established firms.

Self-employment may both affect and be affected by more conventional career processes. Those who engage in self-employment build up a unique kind of human

capital that may be valuable in later self-employment and in other settings as well. Conversely, those whose career mobility in organizations is limited by educational, political, demographic, and racial factors may be especially attracted to the alternative which self-employment offers (Bonacich, 1973; Freeman, 1984).

What little career-oriented research there is on the topic suggests that self-employment does indeed make a difference. Fuchs (1982), for instance, finds that men of retirement age who are self-employed are more likely to continue working, thus expanding the length of their careers. He also finds that men with experience as managers, professionals, and salesmen are more likely to be self-employed at the end of their careers.

In another solid study, Borjas (1986) finds some evidence for the claim that blocked career opportunities lead to self-employment. Using U.S. Census data he shows that not only are immigrants and some minorities more likely to be self-employed but that those with poor health conditions were especially likely in some cases. He also found some positive effects of education and labor force experience.

Summary. Although at least four important bodies of social science literature address the topic of self-employment, the treatment as a whole is unsatisfying. Where there is sophisticated theory, as in the entrepreneurship literature, there is questionable empirical evidence. Conversely, where there is solidly designed empirical research, as in the literature on social class, there is little pertinent theory. In other areas, such as organizational research and research on careers, self-employment is simply given short shrift. Thus a need exists for well designed and substantively informed research on self employment. Such research can in turn inform all four of these literatures, although it may not fall squarely within any one of them.

THEORETICAL ISSUES

Given the fragmentary nature of previous research, it makes little sense to speak of theories of self-employment. There are, to be sure, specific theoretical arguments about which factors are likely to be associated with self-employment, e.g., immigration status. However, there is rarely any attempt to embed these arguments in a model of how the self-employment process operates. One of our goals here is to establish a framework for the development of such a model.

A first step in this direction is recognition of the obvious but fundamental fact that self-employment is episodic. Because it is so, theoretical arguments which rely on the stable attributes of individuals are bound to be incomplete -- at best they can explain an individual's behavior at some particular point in life or in interaction with some other situational phenomena. Consequently, those factors which lead to self-employment early in careers may be quite different from those associated with entry at later points.

There are also a number of different avenues by which one might become self-employed. First, an individual might start a new firm and operate it as the owner-manager. Second, an individual might purchase an existing firm and assume the top position. Third, an individual might inherit the controlling position in an existing firm. The factors which account for each mode are likely to differ and should be considered in a general analysis of who becomes self-employed.

These two sets of simple observations suggest a modelling framework much different from that usually used to study self-employment or entrepreneurship. The importance of a dynamic perspective is clear: variables should have a chance to operate at any point in the career. The historical experience of an individual also needs to be considered -- this may very well affect the operation of otherwise strong variables. Substantively, a distinction between stages of the life course seems appropriate

because the close association of these phenomena with labor market behavior (Hogan, 1980) suggests that they are likely to interact with other variables in affecting self-employment. Finally, consideration of the ways one might become self-employed suggests that the common sequence of family employment to self-employment needs to be identified and studied as part of the process.

Assuming this general framework decomposes the study of self-employment into a series of separate but interrelated research questions: Who becomes self-employed upon labor force entry? Who takes family employment at that time? Who moves from family employment to self-employment? Who becomes self-employed after conventional employment? Who becomes family employed later in life? What consequences do any or all of these behaviors have?

Previous arguments about self-employment and entrepreneurship fail to address questions with this degree of sophistication. Consequently, we do not propose any formal hypotheses for testing. Instead, we use the general framework just described to study the effects of three types of substantive variables which have long been thought to be important for understanding self-employment and entrepreneurship: religion, parental self-employment and individual experience in self-employment.

Protestantism. Following Weber's (1930) classic statement of the Protestant ethic, many previous analyses of entrepreneurship, including a number of studies looking at self-employed entrepreneurs, have focused on the effects of religion and religious values (e.g., J. Carroll, 1965; Jeremy, 1984; Singh, 1985). It is generally expected from this literature that Protestants are more likely to become entrepreneurs, and once entrepreneurs, more likely to succeed. If so, such behavior should show up in higher rates of self-employment. There is no obvious reason, however, to expect an effect at any particular stage of the career. There is also some question as to whether the Protestant ethic thesis is still valid today. Weber's later writing stressed the cult aspect of early

Protestantism; a similar view has been advanced by Hagen (1962) who emphasized the entrepreneurial propensities of non-conformist religions.

Self-Employed Parents. Parental self-employment is easier to deal with within a life-course framework. The children of self-employed parents are likely to work in the family firm at an early age. Consequently, they should show higher rates of early (i.e., first jobs) career movement into family employment. Moreover, since they are also likely to inherit rights of ownership to the firm, these persons are more likely to move into self-employment, although probably at later points in the career. Taken together these two expectations suggest a sequential process of movement into owner-management for those with self-employed parents: in the first early stage, they hold quasi-proprietary helping positions; in the second stage, they assume full ownership and control. Thus, the two types of positions should be interrelated -- not only in the entry rates but also probably in their exit rates, due to accumulated experience.

Besides providing an opportunity structure, self-employed parents also serve as role models. Children raised in such families are more likely to have an understanding of self-employment and to think of it as a realistic alternative to conventional employment (Young, 1971).

Individual Experience. Of course, self-employment experience also can be gained without involvement in a family firm and this too is likely to affect the propensity to become self-employed. Unlike those with only conventional employment experience, persons with prior self-employment experience are more likely to consider it a viable later career option. This may be especially true in those sectors where self-employment does not necessarily involve large capital investments. In addition, a distinction should be made between length of experience and the sheer number of prior self-employment

episodes. A single long episode may develop fewer skills, but it is likely to indicate prior success. On the other hand, many prior episodes may give one more insight into self-employment, but such instability may indicate prior failures.

Outcomes. The effects of self-employment are slightly better understood. Empirical research usually shows a positive financial return to self-employment (Wright and Perone, 1977). Less clear are the effects on employment stability. On the one hand, a very high proportion of new enterprises fail within a very short period of time (see Carroll, 1984), suggesting self-employment is unstable. This depiction coincides with the notion of the entrepreneur as a risk-taker (Knight, 1921). On the other hand, a person who assumes control of an existing firm may be taking over a stable, long-lived business which has already survived the liability of newness. In either case, experience in self-employment may factor into affairs.

Returns to family employment are more complicated. In terms of wages, those in subordinate positions usually make less than they might in conventional employment (Boswell, 1972; Bonacich, 1973). However, because they are members of the owning family it is likely that they derive financial returns indirectly. Even if not, the promise of future succession into the owner-manager position may provide sufficient motivation to accept lower wages. In terms of stability, family employment probably shows lower than usual amounts of job changing because of the large number of spouses holding such positions.

Control Variables. As with most labor market processes, self-employment surely is driven in part by human capital variables. Even if not, controlling for such variables is critical when examining the effects of variables of substantive interest. Relying on standard models of job mobility (e.g., Carroll and Mayer, 1986), we control for birth

cohort, sex, education, prestige of job and labor force experience. Birth cohort and sex were included because they define the sampling stratification scheme of the data we use. Education in West Germany is peculiar in that it routinely involves an intensive component of occupational training (see Max Planck Institute, 1983). Nonetheless, we do not expect a priori that either general and occupational education should be related to movement into or out of self-employment. Finally, since both prestige and labor force experience have strong negative effects on overall labor force mobility, we expect that they will operate similarly for movement into self-employment.

DATA

The data we use were collected by Karl Ulrich Mayer (1979; 1981a; 1981b; 1984) and are part of the West German Life History Study. The data constitute a nationally representative sample of the life experiences of citizens in the Federal Republic of Germany and West Berlin. The sample was stratified along two dimensions: sex (half men and half women) and birth cohort (one third each from the grouped years of 1929-1931, 1939-1941, and 1949-1951). The sample was drawn from approximately 14,000 household listings in 420 primary sampling units (for details, see Brückner et. al., 1984).

From each of the 2172 respondents, professional interviewers collected a complete retrospective career history. They asked respondents the exact beginning and ending dates of each job they had ever held, including "jobs" of self-employment. For each job and self-employment experience, respondents also identified: the occupation, the industry, the size of the firm, and the beginning and ending compensation levels. Information on more general types of events such as schooling and religion was also collected.

Retrospective data do not suffer from the more serious problems of panel data such as mortality and changing measurement conditions (Featherman, 1979). However, they are potentially subject to errors of recall and for this reason Mayer and his colleagues took special precautions in ensuring the quality of the data. Prior to data collection at the national level, a pilot study was conducted in Mannheim to compare systematically data collected prospectively and retrospectively from the same individuals (see Tölke, 1980; Papastefanou, 1980). The findings were used to develop interview schedules and field procedures that generated the most accurate responses. After the national data were collected, the life-history protocols were checked thoroughly. Over 4,000 man-hours were spent reviewing the internal consistency of the interview information and soliciting initially missing data. In this task, about 15% of the respondents were contacted again in one manner or another. The pay-off from such meticulous and tedious work is demonstrated in Blossfeld's (forthcoming) analysis of the reliability of the final data. His comparisons between the life-history data and the German micro-census show no statistically significant differences across the two samples in cohort-specific, cross-sectional distributions of educational levels, occupational training, employment status, size of locality and region of residence.

Using data from West Germany also offers some advantages for measuring self-employment. Small firms in West Germany are officially designated "mittelstaendische Unternehmen." This designation requires that a firm must be legally and financially independent and that the owner must actively participate in its management (Hull, 1983). Closely related to this categorization of firms is an official employment classification scheme known as "berufliche Stellung." Besides being an official pension category, the berufliche Stellung publicly acknowledges job types in West Germany (Hartmann, 1959). This scheme categorizes self-employment separately from traditional employment, and differentiates among types of self-employment, such as agricultural,

professional and familial employment. Both classification schemes make it easier for respondents to identify themselves as self-employed. They also make it less likely that unmeaningful (perhaps tax-related) reports of self-employment are given.

Because of its representativeness, and because of its selection on the basis of birth cohorts rather than employment criteria, the life-history sample has the obvious advantage of not being biased toward the self-employed. It also has the advantage of comprehensiveness, both temporally and economically. Temporal comprehensiveness allows the analysis of self-employment dynamically as part of the career life history. Within such a context, it makes little sense to think of self-employed "persons" and much greater sense to think only of episodes of self-employment. Economic comprehensiveness allows the examination of the full range and distribution of self-employment. For this reason we do not restrict our attention to a single type of self-employment, although we do not examine self-employment in agriculture except occasionally as a control.

In line with the focus on career dynamics, our unit of analysis is the job spell, not the individual. We identify self-employment episodes of jobs with two different variables in Mayer's data. The first and most important variable is the respondent's self-reported "berufliche Stellung" classification. Because this classification scheme is widely used in the West German labor market, it is well known by the populace and hence in our opinion constitutes a reliable measure of self-employment. For this reason, we assigned priority to this variable and defined as self-employed anyone with a response that so indicates.

The second variable with we used to identify entrepreneurs is a self-reported "sector" code. This variable also asks about self-employment and, for family enterprises, it includes considerable detail about the respondent's relationship with the owner. However, because of the novelty of this classification and technical problems with this question, the answers to this question are not nearly as reliable as those to the

institutionalized Stellung question. Consequently we assigned secondary priority to this variable and used it primarily to identify persons in positions of quasi-self-employment in family firms, e.g., the wife of the legal owner of a firm who also works in the firm. Although by a general functional definition these persons might be considered self-employed, we refer to them as employed in family enterprises. Throughout our analysis, we distinguish between persons who are self-employed and those who are family members employed in family firms because, as we argued above, the labor dynamics of the two types of positions are likely to differ.

Table 1 presents some basic descriptive statistics on the employment and self-employment episodes found in Mayer's data. Of the 6732 total episodes, 279 of these -- about 4.1% -- fall within either self- or family employment. As would be expected, the highest percentage of those whose first job is an "entrepreneurial" episode are in family enterprises. The age data show a similar pattern. Also, as might be expected, fewer women are found in self-employment but more are found in the family enterprises.

[Table 1 about here]

Table 2 lists the variables used in the analysis and briefly describes how each was measured. This table also gives the variable names used in reporting estimates in tables below.

[Table 2 about here]

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ANALYSIS

To study the process by which individuals move into the out of self-employment we use the stochastic modeling framework described in Coleman (1981) and Tuma and Hannan (1984). This means that in many of the analyses the dependent variable is the instantaneous rate of movement into and out of self-employment. (In other analyses we use ordinary least squares regression techniques.) This rate is formally defined as:

$$r(t) = \lim_{dt \to 0} \frac{Pr[\text{move } t, \, t + \Delta t \mid \text{ available at } t]}{dt}$$

where $Pr(.)$ indicates the probability of a move into self-employment given that the person is "at risk" to experience such a move. We use a duration-based model of movement; intuitively, the rate can be thought of as being inversely related to the duration in a given state before a transition occurs.

Our general research strategy is to examine separately the rates of movement into self-employment and family employment. To model movements out of, rather than into, these positions, we simply redefine the risk set to include only those already holding such positions. Our goal in all analyses is to specify the rates of movement as functions of the substantive variables of interest.

It is well known that rates of job change show duration dependence (Sørensen and Tuma, 1981). Ordinarily, duration in the job shows an inverse relationship with the rate: the longer one stays in the job, the less likely one is to change jobs. Because our interest resides in the contribution of the substantive variables to self-employment behavior -- not the duration dependence of this behavior -- we have chosen not to model explicitly duration dependence. Instead we use a non-parametric specification of duration dependence, the so-called proportional hazards model of Cox (1972). This model specifies the rate to be:

$$r(t) = h(t) \exp (b_1 X_1 + ... + b_n X_n)$$

where the X's are exogenous variables of interest, the b's are coefficients estimating the effects of these variables, and $h(t)$ is some unknown nuisance function which affects every sample member in the same way. Since one need not specify the nuisance function in any greater detail, the generality of this model is very appealing. Interpretations that might be given to this function include duration dependence, as well as many other types of time-dependent or time-independent disturbances. We estimate the model with partial likelihood methods (Cox, 1975), which yield unbiased and high-quality estimates of the effects of exogenous variables (Efron, 1977). Moreover, with estimates from event-history data of the type used here, the model does not employ the usual assumption of temporal equilibrium (see Tuma and Hannan, 1984).

We begin by analyzing the rates of movement into self-employment related first jobs, i.e., instances where the initial employment experience involves either self-employment or family employment. We then examine rates of movement into self-employment at later stages in the career. Following this, we shift gears slightly and explore how self-employment affects later labor market experiences.

Self and Family Employment As First Jobs

Here we examine the rate of movement into first "jobs" only. We define the beginning of this process as date of birth and estimate the rate of movement into self and family employment first "jobs". If respondents take a first job in conventional employment, then they become "censored" at the time of entry into the job (see Tuma and Hannan, 1984). Although our interest here is in estimating the effects of independent variables on the rates of entry into these jobs, we cannot specify all the substantive variables discussed earlier because some are drawn from work histories (which, of

course, are non-existent for those who have not yet entered the labor force). Partial likelihood estimates of the effects of the available variables are presented in Table 3.

[Table 3 about here]

Only occupational education shows a statistically significant effect in the equation for entry into self-employment. This variable's effect is negative, predicting that those with higher levels of occupational education are less likely to become self-employed at labor force entry. The global test for this equation compared to a simple constant rate model -- given by the Chi square value shown in the table -- indicates no improvement of fit. Movement into full-fledged self-employment at time of entry into the labor force thus appears to be a relatively random process, a finding not totally surprising given the rarity of this event.

By contrast, the equation for initial movement into family employment shows four statistically significant variables and improves considerably over a constant rate model. Of substantive interest here are the positive effects of Protestantism and female sex. These are due to something other than parentally controlled family firms because the self-employed parents variable is not significant.

Later Movement into Self and Family Employment

We now examine how one becomes self-employed after entry into the labor force. Table 4 presents some important descriptive data on this process: it shows the probabilities of entry into self and family employment by type of position currently held, conditional on being in the labor force, and conditional on having changed "jobs." The table can be used, for instance, to infer that of those persons who were not self

or family employed, and for whom a job change was observed, approximately 2.6% entered into positions of self-employment in manufacturing, commerce or service. The vast majority of these persons -- our estimate is 96.5% -- entered into conventional jobs.

[Table 4 about here]

Several observations about entry into self-employment can be made from Table 4. First, in all instances the most likely destination for those who leave self or family employment is conventional employment. Second, those who are self-employed move only to other forms of self-employment or to conventional employment; they do not move into subordinate positions in family enterprises. Third, those employed in family enterprises frequently move into positions of self-employment. Presumably, these moves involve assuming control over family enterprises in which these individuals were previously subordinate. Since family employment attracts the highest number of first job entrants, this finding confirms our preconception that much self-employment comes only in stages that occur across the life course.

Table 5 presents partial likelihood estimates of the effects of the substantive variables on the rates of movement into self and family employment after entry into the labor force.

[Table 5 about here]

In contrast to the analysis of labor force entry, where the self-employed parents variable was not significant, here it shows larger positive and significant effects. Ev-

idently those with self-employed parents are quicker to move into family employment and self employment themselves at points in their careers other than their first jobs. This is a mildly surprising finding that we shall return to later.

The religion variables again show some support for the classic Protestant ethic argument. Protestants show a greater rate of movement into self-employment, as do the other non-Catholic religions. Interestingly, at this stage of the career, Protestants also show significant dispropensities toward family employment. When coupled with the findings from the labor force entry analysis, which showed that Protestants where more likely to move into family employment as a first job, a picture emerges of Protestants starting out early in their careers in family firms and then later moving into ownership positions. Thus it may be the entrepreneurial success of Protestants which is responsible for their lower rates of movement into family employment at this career stage.

As expected, experience in self and family employment shows positive significant effects on the rate of movement into self-employment. The effect of prior self employment is greater than that of prior family employment. It also appears that length of experience is not important, only the fact of it.

In general, these models perform much better than those estimated for labor force entry into self and family employment. This enhanced performance comes as a result of the estimated stronger effects of the three substantive variables under study.

Effects of Self and Family Employment

We now ask how the labor force experience of those in self and family employment differs from those engaged in conventional employment. We concern ourselves with three different labor force outcomes: (1) the rate of "job" change; (2) the compensation received at the beginning of the employment episode; and (3) the change in compensation

throughout the employment episode.[2] We investigate the effects of both current employment status (which tells how the self-employed differ) and prior employment status (which tells about the long-term effects of self and family employment). We use partial likelihood techniques for the rate analyses and ordinary least squares procedures for the wage analyses.

Table 6 presents estimates of the differences in labor force outcomes. The variables labelled ENT1 through ENT4 are dummies for current occupancy of each of four types of self and family employment (because we want the comparison to be with conventional employment, we include dummies for self and family employment in agriculture). The coefficients of these variables estimate the difference between a given type of self or family employment and conventional employment; comparisons of the coefficients with each other yield estimates of the differences between the types of self and family employment. The variables labelled PENT1 through PENT4 are dummy variables indicating prior experience in self or family employment; these coefficients estimate the long-lasting effects of such positions. We present two equations for each type of labor force outcome. The first estimates the effects of current self and family employment, controlling for standard labor force characteristics. The second equation includes also the effects of prior experience in either status.

[Table 6 about here]

Perhaps the most interesting effect of self and family employment is that of stability. Although entrepreneurship, and by association self employment, often invokes an imagery of risk (Knight, 1921), the estimates here show the reverse to be true: in all instances, the self and family employed have significantly lower rates of "job" change than the conventionally employed. Moreover, the point estimates of the coefficients

suggest that the ownership position is more stable than family employment. Apparently self-employment is one of the most stable positions in the labor force, despite high rates of business failure.

Prior self and family employment show far fewer effects on rates of job change. Only for family employment in manufacturing, commerce, and service is a statistically significant difference with conventional employment found. This effect is positive, indicating that those who have previously been employed by the family firm in manufacturing, commerce or service have less stable careers than others.

In terms of compensation, employment status also shows strong effects. For starting wages, self-employment outside agriculture involves considerably higher compensation. By contrast, family employment and self employment in agriculture show less compensation than the average conventionally employed person. However, these estimates may be misleading since they concern self-reported wage, not profit. They also ignore indirect benefits accruing through the accumulation of family assets.

For the change in wage equations, no significant differences are found between conventional employment and self and family employment in the non-agricultural sector. Similarly, prior self or family employment shows few wage effects of either kind. The only exception is that prior family employment apparently has a positive effect on later starting wages.

DISCUSSION

One of our primary goals here has been to show that using a life-course perspective on self-employment and entrepreneurship gives a much different image than the usual static, cross-sectional perspective. By now, that difference should be obvious. We have seen that the probability of a person entering into self-employment at any stage in the life cycle is heavily dependent upon prior engagement in self or family employ-

ment. Perhaps even more important, we have seen that important individual characteristics such as religion affect some aspects of the self-employment process and not others. Such finding could be ascertained only with great difficulty -- if at all -- from the usual static research design (see, for example, other studies of religion: J. Carroll, 1965; Jeremy, 1984; Singh, 1985).

Similarly, the finding of greater "job" stability among the self and family employed addresses a question that does not even occur to those using a static research design. Yet this important implication of self and family employment may attract many to these positions. It may also be partly responsible for the retention of diverse organizational solutions in society, an important industrial policy issue.

In substantive terms, our findings point to the strong role of social structures in affecting who becomes self-employed. Generally speaking, Protestants are more likely than Catholics to become self-employed but the ways in which they do so depend heavily on their career stage and often involve a sequential process beginning with family employment. Likewise, having self-employed parents affects the likelihood of a person becoming self-employed or family-employed but only after one has already participated in the labor market in some other fashion.

The overall picture of self-employment which emerges from our analysis is more complex than that used by any of the four literatures reviewed earlier. While we have not had the data needed to test the arguments about individual attributes of the kind used in the entrepreneurship literature, our findings show that at a minimum these theories are incomplete explanations and need to take social structural variables into account. On the other side of the coin, sociological theories of class and careers tend to be incomplete explanations themselves because of their failure to consider life-course dynamics. Obviously, what is needed here is more research drawing from ideas found in all these literatures.

Progress in this area may have wide implications. Although organizational theory has traditionally focused on the structure and activities of already existing organizations, recent theoretical developments reflect an interest in broader organizational phenomena. Within each of three major new theoretical perspectives -- organizational ecology (Hannan and Freeman, 1974), institutional organizational sociology (Meyer and Rowan, 1977), and transaction cost economics (Williamson, 1975) -- the processes by which organizations are founded or disestablished have become theoretical focal points. Consequently, development of organizational theory depends, at least in part, on solid empirical research on self-employment from all perspectives.

FOOTNOTES

1. The selection bias problem remains, however, when analysis focuses on the initial owner-manager or founder of a family firm.

2. Since our compensation data is self-reported, interpretation is somewhat ambiguous especially for the self and family employed. Nonetheless, we treat them as though they are accurate measures of financial returns and comparable across types of employment.

REFERENCES

Ahmed, M.

1977   "An analysis of small-scale entrepreneurs in the Irish plastics industry," Economic and Social Review, 8: 279-304.

Bechhofer, Frank and Brian Elliot (eds.)

1981   The Petite Bourgeoisie, New York: St. Martins.

Berle, A.A., Jr. and Gardiner C. Means

1932   The Modern Corporation and Private Property, New York: Macmillan.

Blok, Anton

1974   Mafia of a Sicilian Village 1860-1960: A Study of Violent Peasant Entrepreneurs, Oxford: Blackwell.

Blossfeld, Peter

Forthcoming "Zur Reprasentativstat der Sfb 3-Lebensverlaufsstudie, Ein Vergleich aus der Amtlichen Statistik," Allegemeines Statistiches Archiv.

Bonacich, Edna

1973   "A theory of middleman minorities," American Sociological Review, 38: 583-594.

Borjas, George

1986   "The self-employment experience of immigrants," Working Paper No. 1942, National Bureau of Economic Research, Cambridge, MA.

Boswell, Jonathan

1972   The Rise and Decline of Small Firms. London: George Allen and Unwin.

Bruchey, Stuart W. (ed.)

1980   Small Business in American Life. New York: Columbia University Press.

Brückner, F., J. Hoffmeyer-Zlotnik, H. Kirschner and M. Wiedenbeck

1984 "Methodenreport 'Lebensverlaufe.'" ZUMA Technischer Bericht Nr. T84/08. Mannheim, Federal Republic of Germany.

Carroll, Glenn R.

1984 "Organizational ecology," Annual Review of Sociology, 10: 71-93.

Carroll, Glenn R. and Karl Ulrich Mayer

1986 "Job-shift patterns in the Federal Republic of Germany: The effects of social class, industrial sector, and organizational size," American Sociological Review, 51: 323-341.

Carroll, John J.

1965 The Filipino Manufacturing Entrepreneur. Ithaca, New York: Cornell University Press.

Cochran, Thomas C.

1968 "Entrepreneurship," pp. 87-91 in International Encyclopedia of the Social Sciences, D. Sills (ed.). New York: Macmillan.

Coleman, James S.

1981 Longitudinal Data Analysis. New York: Basic.

Collins Orvis and David G. Moore

1970 The Organization Makers: A Behavioral Study of Independent Entrepreneurs. New York: Appleton-Century Crofts.

Copeman, G. H.

1955 Leaders of British Industry: A Study of the Careers of More Than a Thousand Public Company Directors. London: Gee.

Cox, D. R.

1972   "Regression models and life tables," Journal of the Royal Statistical Society, B34: 187-220.

1975   "Partial likelihood," Biometrika, 62: 260-276.

Curran, James and Roger Burrows

1986   "The sociology of petit capitalism: A trend report," Sociology, 20: 265-269.

Domar, Evsey

1968   "The entrepreneur: Discussion," American Economic Review, 58: 93-94.

Efron, Bradley

1977   "The efficiency of Cox's likelihood function for censored data," Journal of the American Statistical Association, 72: 557-565.

Erickson, C.

1959   British Industrialists: Steel and Hosiery, 1850-1950. Cambridge: Cambridge Press.

Featherman, David

1979   "Retrospective longitudinal research: Methodological considerations," Journal of Economics and Business, 32: 152-169.

Freeman, John

1984   "Entrepreneurs as Organizational Products," paper presented at Business/ Academic Dialogue, University of Arizona, Tucson.

Fuchs, Victor R.

1982   "Self-employment and labor force participation of older males," Journal of Human Resources, 17: 334-357.

Goldthorpe, John H.

1980   Social Mobility and Class Structure in Modern Britain. Oxford: Clarendon.

Hachen, David

1986   "Career mobility patterns in the U.S.: A dynamic analysis of job-shift rates," Unpublished manuscript, University of Washington, Department of Sociology.

Hagen, Everett E.

1962   On the Theory of Social Change: How Economic Growth Begins. Homewood, Ill.: Dorsey.

Hall, Douglas T.

1976   Careers in Organizations. Glenview, Ill.: Scott, Foresman.

Hannan, Michael T. and John Freeman

1977   "The population ecology of organizations," American Journal of Sociology, 82: 929-964.

Hartmann, Heinz

1959   Authority and Organization in German Management. Princeton, NJ: Princeton University.

Heckman, James J.

1979   "Sample selection bias as a specification error," Econometrica, 47: 153-161.

Hogan, Dennis P.

1980   "The transition to adulthood as a career contingency," American Sociological Review, 45: 261-276.

Hull, Chris

1983   "The Federal Republic of Germany," in David J. Storey (ed.), The Small Firm: An International Survey. London: Croom Helm.

Jeremy, David J

1984   "Anatomy of the British business elite, 1860-1980," Business History, 26: 3-23.

Kaplan, Paul and Cynthia Hsien Huang

1974   "Achievement orientation of small industrial entrepreneurs in the Philippines," Human Organization, 33: 173-182.

Kimberly, John and Robert Miles (eds.)

1981   The Organizational Life Cycle. San Francisco: Jossey-Bass.

Knight, Frank H.

1921   Risk, Uncertainty and Profit. Chicago: University of Chicago Press.

Lamont, Lawrence M.

1975   "What entrepreneurs learn from experience," in Entrepreneurship and Venture Management, Clifford M. Raumback and Joseph R. Mancuso, eds., Englewood Cliffs, NJ: Prentice-Hall.

Lawrence, Peter

1980   Managers and Management in West Germany. London: Croom Helm.

Mathias, Peter

1967   "The entrepreneur in brewing 1700-1830," pp. 309-326 in H. G. J. Aitken (ed.), Explorations in Enterprise. Cambridge: Harvard University Press.

Mayer, Karl Ulrich

1970   Lebensverlaufe and Wohlfahrtsentwicklung. Antrag auf Einrichtung and Finanzierung des Sfb3 "mikroanalytische Grundlagen der Gesellschaftspolitik." Frankfurt am Main/Mannheim, Federal Republic of Germany.

1981a Lebensverlaufe und Wohlfahrtsentwicklung. Bericht ueber die Forschungstaetigkeit in der ersten Forschungsphase 1979-1981. Frankfurt am Main/Mannheim.

1981b Lebensverlaufe und Wohlfahrtsentwicklung. Antrag auf Forderung fuer die zwiete Forschungsphase 1982-1984. Frankfurt am Main/Mannheim.

1984 Lebensverlaufe und Wohlfahrtsentwicklung. Antrag auf Forderung fuer die dritte Forschungsphase 1985-1987. Frankfurt am Main/Mannheim.

Mayer, Karl Ulrich and Glenn R. Carroll
1987 "Jobs and classes: Structural constraints on career mobility," European Sociological Review, forthcoming.

Max Planck Institute for Human Development and Education
1983 Between Elite and Mass Education. Albany, NY: SUNY Press.

McClelland, David C.
1967 The Achieving Society. New York: Free Press.

Meyer, John W. and Brian Rowan
1977 "Formal structure of organizations as myth and ceremony," American Journal of Sociology, 83: 340-363.

Miller, Danny and Cornelia Dröge
1987 "Psychological and traditional determinants of structure," Administrative Science Quarterly, 31: 539-560.

Mintzberg, Henry
1979 The Structuring of Organizations. Englewood Cliff, NJ: Prentice-Hall.

Nafziger, F. Wayne

1978   Class, Caste, and Entrepreneurship: A Study of Indian Industrialists. Honolulu, Hawaii: The University Press of Hawaii.

Papastefanou, Georgios

1980   "Zur Gute von Retrospektiven Daten - Eine Anwendung Gedachnispsychologischer Theorie and Ergebnisse einer Nachtetragung. Frankfurt am Main/Mannheim, Sfb-3, Arbeitspapier Nr. 29.

Pelzel, John

1963   "The small industrialist in Japan," pp. 163-183 in H. G. J. Aitken (ed.), Explorations in Enterprise. Cambridge: Harvard Press.

Penrose, Edith

1959   The Theory of Growth in the Firm. Oxford: Blackwell.

Prais, S. J.

1975   "Large and Small Manufacturing Enterprises in Europe and America," unpublished paper, discussed in Lawrence (1980:33).

Riise-Jorgensen, Karin

1984   Equal Opportunities and Vocational Training: Qualification and Educational Needs of Co-Working Spouses of Owners of Small and Medium-Sized Enterprises. Luxembourg: Office for Official Publications of the European Communities.

Scase, R. and R. Goffee

1982   The Entrepreneurial Middle Class. London: Croom Helm.

Singh, Schcobahal

1985   "Relevance of social factors in entrepreneurial growth," Journal of Sociological
        Studies, 4: 72-85.

Sørensen, Aage

1975   "Intergenerational mobility," American Sociological Review, 40: 456-471.

Sørensen, Aage and Nancy Brandon Tuma

1981   "Labor market structures and job mobility," Research in Social Stratification
        and Mobility, 1: 67-94.

Spilerman, Seymour

1977   "Careers, labor market structure and socioeconomic achievement," American
        Journal of Sociology, 83: 551-593.

Stepanek, Joseph F.

1980   Managers for Small Industry: An International Study. Menlo Park, CA:
        Stanford Research Institute.

Stinchcombe, Arthur S.

1979   "Social mobility in industrial labor markets," Acta Sociologica, 22: 217-245.

Taussig, F. W. and C. S. Joslyn

1932   American Business Leaders: A Study in Social Origins and Social Stratification.
        New York: Macmillan.

Toivonen, Timo

1985   "The entrepreneurs in Denmark, Finland and Sweden, 1930-70," Acta
        Sociologica, 28: 193-205.

Tölke, Angelika

1980   "Zuverlässigkeit Retrospektiver Verlaufsdaten - Qualitativ Ergebnisse einer Nachbefragung," Frankfurt am Main/Mannheim, Sfb-3, Arbeitspapier Nr. 30.

Tuma, Nancy Brandon and Michael T. Hannan

1984   Social Dynamics: Models and Methods. New York: Academic.

Weber, Max

1930   The Protestant Ethic and the Spirit of Capitalism. London: Allen and Unwin.

Wegener, Berndt

1985   "Gibt es Sozial Prestige? Konstruktion and Validitaet der Magnitude-Prestigeskala." ZUMA Arbeitbericht Nr. 84/02. Mannheim, Federal Republic of Germany. Forthcoming in Zeitschrift fuer Soziologie.

Williamson, Oliver E.

1975   Markets and Hierarchies. New York: Free Press.

Wright, Erik Olin and Luca Perrone

1977   "Marxist class categories and income inequality," American Sociological Review, 42: 32-55.

Year Book of Labor Statistics

1966-85 Geneva: International Labour Office.

Young, F. W.

1971   "A macro-sociological interpretation of entrepreneurship," in Peter Kilby (ed.), Entrepreneurship and Economic Development. New York: Free Press.

Table 1. Characteristics of the Self and Family Employed

	Number of Episodes	% as First Jobs	% Held by Women	Mean Age at Beginning of Episode (in Years)	Mean Firm Size (in Number of Employees)	Median Firm Size (in Number of Employees)
Self-employed in manufacturing, commerce and service	174	5.2	26.4	30.5	11.7	1.20
Employed in family enterprise in manufacturing, commerce and service	105	41.9	58.1	23.1	8.56	1.74
All job spells in sample	6732	31.5	2.9	23.8	457.	35.

Table 2. Variables Used in the Analysis

Variable	Variable Name	Description
Sex	SEX	Dummy variable which takes the value of one for women and zero for men.
Cohort	C2	Dummy variable which takes the value of one for those born in the years 1939-41; otherwise it is zero.
Cohort	C3	Dummy variable which takes the value of one for those born in the years 1949-51; otherwise it is zero.
General Education	GED	Scale of highest level of general education completed. Takes the values: 0 if no degree 1 if elementary school degree 2 if secondary school degree.
Occupational Education	OED	Scale of highest level of occupational education completed. Takes the values: 1 if no vocational training 2 if apprenticeship 3 if skilled worker training 4 if technical school degree 5 if university degree.
Occupational Prestige	STATUS	Scale of social prestige of occupation. Based on the extensive work of Wegner (1985) using German survey data.
Labor Force Experience	LFX	Measured as the number of months elapsed since entry into first job.
Self-employed Parents	ENTP	Dummy variable which takes the value of one if either parent was self-employed; otherwise it is zero.
Religion	PROT	Dummy variable which takes the value of one for Protestants and zero for others.
Religion	OTHER	Dummy variable which takes the value of one for Catholics and Protestants; otherwise it is zero.
Self-employment Experience	EDUR	Duration in prior self-employed positions, measured in months.
Self-employment Experience	ETIMES	Number of different prior episodes of self-employment.
Self-employment Experience	ENT1 PENT1	Dummy variables which take the value of one for current and prior self-employment, respectively, in manufacturing, commerce and service.
Family-employment Experience	ENT2 PENT2	Dummy variables which take the value of one for current and prior family employment, respectively, in manufacturing, commerce and service.
Agricultural Self-employment Experience	ENT3 PENT3	Dummy variables which take the value of one for current and prior self-employment, respectively, in agriculture.
Agricultural Family Employment Experience	ENT4 PENT4	Dummy variables which take the value of one for current and prior family employment, respectively, in agriculture.

Table 3. Partial Likelihood Estimates of the Rates of Movement into Self and
Family Employment at Labor Force Entry
(standard errors shown in parentheses)

Dependent State	C2	C3	SEX	GED	OED	ENTP	PROT	OTHER	Chi^2	D.F.	N
Self-employed in manufacturing, commerce, and service	.554 (.792)	-.845 (1.17)	-.810 (.862)	-.552 (.460)	-.862* (.506)	.111 (.868)	.741 (.776)	-5.43 (80.5)	12.2	8	2051
Employed in family enterprise, in manufacturing, commerce, and service	-3.24* (1.88)	.884* (.435)	1.68* (.404)	.114 (6.10)	3.27 (2.59)	-6.79 (7.71)	.983* (.362)	-2.18 (32.9)	170.	8	2118

* p ≤ .05 (one-tailed test)

Table 4. Conditional Probabilities of Entry into Self and Family Employment
by Type of Position Currently Held

Origin \ Destination	Conventional employment and agriculture	Self-employed in manufacturing, commerce, and service	Employed in family enterprise in manufacturing, commerce, and service	Total of Origin
Conventional employment	.965	.026	.009	1.00
Self-employed in manufacturing, commerce, and service	.77	.23	0	1.00
Employed in family enterprise in manufacuturing, commerce, and service	.52	.26	.22	1.00

1

Table 5. Partial Likelihood Estimates of the Rate of Movement into Self and
Family Employment after Entry into Labor Force
(standard errors shown in parentheses)

Dependent State	C2	C3	SEX	GED	OED	STATUS	LFX	ENTP
Self-employed in manufacturing, commerce, and service	.201 (.197)	.423* (.243)	-.123 (.193)	.139 (.180)	.197 (.120)	-.004 (.005)	-.0002 (.001)	1.06* (.180)
Self-employed in manufacturing, commerce, and service	.158 (.197)	.401* (.242)	-.081 (.193)	.129 (.176)	.196 (.120)	-.005 (.005)	-.001 (.001)	.969* (.187)
Employed in family enterprise in manufacturing, commerce, and service	.880* (.346)	.132 (.466)	.325 (.319)	-.047 (.350)	-.071 (.256)	-.016 (.012)	-.009* (.003)	1.93* (.299)

* $p \le .05$ (one-tailed test)

PROT	OTHER	EDUR	PENT1	PENT2	Chi^2	D.F.	N
.262 (.172)	.879* (.522)	.002 (.002)	-	-	59.2	11	5310
.286* (.173)	.922* (.522)	-	1.31* (.384)	.727* (.347)	79.5	12	5311
-.512* (.299)	-6.26 (32.4)	.001 (.001)	-	-	85.6	11	6015

1

Table 6. Estimates of the Effects of Current and Prior Self and Family
Employment on Labor Force Outcomes
(standard errors shown in parentheses)

Dependent Variable	Intercept	C2	C3	SEX	GED	OED	STATUS	LFX
Rate of Job Change	-	.129* (.036)	.208* (.040)	.246* (.032)	.162* (.034)	-.055* (.024)	-.007* (.001)	-.004* (.0002)
Rate of Job Change	-	.129* (.036)	.208* (.040)	.246* (.032)	.162* (.034)	-.059* (.024)	-.007* (.001)	-.004* (.0002)
Log Starting Wage	5.73	.340* (.024)	.671* (.026)	-.520* (.020)	.094* (.020)	.117* (.015)	.005* (.001)	.003* (.0001)
Log Starting Wage	5.76	.335* (.024)	.665* (.026)	-.520* (.020)	.093* (.020)	.114* (.015)	.005* (.001)	.003* (.0001)
Change in Wage	1040.	51.4* (19.8)	44.1* (23.4)	-132. (17.1)	69.7* (16.1)	5.34 (11.7)	1.76* (.496)	-.353* (.106)
Change in Wage	1040.	51.0* (19.9)	43.8* (23.4)	-133.* (17.1)	59.9* (16.1)	4.92 (11.7)	1.76* (.496)	-.341* (.108)

* $p \leq .05$ (one-tailed test)
# Reported measure of fit is R^1 for the regression equations and Chi^2 for the rate equations.

ENT1	ENT2	ENT3	ENT4	PENT1	PENT2	PENT3	PENT4
-.727* (.124)	-.542* (.130)	-1.77* (.290)	-.245* (.087)	-	-	-	-
-.793* (.127)	-.622* (.133)	-1.76* (.294)	-.250* (.088)	.084 (.163)	.390* (.126)	-.655 (.410)	-.022 (.089)
.467* (.065)	-.211* (.098)	-.546* (.210)	-1.75* (.163)	-	-	-	-
.443* (.066)	-.257* (.099)	-.370* (.213)	-1.72* (.163)	.062 (.078)	.153* (.071)	.084 (.191)	-.303* (.059)
-55.4 (55.3)	9.57 (78.6)	774.* (158.)	-347.* (132.)	-	-	-	-
-56.6 (55.6)	11.6 (80.1)	801.* (161.)	-346.* (132.)	15.9 (64.3)	-11.8 (56.5)	-179. (150.)	-18.3 (48.0)

DUR	LAMAGE	FIT#	D.F.	N
-	-	761	11	5802
-	-	770	15	5802
-	-	.413	11	4335
-	-	.417	15	4335
1.43* (.117)	-165.* (12.3)	.110	13	3879
1.43* (.117)	-165.* (12.4)	.110	17	3879