

Status in the Workplace: Evidence from M&A

Abstract

Using mergers and acquisitions as a natural experiment, this paper analyzes how changes in workers' status in the workplace affect their turnover decisions. The evidence suggests that workers have different preferences for status depending on reference group. When compared with co-workers in the same occupation, workers positively value their status. However, when compared with workers in other occupations in the same firm, workers negatively value their status. Workers seem to give up absolute wage increase for higher status within occupation, which suggests that preference for status stems from status' social value, not from its instrumental value for future income.

One of the most basic social phenomena is that people compare their circumstances and attributes with those of others.¹ For example, they may compare their wage, authority, or beauty, with that of co-workers, neighbors, and friends. The perceived relative standings, called *status*, can lead to frustration or satisfaction, which in turn can affect job performance and turnovers.

Although status is one of the most central concepts in sociology, it has been slow to make inroads into mainstream economics.² To bridge this gap we set out to answer three empirical questions. Using changes in workers' status, as measured by *relative pay* or *relative rank*, during mergers and acquisitions (henceforth M&A), we ask: (i) whether people care about their status at all; (ii) which reference group(s) matters for status in the workplace; and (iii) whether workers care more about status for social reasons such as prestige and respect, or for pecuniary reasons such as wage growth.

Research on status has provided new insights in personnel policy, organization design, and market strategy (Martin 1981, Fershtman, Weiss, and Hvide 2001, Besley and Ghatak 2008), aggregate consumption (Veblen 1949; Duesenberry 1949; Bourdieu 1984), wage compression (Frank 1985), internal labor market (Gylfason and Lindbeck 1984, Solow 1990), involuntary unemployment (Akerlof and Yellen 1990), saving and growth (Fershtman et al. 1996), tax policy (Boskin and Sheshinski 1978, Abel 2005), income distribution (Becker et al. 2005), market competition (Podolny 2005), and social welfare (Durkheim 1951, Townsend 1979).

¹ See Jasso (1990) for a comprehensive survey of comparison theories in sociology.

² There may be many reasons for the paucity of research on status in economics. One is the lack of convincing empirical evidence. Another is associated with technical difficulties. For example, equilibrium may not exist in many models. Another is the implicit "individualism" assumption in neoclassical economics. (Kjosavik 2003).

However, hard evidence on the role of status, especially in the workplace, is inconclusive if not scarce³. A rigorous quantitative analysis of status must address three challenges. First, status is endogenously determined by individuals' unobserved characteristics, such as ability or ambition. To address this endogeneity problem, one must find an exogenous shock to status, that is, an event that affects the wages of a worker's colleagues, but not the wage of the worker him/herself. Second, we have surprisingly little understanding of workers' reference groups, i.e. those with whom workers compare themselves. As a result, it is unclear whether to measure relative wages with respect to other workers in the same occupation, with all the workers in the same firm, with workers in other firms, etc. As we will demonstrate later, a misspecification of reference group can bias the estimation results, and their resulting theoretical interpretations. Third, it is difficult to conclude whether observed concerns about status are due to social preference as assumed in the theoretical literature or to other factors. For example, workers may care about their status because it is a signal of ability that affects their future market wages, not because they care about others' wages or status *per se*.

Our empirical analysis of status attempts to address these three challenges and to add insights to the theoretical literature on status. The starting point of our analysis is the identification of exogenous changes in workers' status within firms. Such changes can arise during M&As. In these cases, workers are introduced to a large pool of new co-workers, and their status within occupation or firm may change significantly. Since an average worker cannot affect the M&A decision, the changes in status during M&As can be considered exogenous to any individual worker's characteristics. Moreover, M&As change workers' status only within the firm's boundary. In other words, M&As are

³ There are many cases studies especially in social psychology. (see, e.g., Hogg and Terry 2001)

unlikely to change a worker's status among friends, neighbors, or workers in other firms. Therefore, we can focus on reference groups within firms without worrying about possible bias from omitting status in other reference groups. In particular, we focus on two natural reference groups within the firm: (i) workers in the same occupation group (e.g. marketing department) and (ii) all workers in the same firm.

We construct personnel data of merging firms for more than 400 M&As from the Swedish employer-employee matched data, which present unprecedented scope and detail. Our analysis shows that an increase in status with respect to co-workers in the same occupation, (henceforth *status within occupation*), leads to lower probability of turnover, which suggests a preference for high status within occupation. The preference for a one standard deviation increase in status within occupation is equivalent to that for a 6.8% increase in wages. Interestingly, however, holding status within occupation constant, an increase in status with respect to all the workers in the same firm, (henceforth *status within firm*), leads to higher turnover rates, which suggests preference for low status within a firm. Although the latter result is somewhat counter-intuitive, as we discuss later, it is consistent with extant theories in the literature. These results show not only the importance and complexity of status concerns in the workplace, but also the significance of controlling for multiple reference groups.

We also show that an increase in status within occupation during M&A leads to *lower* wage growth rates after the M&A. This finding is important, as it suggests that high status is not instrumental for future pecuniary rewards, but that workers are willing to give up (or be less aggressive in pursuing) their pecuniary payoffs in exchange for

additional social rewards from increased status⁴. It also suggests the existence of a ‘market for status’ as theorized by Frank (1985) and Becker et al. (2005).

Previous empirical studies have largely ignored the endogeneity of status (e.g. Pritchard, Dunnette, and Jorgenson 1972, Valenzi and Andrews 1971, Clark and Oswald 1996, Martin 2003, and Brown et. al. 2007)⁵. While Luttmer (2005) attempts to control for individuals’ and reference groups’ unobserved characteristics using fixed effects, this method leaves insufficient variation in the data to give accurate estimates . Moreover, many of these studies analyze the effect of status on subjective satisfaction (happiness) ratings (see also Layard 2005). It is well known, however, that in such surveys and experiments people often report relative satisfaction ratings instead of absolute satisfaction ratings, which potentially undermines the purpose of these studies. (see Tversky and Griffin 1991 and Frederick and Loewenstein 1999)⁶ Galizzi and Lang (1998) study how relative wages influence on turnover behavior, but likewise fail to control for unobserved individual characteristics⁷.

It is worth emphasizing that all of these studies have chosen reference groups arbitrarily (often according to the availability of data), and that none allows for the possibility of multiple reference groups⁸. For example, Clark and Oswald (1996) measure relative wage with respect to a national survey, Luttmer (2005) with respect to neighbors,

⁴ Zizzo and Oswald (2001) provides the related experimental evidence.

⁵ A potential exception includes Neumark and Postlewaite (1998) which shows how married women’s labor market participation is affected by the wage of a sister-in-law.

⁶ Also see Bertrand and Mullainathan (2001) on the problems of using self-reported measures of happiness.

⁷ Experimental studies can control these issues directly. However, the limitation of lab experiments is the standard one of external validity. Given that social preference arises from complex social interactions among heterogeneous agents, it is difficult to recreate such social interactions in a lab. See Fehr and Schmidt (2005) for a survey of experimental evidence.

⁸ There is an old tradition in the theoretical literature in sociology distinguishing multiple reference groups. (see Merton 1949 and 1957, Berger, Zelditch, Anderson, and Cohen 1972, and Jasso 1980). In economics, Frank (1985), for instance, discusses various reference groups. However research on multiple reference groups is plagued by paucity of data and hence lacks empirical analysis.

and Galizzi and Lang (1998) with respect to all workers in a firm⁹. However, it is possible that people may care about their status with respect to co-workers in the same occupation, rather than to everyone in a firm, or that they may care about status with respect to friends, rather than to all neighbors, or to a whole country. Our results show that the misspecification of reference group can bias the results and that preference for status in one reference group cannot be generalized to preference for status in other reference groups.

Most previous empirical studies have also focused on *whether* people care about their status, but not necessarily on *why*. For example, many studies simply *assume* that people care about status for the social benefits they derive from it, such as prestige, respect, or perceived fairness. Other studies assume that the observed preference for status is due to status' instrumental value for future pecuniary benefits such as larger wages or faster promotions¹⁰ (e.g. Galizzi and Lang 1998). Aside from experimental evidence (e.g. Zizzo and Oswald 2001, Brown et. al. 2007), this paper is one of the few field studies that formally test the underlying preference for status¹¹.

The paper is organized as follows. In section I, we summarize the theoretical literature on status. Section II describes our empirical methodology. We describe the data and the construction of variables in section III. In section IV, we examine how changes in status in different reference groups affect workers' turnover rates, and infer their preference for status. Section V investigates whether the observed preference for status is due to (i) the instrumental value of status for pecuniary rewards or (ii) the social value of

⁹ Similarly, in theoretical models, Akerlof and Yellen (1990) takes workers in the same firm as a reference group, while Summers (1986) takes comparable workers in other firms as a reference group.

¹⁰ For more detailed discussion of the distinction between social value and instrumental value, see Sobel (2005).

¹¹ Luttmer (2005) also provides suggestive evidence for the social value of status.

status as prestige and respect. We discuss further evidence in section VI, and conclude in section VII.

I. Theoretical Framework

In this section, we survey various theories in sociology and economics that address why and how workers may care about their status in the workplace. Note that throughout the paper, we refer to relative wage as status (specific measures of relative wage are discussed later) without pre-imposing any social/economic value on status. We will also discuss an alternative measure of status based on job titles/ranks within a firm instead of on wages.

A. Status and Social Rewards

Concerns about status can arise if status enters directly into a person's utility function, called *social preference*. For example, social preference can take the following form:

$$U_i^S = U(w_i, s_i) \tag{1}$$

where w_i is worker i 's absolute income, and $s_i = s(w_1, w_2, \dots, w_n)$ is worker i 's status within a reference group of n workers. Note that s_i is a function of others' incomes in the reference group¹².

¹² Jasso (2001) discusses how the different sociological theories mentioned above imply different functional form of $s(\cdot)$. However, identifying the functional form of $s(\cdot)$ and distinguishing different theories within the sociology literature is outside the scope of this paper, and is pursued in a separate paper.

Sociology provides various theories on how status can enter into a social preference. In *social status* theory, status within a particular group can signify prestige, honor, esteem, or respect. (see, e.g., Goode 1978, Sorensen 1979, Jasso 2001) Here members of the group positively value their own status. In *equity* theory, lower status can represent an individual's perceived inequity in terms of monetary compensation. Thus, holding everything else constant, a lower status decreases the individual's utility. In particular, when a person attempts to restore equity in other dimensions (e.g. by shirking), the individual's perception of status affects his or her behavior and welfare. (Adams 1963, 1965, see also Akerlof and Yellen 1990) Similarly, in *relative deprivation* theory (Stouffer et al. 1949) or social exchange theory (Blau 1955, Homans 1961), the utility of an individual decreases when his or her status is lower than the status of comparable others. Frank (1985) and Fershtman and Weiss (1998) also provide evolutionary justification for such preferences¹³.

B. Status and Pecuniary Rewards

In contrast to sociological theories, standard economics models have shown that concerns about status can be explained without relying on the concepts of social rewards or social preference. For example, people may positively value status because it serves as a signal of the worker's unobserved quality, especially when the market only observes the worker's status, not the absolute wage. Then, a higher status can signal higher quality and lead to larger future income (see, e.g., Podolny 2005). Also, in a tournament of promotions, a worker may positively value status because future expected payoffs increase with higher status, or relative ranking. (e.g., Lazear and Rosen 1981)

¹³ See Akerlof and Yellen (1990) for a more detailed summary.

Consequently, a worker will positively value status not because of its own social rewards, but because of its instrumental value for his/her future pecuniary rewards. Weber (1922) also suggests that the value of status arises partly because high status provides access to better resources and opportunities.

Such pecuniary preference for status can be summarized with the following utility function:

$$U_i^P = U(w_{it}, w_{it+1}(s_{it})) \quad (2)$$

where t is a time index. Note that unlike the social preference in (1), if we hold all the pecuniary benefits (w_{it}, w_{it+1}) constant, utility does not depend on status.

C. Preference for low status?

It is interesting to note that both social reward theories and pecuniary reward theories predict that workers may prefer lower status in a particular reference group. In social status theory, a worker may prefer a *lower* status within a firm, holding everything else constant, in order to work with relatively higher-quality (and better-paid) co-workers who can raise the status of the firm. For example, an economics job candidate may prefer a top-ranked department for its department prestige, even though his/her status within the top-ranked department may be quite low. This idea is captured by the concept of the ‘status group’ in Weber (1922) or the ‘halo effect’ in Frank (1985)¹⁴. Similarly, in equity theory and relative deprivation theory, when workers interact with people outside the

¹⁴ See also Ridgeway (1991) and Jasso (2001). Formally, we can specify a reduced-form utility function as $U_i^S = U(w_i, s_i, s_F(s_i))$ where s_F is the status of the firm in the economy and $s_F' < 0$.

firm, they may care about equity or fairness in terms of their firm's relative standing with respect to other firms.

People may also negatively value their status because high status can lead to lower future income, i.e., $w'_{it+1}(s_{it}) < 0$ in (2). For example, high status could mean that there is no more opportunity for future promotions or wage increases (the dead-end effect; see Galizzi and Lang 1998). Then, workers, holding everything else constant, would prefer lower status. Moreover, the economics job candidate mentioned above may prefer a top-ranked department because he or she can learn from higher quality (i.e. better paid) co-workers. (the learning effect; see Frank 1985) Finally, in the context of M&As, if the average wage of workers in the acquiring firm is higher than that in the acquired firm, the workers in the acquiring firm may be afraid that their wages will be reduced after M&A(wage compression effect)¹⁵, even though their status within the firm would increase.

We can summarize these theories of status as follows:

[Table 1 here]

II. Empirical Strategy

To investigate whether and how workers value their status, we study changes in workers' status during M&A and workers' subsequent turnover behaviors.

¹⁵ For example, American Airlines pilots opposed the merger with Reno Airlines partly because they were afraid that their wages would not increase much and that their jobs would be replaced by cheaper Reno pilots. (Cimini 1999)

A. M&A as a Natural Experiment

Three key features of M&As make them attractive natural experiments. First, in typical panel data, a worker's status changes over time mostly because his or her absolute income changes. Therefore, if one controls for absolute income and other unobserved individual characteristics, there is insufficient variations in the status of an individual to identify the effect of status. (see e.g. Luttmer (2005) Table II) However, during an M&A, a large pool of new co-workers is introduced to the merged firm. A worker's status within the firm may change significantly even if nothing about the worker him- or herself, such as absolute income, has changed. This makes it possible to identify the effect of status on workers' behavior.

Second, changes in status during M&As are for the most part exogenous to individual workers' (unobserved) characteristics, because an individual worker is unlikely to influence merger and acquisition decisions. This contrasts with the typical situation, in which a worker's status within a firm and/or an occupation is endogenously determined by the worker's ability and ambition, the worker's choice of a firm, and the firm's promotion and wage policies. These factors have made it difficult to find a natural experiment that can affect a worker's status without influencing the worker's other characteristics, but they are addressed by the special cases of M&As.

The third feature of M&As are their influence on a worker's status solely within the firm boundary. For example, a worker's status within a specific department or within the whole firm will change, but the worker's status among neighbors or friends is unlikely to change due to an M&A. Therefore, we can focus on reference groups within the firm, ignoring other reference groups outside the firm.

A potential shortcoming of this approach is that M&As change various aspects of a company, other than the workers' status. If changes in status are correlated with other changes in, for example, productivity or organizational structure, the measured effect of status may reflect the effect of other (unobserved) structural changes. To address this concern, we construct various *distance* measures that capture the differences between merging firms in terms of structures of wage, occupation, industry, geography, gender, and rank. Assuming that most structural changes during and after M&A depend on the pre-existing difference between the two companies, these distance variables can control for potential structural changes during M&As.

B. Revealed Preference for Status

In this paper, we infer workers' preference for status from their observed *turnover* behaviors. If workers prefer higher (lower) status, an exogenous increase in status should lead to higher (lower) utility and lower (higher) probability of quitting. This approach has two salient merits. First, as discussed above, we avoid using potentially problematic "happiness ratings" from self-reported surveys. Second, no assumptions are needed about how status should change the *marginal* utility of income/consumption. Many models of status derive their predictions by assuming that status increases the marginal utility of income (e.g. Becker et al. 2005). However, sociological theories of status do not necessarily support this assumption.

Unfortunately, as with other studies on turnovers, it is difficult to distinguish directly between quits and layoffs. However, unlike most such studies, we can track workers' wages after they have left a firm. Therefore, if workers' wages drop after they

leave a firm (or increase less than the wages of those who remain), we can define such instances of turnover as ‘layoffs’, and exclude them from the analysis. Alternatively, following previous studies (e.g. Jacobson, et. al.1993 and Galizzi and Lang 1998), we can define instances of turnover as ‘layoffs’ and drop them if the combined size of the merged firms decreases significantly.

C. Social vs. Pecuniary Preference

Even if workers prefer high (or low) status, as shown in Table 1, this does not necessarily imply that they prefer high/low status for social preference reasons. To investigate the underlying preference, we examine how exogenous changes in status affect wage growth rates after an M&A. Suppose that status has positive social value, independent of pecuniary benefits. If a worker’s status decreases exogenously, the firm should compensate the worker with more pecuniary benefits, (i.e. higher wages), in order to keep him or her from quitting. Alternatively, if his or her status increases, a worker would be willing to accept slower wage growth.

Suppose, however, that status lacks social value, and has solely a positive instrumental/pecuniary value for his/her future wages. If a worker’s status increases exogenously, then his/her future wages should increase. Obviously, if status has a negative social or instrumental value, wages should move in the opposite direction. Then, combining these considerations with our discussion of turnover, we can distinguish different sets of theories as follows:

[Table 2 here]

An important caveat in the study of wage growth, however, is that we only observe wage growth for those who remain after M&As. This can lead to a potential selection bias. In addition, an individual's wage growth after an M&A may depend on other concurrent structural changes in productivity and organization. To address these issues, we use a Heckman two-step estimation to address potential selection bias, and we control for the pre-existing difference between two merging firms to capture potential structural changes after an M&A.

III. Data and Measurement

A. Swedish Employer-Employee Matched Data

We construct personnel records of merging firms from the Swedish employer-employee matched data. The Swedish data are essentially the collection of personnel records of white-collar workers in *all the firms* in the private sector of Sweden from 1970 to 1990 (except banking and insurance)¹⁶. The data served as the input to Sweden's centralized wage negotiations and were gathered from personnel records by The Swedish Federation of Employers and monitored by the labor unions. Thus, the data are of very high quality. (see Kwon and Myrsson Milgrom (2008) for more details on the wage negotiation system in Sweden.)

For each worker, the data contain *annual* information on wage, age, gender, education, geographic region, firm ID, plant ID, industry ID, occupation ID, and rank. Because all the IDs are comparable across firms, occupations, and time, we can track

¹⁶ The data also excludes the executive team (e.g. CEO or CFO).

each individual worker across firms and occupations throughout his/her career. The data lack information about firm tenure. However, due to the long and expansive span of the data, we can compute firm tenure for those workers who entered the data (or the labor market) after 1970.

The occupation code (called BNT code) is a four-digit code, where the first three digits (occupation ID) describe types of tasks. The fourth digit (rank ID) describes the degree of skill needed to fulfill the tasks as well as the number of subordinates. The white-collar workers' occupations cover 51 three-digit occupation groups such as construction, design, and management. (for more details, see appendix A). Within each occupation, the fourth digit rank code runs from 1 (lowest) to 7 (highest).

In this study, we focus on firms involved in acquisitions. Our data do not include information about firm ownership other than firm ID. Therefore, we identify M&As based on changes in workers' firm IDs. More specifically, if more than 50% of workers in one firm change firm ID¹⁷, say from A to B, and if the old firm ID, A, disappears from the data, then we say "B has acquired A". We refer to B as 'acquirer' and to A as 'acquired'. We restrict our attention to firms with more than ten white-collar workers¹⁸. There are only a few clearly identified merger cases where more than 50% of workers from both firm A and B move to a new firm C, and where firm A and B disappear. Therefore, we focus on clearly identified acquisition cases only.

¹⁷ Even when we require more than 90% of workers to change firm ID, there is very little change in our results.

¹⁸ Focusing on firms with more than 100 white-collar workers does not change the qualitative results of the paper.

This sample contains 443 M&A cases and 186,679 workers¹⁹. Figure 1 shows these numbers by year.

[Figure 1 here]

Given that previous studies of M&A are based on personnel records from one or two firms or on simple surveys of workers, our data provide unprecedented scope and detail.

Table 3 shows the summary statistics of selected variables. Acquiring firms are, on average, much larger than acquired firms²⁰. When we measure firm size by the number of (white-collar) workers, the average ratio of acquired to acquiring firm size is 0.61, but there are large variations. At the individual level, acquiring firms and acquired firms are comparable in workers' average age, rank, male-female ratio, and wage. Though the average rank and wage are slightly higher in acquiring firms, this effect can largely be explained by the differences in firm size.

[Table 3 here]

At the worker level, workers in acquired firms have, on average, higher turnover rates after M&A than those in acquiring firms. Average turnover rates in the first year after an M&A (turnover1) are 12.1% for acquiring firms and 15.5% for acquired firms. In comparison, the average turnover rate in Swedish firms is about 10% per year. Within

¹⁹ Some firms are involved in more than one M&A during our sample period. Excluding M&A where the same firm is involved in more than one M&A within 6 years does not change our qualitative results.

²⁰ In our sample, the number of workers from acquired firms is much smaller than the firm size ratio would suggest. This is because we have excluded workers if the number of co-workers in the same occupation in the same firm is less than 10, which applies to many workers in acquired firms due to their smaller size. Recall, however, that focusing solely on larger firms does not change our qualitative results.

three years, the turnover rate (turnover3) is 32.6% for acquiring firms and 39.2% for acquired firms.

B. Reference Groups

We measure status with respect to two reference groups: (i) co-workers in the same occupation in the same firm and (ii) all the workers in the same firm. Workers are likely to compete with other workers in the same occupation for promotions, and therefore to compare themselves with one another. Consequently, the occupation group is a likely candidate for a significant reference group. Moreover, from the perspective of pecuniary rewards theory, co-workers in the same occupation are subject to the same information and wage dynamics (such as signaling, and tournaments), and thus constitute a natural reference group.

All workers in the same firm, regardless of occupation, constitute another likely reference group, as they all share a common employer and personnel policy. In fact, many previous studies have focused on relative wages within a single firm only. (see, e.g., Telly, French, and Scott 1971, Dittrich and Carrel 1979, Galizzi and Lang 1998.)

These two reference groups are also interesting because workers in the same occupation are typically substitutable as they possess the same types of skills, while workers in different occupations are likely to be complementary. Therefore, we can potentially study how such differences in the social/production context can interact with status.

Note that instead of making an ad-hoc assumption that one reference group matters more than another, we control for status in both reference groups and then let the

data speak for themselves. Of course, it remains impossible to control for status in all possible reference groups: for example, in this study, we ignore other potential reference groups, such as, the same gender group, the same-hiring-year cohort, workers with the same rank, etc. We pursue the study of these reference groups in separate papers.

C. Status

We measure status by relative wage. One possible measure of relative wage is the deviation from the mean, i.e., $w_i - \bar{w}$ where \bar{w} is the average wage in a reference group. Other possible measures include the relative ranking of wage, or the value of the cumulative density function (CDF) of wage, where 0 is the lowest and 1 is the highest. In this paper, following the tradition of sociological theory (see e.g. Sørensen 1979 and Jasso 2001), we define status as follows:

$$\text{Status} = \ln\left(\frac{N+1}{N+1-n}\right) = \ln\left(\frac{1}{1-\frac{n}{N+1}}\right) \approx \ln\left(\frac{1}{1-r}\right) \quad (3)$$

where N denotes the number of workers in the group, n denotes the raw rank (with 1 assigned to the lowest wage and N assigned to the largest wage), and r ($0 \leq r \leq 1$) denotes the relative rank of wage ($= n/N$).

This formula captures two aspects of social status. First, because the status measure in (3) is a convex function of relative ranking of wages (r), the ranking matters for status more at the top than at the bottom. For example, the change in status when the second-highest ranked person becomes the highest ranked person is greater than the

change in status when the lowest ranked person becomes the second-lowest ranked person. Second, a high relative ranking in a large group is assigned with a higher status than the same relative ranking in a smaller group. For example, for the highest-paid person, the status is $\ln((N+1)/(N+1-N))=\ln(N+1)$ which increases with N (for more detail, see Jasso 2001).

Status can be measured not only by relative wages, but also by relative position in a hierarchical structure. A unique aspect of the Swedish data is that they contain seven hierarchical rank codes (the fourth digit of the BNT code) within each occupation (the first three digits). Therefore, we can measure each worker's relative position in his or her occupation by the number of workers below that worker's rank, divided by the total number of workers in the occupation.

We do not analyze which measure is most relevant. Instead, we show that our main results are robust according to each of these various measures of status²¹.

D. Expected Change in Status

As discussed above, our identification is based on changes in status during M&As. Figure 2 shows that M&As bring significant changes in status.

[Figure 2 here]

Because acquired firms tend to be much smaller than acquiring firms, workers in acquired firms experience larger average changes in status. Specifically, for an average

²¹ For more details on different measures of status and underlying theories in psychology, see Brown et. al. (2007).

worker in an acquiring firm, an M&A causes a 2% change in status within firm and a 3% change in status within occupation. However, for an average worker in an acquired firm, an M&A causes 14% and 20% changes in status within firm and within occupation, respectively. Figure 2 shows that these changes are almost twice the usual changes in status in the absence of an M&A.

Despite large changes in status during M&As, using *actual* changes in status has several potential problems. First, as Figure 2 shows, status can change even without an M&A, for example, due to change in one's own absolute income. Second, for those who quit during an M&A, we don't observe their change in status. Therefore, using actual changes for those who remain after an M&A is subject to a potential selection bias. Third, actual change in status can be correlated with other unexpected structural changes during an M&A.

Therefore, we focus on *expected* post-merger status as measured by status with respect to all the workers in two merging companies combined, just before the merger. We also define expected change in status by the difference between expected post-merger status and actual pre-merger status. Table 4 provides examples showing how we compute expected post-merger relative wages and status.

[Table 4 here]

Since we do not use actual post-merger wages in constructing these variables, expected change in status is due entirely to changes in firm boundary, and not to wage change or to any structural changes during an M&A. Also, since we can measure expected changes in

status for everyone before the M&A, the potential selection bias problem can be eliminated.

Thus, controlling for pre-merger status and absolute income, we will primarily focus on how expected changes in status (or equivalently expected post-merger status) affect workers' turnover rate and wage growth after M&As. Alternatively, we will use expected change in status as an instrument for actual change in status. Table 5 shows basic summary statistics for status variables.

[Table 5 here]

Note that the correlation between expected changes in status within firm, denoted by $E[\Delta Status_{firm}]$, and expected changes in status within occupation, denoted by $E[\Delta Status_{occup}]$ is 0.53. Thus, if status in both reference groups matters, omitting one status can lead to a potentially significant omitted-variable bias.

IV. Revealed Preference for Status and Reference Group

A. Expected Change in Status and Turnover

In this section, we infer workers' preference for status from their observed turnover behavior. In particular, we are interested in the effects of expected changes in status within occupation ($E[\Delta Status_{occup}]$) and expected changes in status within firm ($E[\Delta Status_{firm}]$). More specifically, we estimate the following probit regression.

$$T_{ijt} = \Phi(\alpha_1 E[\Delta Status_occup_{ijt}] + \alpha_2 E[\Delta Status_firm_{ijt}] + \alpha_3 Status_firm_{ijt-1} + \alpha_4 Status_occup_{ijt-1} + \alpha_5 Wage_{ijt-1} + \alpha_6 Acquired_{jt} + X'_{ijt-1} \cdot \gamma + Z'_{jt} \cdot \phi + \delta_t) \quad (4)$$

where $T_{ijt} = 1$ if worker i from firm j quits within two years²² after the M&A at year t , and $= 0$ otherwise. $Acquired_{jt}$ is a dummy variable for workers from acquired firms. X_{ijt-1} is a vector of individual characteristics at year $t-1$ that includes age, age squared, a set of dummy variables for gender, part time, rank, occupation, and region²³. Z_{jt} is a vector of firm characteristics that include post-merger (combined) firm size, ratio of before-and-after-merger firm sizes, the ratio of before-and-after-merger occupation sizes, ratio of workers who move to other plants in different regional codes during an M&A, wage dispersion²⁴, actual changes in wage dispersion after the M&A, and industry dummy variables. δ_t is a time dummy variable for the year of the M&A. Standard errors are adjusted for clustering within each M&A case.

Since it is generally very difficult for firms to fire workers in Sweden, at first we treat all instances of turnover as quits. Later, we attempt to distinguish quits and layoffs and show that most results remain robust.

[Table 6 here]

In Table 6 column [1], we control only for status within the firm and its expected change, and find that the expected change in status within a firm has a significant positive effect

²² We focus on instances of turnovers within two years after the M&A. However, even when we study only the turnover immediately after the M&A, the qualitative results do not change.

²³ Education is not controlled for because data are missing for many workers especially in the 1970s. Controlling for education for M&A in the 1980s, however, does not change the results.

²⁴ Wage dispersion is measured by standard deviation of wages within each firm.

on worker turnover. However, Table 6 column [2] shows that the expected change in status within an occupation has a significant negative effect on turnover probability. In Table 6 column [3], we control for both the expected changes in status within a firm and within an occupation. Under these controls, the size of the coefficients nearly doubles for expected changes in status both within firm and within occupation.

This analysis yields at least three noteworthy findings. First, an expected increase in status within an occupation ($E[\Delta status_occup]$) decreases the turnover probability. The estimates from column [3] indicate that a one standard deviation increase in status within occupation reduces turnover probability by 12.1%. This finding suggests that status within occupation strictly increases workers' utility.

Second, somewhat surprisingly, an expected increase in status within a firm ($E[\Delta status_firm]$), holding status within occupation constant, increases turnover probability. From column [3], for an average worker, a one standard deviation increase in status within firm raises turnover probability by 18.2%. This finding suggests that status within firm strictly decreases workers' utility. Though this finding may seem counter-intuitive, it is, as discussed in Table 1, consistent with group status theory or the dead-end story.

Third, distinguishing two reference groups (occupation and firm) is very important. Controlling for status in only one reference group biases the effect of status toward zero, reducing the size of the coefficients almost by a half. Such omitted variable biases may explain why Telly, French, and Scott (1971) and Dittrich and Carrell (1979) find that relative wage within firm does not provide a significant explanation for

turnovers. More importantly, controlling for status only within firm caused the analysis to miss the significant and opposite effect of status within occupation.

We also find that workers who already had high status within occupation are less likely to quit. Since workers with high relative wages are those who have long tenure and high ranks, they have low turnover rates as previous studies have shown. (e.g. Farber 1994) Interestingly, holding status within occupation constant, workers who already had high status within a firm are more likely to quit. A potential explanation is that these workers have reached the end of the career ladder within the firm and thus are more likely to quit.

It is also interesting to note that an increase in wage dispersion raises workers' turnover rates. This could be either because workers have preference for wage quality or because an increase in wage dispersion implies an incompatibility of wage structure.

B. Actual Change in Status and Turnover

In the previous section, we implicitly assumed that workers make their turnover decisions based on their expected changes in status before the actual merger takes place. However, workers may not correctly predict the change in status or they may decide whether to quit after observing actual changes in status and wages. Thus, in Table 7, we estimate the effect of actual changes in wages as well as the effect of actual changes in status both within occupation and within firm. In all other respects, the specification of regression is the same as in Table 6.

[Table 7 here]

However, those who quit during the M&A process are omitted because we don't observe actual changes in status and wages for them. Thus, in Table 7 column [1], we control for the potential selection bias using the Heckman two-step procedure. The first-stage selection regression includes all the same control variables except that expected changes in status are used instead of actual changes in status. Note that the qualitative results do not change from Table 6, column [3].

Furthermore, using these estimates, we can value a one standard deviation increase in status within occupation as being equivalent to an increase in monthly wage of 215.14 Kronor, or 6.8%. Also, a one standard deviation increase in status within firm is equivalent to a decrease in monthly wage by 504.96 Kronor, or 15.9%.

In column [2], we again control for both actual changes in wages and actual changes in status. However, instead of using a Heckman 2-step estimation, we use the expected changes in status as instrumental variables for actual changes in status. Note that unlike the Heckman 2-step procedure, this approach does not require any distributional assumptions. Column [2] shows that the instrumental variable approach yields the same qualitative results.

C. Robustness

In this section, we assess the robustness of our results with respect to alternative measures and specifications.

■ *Quits vs. Layoffs*

An alternative explanation for our findings is that workers are fired in a systematic way during M&As. For example, workers with high expected post-merger status within firms may be more likely to be fired during an M&A, perhaps because they become redundant. On the other hand, workers with high expected post-merger status within occupations may be less likely to be fired, perhaps because they are highly skilled. In this case, our estimates would be capturing these structural changes in worker composition rather than changes in status *per se*.

To control for this possibility, we repeat our analysis after excluding layoffs or involuntary turnovers. First, following previous studies (e.g. Jacobson, et. al.1993 and Galizzi and Lang 1998), we define an instance of turnover as involuntary and exclude it if the (combined) size of the merged firm decreases by more than 10%. Table 8 column [1] shows that the qualitative results do not change.

Second, unlike most previous studies, we can observe a worker's wages in a new firm after he or she has quit the merged firm. Thus, we define an instance of turnover as involuntary and exclude it if the real wage falls. Table 8 column [2] shows that the qualitative results still do not change.

Finally, in column [3], we define turnovers as involuntary if the real wage growth after turnover is smaller than the average growth rate of remaining workers in the previous firm. The qualitative results remain the same, but the expected change in status within firm becomes insignificant. One possible reason for this change is that too many instances of turnover are classified as involuntary and excluded, since more than 44% of the instances of turnover are classified as involuntary under this definition. Given the

general difficulty of firing workers in Sweden, this definition seems to overestimate the amount of involuntary turnover.

[Table 8 here]

As in most studies on turnover, it is impossible to make a clear distinction between layoffs and quits. However, the fact that our results are largely robust under various definition of quits suggests that our findings are not driven by involuntary layoffs, specifically those due to structural changes during an M&A.

■ *Alternative Measures of Status*

So far, we have measured workers' status within a reference group by relative wage as in equation (3), in the manner stipulated by Jasso (2001), building on the work of Goode (1978) and Sorensen (1979). However, relative wage can be measured in various ways. First, we measure status by the relative ranking itself ($= n/N$ according to the notation in equation (3)), where 0 is the lowest and 1 the highest. Table 9, column [1] shows that the qualitative results do not change.

We can also measure status by the deviation of wages from the mean, $(w_i - \bar{w})$. Table 9, column [2] shows that expected changes in status within occupation still have significant negative effects on turnover. However, it is unclear why expected changes in status within firm are no longer significant. Workers may not care about status within firm after all. Alternatively, the deviation of wages from the mean may not be a correct

measure of status within firm. For example, Brown et. al. (2007) suggest that ranking is a more relevant measure of status based on both experimental and field evidence.

[Table 9 here]

Another explanation may be that workers care more about their relative position in the authority hierarchy of a firm than about their relative wage. Thus, in column [3] we measure status by a worker's relative standing within the rank hierarchy of his or her occupation without using wage information. Recall that one of the unique features of the Swedish data is that they contain accurate information on rank within each occupation, ranging from 1 (lowest) to 7 (highest). The ranks are determined based on required skill levels and responsibility, and are comparable across firms. However, ranks across different occupations are not precisely comparable. In other words, it is difficult to construct the hierarchy structure within a firm across different occupations. Therefore, we focus on workers' status within their own occupation hierarchy. More specifically, we use the following alternative measure of status:

$$\text{status}^H_{\text{occup}} = \frac{\# \text{ of workers below one's own rank within the occupation}}{\text{total number of workers within the occupation}} \quad (5)$$

The expected post-merger status is computed in the same way as before, using the workers' occupation ranks in both firms A and B combined.

This measure of status has two merits. First, since individual wages, or wage distribution within a reference group, may not be observable, workers may not know their

relative standing in wages. However, ranks, or job titles, are easily observable. Second, while wages in Sweden are largely determined by centralized wage bargaining, promotions are entirely up to each firm's discretion. Thus, measuring status by relative ranks can avoid reflecting the potential effects of the centralized wage bargaining system.

Table 9 column [3] shows that the qualitative results are robust even when status is measured by relative standing in ranks. Therefore, the negative effect of status within occupation on turnover rate is robust under various measures of status. However, the positive effect of status within firm is not always robust, and requires more caution in its interpretation.

■ *Rational Expectations*

When we compute expected change in status as in Table 4, an implicit assumption is that workers expect all those working prior to the M&A to stay after the M&A or that workers will leave firms randomly, independent of changes in status. However, rational workers will understand workers' turnover patterns as illustrated in Table 6. These workers can predict their expected change in status based on rational expectations of who will leave and who will stay.

Thus, we re-compute the (rational) expected change in status assuming that workers can correctly predict who will leave and who will stay after the M&A. For each worker who actually leaves the firm, we compute his or her expected change in status based on the worker's expected post-merger status if he or she had stayed, assuming all the others would not change their turnover decisions²⁵.

²⁵ Workers' (rational) expected post-merger status can be different from actual post-merger status for two reasons. First, the expected post-merger status is computed based on the rankings of wages before the

Table 9 column [4] shows that there are no changes in the qualitative results when we use rational expectations.

■ *Hypothetical M&A*

If two firms are *not* merging, then workers have little reason to care about their status compared to workers in other firms. Therefore, as a specification test, we repeat the same analysis as in Table 6 for hypothetical M&As that have not actually happened.

More specifically, to control for unobserved firm characteristics, we focus on each pair of firms involved in an actual M&A, and look at their data five years before the actual M&A. Because workers could not have anticipated an M&A with a specific firm five years later, they would not have cared about status compared with workers in the other firm. In Table 10 column [1], we repeat the same analysis as in Table 6 column [3], but for hypothetical M&As five years before each actual M&A. According to our specifications and interpretation, the expected changes in status should *not* be significant, within either occupation or firm, in these hypothetical M&As. Indeed, Table 10 column [1] shows that the expected (hypothetical) changes in status are not significant either within occupation or within firm.

[Table 10 here]

■ *Controlling for Tenure*

merger, not the actual post-merger wages. Second, workers newly hired during mergers are not accounted for.

It is well-known that firm tenure has a significant effect on turnover decisions (see, e.g., Farber 1999). Unfortunately, the Swedish data do not contain tenure information. However, given the long span of the data, we can determine workers' tenure if they enter a firm after 1970. In particular, for over 85% of workers between 1986 and 1988, we can observe their tenures in this manner. Thus, we repeat our analysis of firm turnovers using the sub-sample of M&As occurring between 1986 and 1988, adding tenure and tenure-squared as control variables.

Furthermore, since the centralized wage bargaining system in Sweden started to break down after 1983, use of this sub-sample is also a test of whether the centralized wage bargaining system in the 1970s had any effect on our qualitative results.

Table 10 column [2] shows that controlling for tenure using this sub-sample does not change the qualitative results, suggesting that the lack of control for tenure or the centralized wage bargaining system in the 1970s is not responsible for our results.

■ *Unobserved Structural Changes*

M&As can change various aspects of firms including job assignment and wage policy. If changes in status are correlated with these unobserved structural changes during M&A, our estimates may be biased. To control for these structural changes, we construct a distance measure between two firms in terms of various properties of the firms. We make the assumption that structural changes during and after the M&A are largely determined by the way two firms differ before the M&A, and consequently that controlling for distance measures between the two firms should capture some of the unobserved structural changes occurring with an M&A.

The distance between two firms is measured by subtracting the uncentered correlation from one, as proposed by Jaffe (1986). For example, to measure the distance in occupation structure, we construct a vector of occupation shares for an acquired firm, $f_i = (s_{1i}, s_{2i}, \dots, s_{54i})$ where s_{ki} is occupation k 's share in firm i (in terms of number of workers)²⁶. We construct the same vector for its acquiring firm j , f_j . Then, the distance in occupation structure is measured by $1 - \frac{f_i f_j'}{((f_i f_i')(f_j f_j'))^{\frac{1}{2}}}$. This distance measure is zero if the composition of occupation is the same between the two firms, and is one if two firms do not share any occupation.

Table 10, column [3] shows that controlling for distance measures in occupation, education, county, gender, age, and rank does not change the qualitative results on status variables. As we show in another paper, however, all of these distance measures significantly affect worker turnover rates. In particular, difference in occupation and gender compositions between firms reduces turnover rates, suggesting that different occupations and genders are complementary in an M&A. However, difference in education, county, age, and rank compositions increases turnover rates, suggesting that, for example, workers with different education levels are substitutable.

V. Preference for Status: Social Rewards vs. Pecuniary Rewards

The previous section shows that workers value status within occupation positively, but surprisingly, may value status within firm negatively. As we discussed and summarized

²⁶ We used 54 different occupations, 44 different industries, 24 different counties, 9 different education codes, 6 different age groups (11-20, 21-30, etc.), 7 rank codes, 2 gender codes, and 2 part time codes.

in Table 2, studying the wage growth rates after M&A can potentially distinguish whether the value of status comes from its social value (such as prestige, equity, etc.) or from its instrumental/pecuniary value for future monetary benefits (through signaling, wage compression, etc.).

More specifically, we estimate the following wage regression:

$$\begin{aligned}
 WageG_{ijt} = & \beta_1 Acquired_{jt} + \beta_2 Status_firm_{ijt-1} + \beta_3 E[\Delta Status_firm_{ijt}] + \beta_4 Status_occup_{ijt-1} \\
 & + \beta_5 E[\Delta Status_occup_{ijt}] + \beta_6 Wage_{ijt-1} + X'_{ijt-1} \cdot \theta + Z'_{jt} \cdot \xi + \delta_t + \varepsilon_{ijt}
 \end{aligned}
 \tag{6}$$

where $WageG_{ijt}$ is the average annual wage growth rate over the period from a year before the M&A to two years after it. $Acquired_{jt} = 1$ if firm j is the acquired company, and $= 0$ otherwise. X_{ijt-1} is a vector of individual characteristics at year $t-1$ that includes age, age squared, a set of dummy variables for gender, part time, occupation, and region. Z_{jt} is a vector of firm characteristics, including before-merger firm size and industry dummy variables. δ_t is a time dummy variable for the year of the M&A.

[Table 11 here]

Table 11 column [1] shows that when a worker's status within occupation increases, the worker's wage growth rate decreases. However, when a worker's status within firm increases, the worker's wage growth rate increases. For example, for an average worker, a one standard deviation increase in status within occupation *reduces* annual wage growth

rate from 6.37% to 4.6%. However, a one standard deviation increase in status within firm raises annual wage growth rate from 6.37% to 10.62%.

This finding suggests that status within occupation provides positive utility independent of pecuniary benefits. Therefore, those workers whose status has *decreased* exogenously during an M&A are being compensated by faster wage growth rates. If the value of status within occupation stems from its pecuniary benefits, lower status should have decreased wage growth rates.

Similarly, this finding suggests that status within firm provides negative utility independent of pecuniary benefits. This may be because a worker's status rises exogenously during an M&A only if the average level of workers in the other firm is lower than his or hers. Thus, the negative utility provided by higher status within firm is due to the reduced status of the firm in the economy. Therefore, those whose status within firm has *increased* exogenously during M&A are being compensated by faster wage growth rates.

In column [2], we also estimate the Heckman two-step regression. Since the wage growth rate is observable only for those who didn't quit within two years after an M&A, there are potential concerns about selection bias. Thus, we first estimate a selection equation that includes additional control variables such as the ratio of regional change, the ratio of firm size change, and the ratio of occupation size change. We then correct for the selection bias. Column [2] shows, however, no qualitative changes in the results.

These findings are important for several reasons. First, to our knowledge, this is the first empirical evidence to show that workers' preference for status vary with their reference groups or social contexts. In comparison with co-workers in the same

occupation where skills are substitutable, workers positively value their individual status within the group for its social rewards, such as prestige, respect, or equity. However, holding status within occupation constant, in comparison with workers in other occupations in the same firm where skills are likely to be complementary, workers do not care about their individual status within the firm. Instead, they seem to care more about the status of the firm as a whole with respect to other firms.

Second, this is one of the first papers based on large field data that formally attempts to distinguish between the social and the pecuniary rewards of status²⁸. Even though experimental studies have explicitly controlled to eliminate the pecuniary aspects of status, it has been largely unknown whether the observed preference for status in the actual workplace is driven by its social rewards, or by pecuniary benefits.

Third, our findings suggest the possible existence of a market for status, where workers with different tastes for status can trade their status for larger absolute wages. Though we don't directly observe such trades among workers, their willingness to pay for higher status strongly suggests the possibility of such a market. These findings provide empirical support for the existence of a market for status as theorized by Frank (1985) or Becker et al. (2005).²⁹

As before, one caveat for our interpretation is that M&As may change wage policies and affect wage growth rates. If such a structural change is correlated with

²⁸ Luttmer (2005) provides suggestive evidence for the social rewards explanation by showing that neighbors' income matters more for socially active people. However, he does not formally distinguish between the pecuniary and social rewards explanations.

²⁹ Furthermore, these results suggest that it is possible to trade high status within occupation with low status within firm, or vice versa. For example, a worker would be willing to work with lower-quality co-workers within the company as long as s/he is the highest paid person in his/her occupation. Such a trade can ease conflicts within the firm and help integration of companies after M&As. We pursue a detailed analysis of this type of trade and its implication for conflicts and post-merger integration in another paper.

changes in status, our estimates may be biased. Thus, we again control for various distance measures between two merging firms as a proxy for unobserved structural changes. However, table 11, column [3] shows little change.

VI. Discussions

A. An Alternative Explanation

So far we have found many explanations based on the pecuniary value of status to be inconsistent with our findings. However, there exists another alternative explanation for our findings. Suppose, contrary to the signaling model, that the market (or firms) has better information about workers' pecuniary value than the workers themselves. Then workers can use their status as a means to *learn* their own pecuniary value or productivity.

For example, if a worker's status decreases (i.e. co-workers get paid relatively more), the worker learns that his or her pecuniary (or market) value is higher than what he thought. Thus, the worker will demand higher wages and/or leave the firm. Note that this prediction is consistent with our findings on status within occupation.

This learning model is difficult to distinguish from social rewards theories, especially from equity theory, both conceptually and empirically. In equity theory, if similar co-workers are getting paid more, people would also think that they are getting under-paid, not because they have learned their *market* wage is higher but because they believe their *fair* (or just) wage is higher. However, if one considers the market wage to be a fair, it becomes conceptually difficult to distinguish this learning model from equity theory.

In order to distinguish these two theories, we follow the wages of those who actually leave the firms during M&As. Under the learning model, when expected status within occupation decreases, workers quit because they believe they can receive higher wages from other firms. However, under social reward theories, such as equity theory, workers quit because they are less happy in the merged firm due to unfairness or lower prestige.

Therefore, under the learning model, if workers expect lower status (within occupation) and quit the firm, they must get, on average, larger absolute wages in the new firm. On the other hand, under the social preference theories, there is no clear prediction on how wages would change after a quit because workers may change firms to get higher status within occupation (or lower status within firm) as well as larger absolute wage.

Thus, in Table 12, we analyze how the wage changes of those who left the merged firms depend on their expected changes in status had they stayed in the merged firms.

[Table 12 here]

From the first column of Table 12, those who would have had lower status within occupation had they stayed receive lower wages in their new firms than others. As discussed above, this finding is not consistent with the learning model. Even when we look at cases of voluntary turnover (column [2]) or when we use rational expectations (column [3]), the expected change in status within occupation has no significant effect on

the wage changes due to turnover. Therefore, our data do not empirically support the learning model.

B. Turnover and Wage Growth

Previous analyses suggest that firms can mitigate the effect of status on turnover by adjusting wage growth. In other words, if firms do not compensate for the negative change in status within occupation with faster wage growth, the negative change in status within occupation leads to more turnover.³⁰

In order to test this hypothesis more directly, we estimate the turnover regression in Table 6 and the wage growth regressions in Table 11 for each M&A. Then, we regress the estimated coefficients of ‘ $E[\Delta status_firm]$ ’ in the turnover regressions on the estimated coefficients of ‘ $E[\Delta status_firm]$ ’ in the wage regressions. We also repeat the regression for the coefficients of ‘ $E[\Delta status_occup]$ ’ as follows:

$$coef[\Delta status_firm]_{jt}^{turnover} = \alpha_f + \beta_f * coef[\Delta status_firm]_{jt}^{wageG} + \epsilon_{jt}$$

$$coef[\Delta status_occup]_{jt}^{turnover} = \alpha_{fo} + \beta_{fo} * coef[\Delta status_occup]_{jt}^{wageG} + \mu_{jt}$$

As predicted by the hypothesis, Table 13 shows that both β_f and β_{fo} are significant and negative. That is, in M&As where absolute wages are not compensated by a change in status, workers are more likely to leave the firm.

[Table 13 here]

³⁰ We thank Yoram Weiss for suggesting this implication.

These regressions, however, suffer from an obvious endogeneity problem. For example, in some M&As where people may care less about their status, the coefficients in both the turnover regression and the wage regression would be smaller. Note, however, that this endogeneity would generate a positive bias. Thus, given that β_f and β_{j_0} are already negative, the correction of the bias would not alter the qualitative interpretation of the regressions. This finding provides further evidence that workers care about their status for its social rewards, independent of absolute wages.

VII. Conclusion

Using M&As as natural experiments, our paper tests (i) whether people care about their status at all; (ii) whether they care about status for reasons of social rewards or rather for reasons of pecuniary rewards; and (iii) whether reference groups affect for workers' preference for status.

The results provide strong evidence that people care about their status primarily for social reward reasons. In the case of M&As, workers compare their present status with their expected status in determining whether to exit or stay. Furthermore, workers derive their valuation of status from more than one reference group. In particular, our results suggest that workers care about their relative standing within at least two distinct groups — coworkers in the same occupation and coworkers in other occupations — within the firm. Higher status among competing or substitutable workers in the same occupation is preferred for social rewards such as prestige, respect, or equity, and lower

status among complementary workers or partners in other occupations is preferred for its social rewards such as the prestige of working with high quality coworkers. Finally, our results imply a market for status, where the loss of status can be compensated by pecuniary rewards or by working with high-performing workers in other occupation within the firm, or vice versa.

This study is unprecedented in scope and detail covering more than 180,000 individual workers in more than 800 firms. We hope that our analysis of the results will provide a solid empirical foundation for theoretical studies on status. The importance and the complexity of interactions among status in multiple reference groups have not been formally captured in theoretical models, and constitute an important topic for future research.

Our results also have direct implications for human resources practices in cases such as M&As, as they suggest how firms may avoid losing key personnel during the uncertain period of the merger: workers that lose out in one dimension may be compensated in another. If the employer can differentiate between more- and less-important reference groups, workers' quits and diminished motivation can be mitigated.

Appendix Three-Digit Occupation Codes

<u>BNT</u> Family	<u>BNT</u> Code	Levels	
0			Administrative work
	020	7	General analytical work
	025	6	Secretarial work, typing and translation
	060	6	Administrative efficiency improvement and development
	070	6	Applied data processing, systems analysis and programming
	075	7	Applied data processing operation
	076	4	Key punching
1			Production Management
	100	4	Administration of local plants and branches
	110	5	Management of production, transportation and maintenance work
	120	5	Work supervision within production, repairs, transportation and maintenance work
	140	5	Work supervision within building and construction
	160	4	Administration, production and work supervision within forestry, log floating and timber scaling
2			Research and Development
	200	6	Mathematical work and calculation methodology
	210	7	Laboratory work
3			Construction and Design
	310	7	Mechanical and electrical design engineering
	320	6	Construction and construction programming
	330	6	Architectural work
	350	7	Design, drawing and decoration
	380	4	Photography
	381	2	Sound technology
4			Technical Methodology, Planning, Control, Service and Industrial Preventive Health Care
	400	6	Production engineering
	410	7	Production planning
	415	6	Traffic and transportation planning
	440	7	Quality control
	470	6	Technical service
	480	5	Industrial, preventive health care, fire protection, security, industrial civil defense
5			Communications, Library and Archival Work
	550	5	Information work
	560	5	Editorial work – publishing

	570	4	Editorial work – technical information
	590	6	Library, archives and documentation
6			Personnel Work
	600	7	Personnel service
	620	6	The planning of education, training and teaching
	640	4	Medical care within industries
7			General Services
	775	3	Restaurant work
8			Business and Trade
	800	7	Marketing and sales
	815	4	Sales within stores and department stores
	825	4	Travel agency work
	830	4	Sales at exhibitions, spare part depots etc.
	835	3	Customer service
	840	5	Tender calculation
	850	5	Order processing
	855	4	The internal processing of customer requests
	860	5	Advertising
	870	7	Buying
	880	6	Management of inventory and sales
	890	6	Shipping and freight services
9			Financial Work and Office Services
	900	7	Financial administration
	920	6	Management of housing and real estate
	940	6	Auditing
	970	4	Telephone work
	985	6	Office services
	986	1	Chauffeuring

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Table 1 Theory of Status
 (s_{it} = status of worker i at time t ; w_{it} = wage)

	Social Reward Theory	Pecuniary Reward Theory
Utility Function	$U_i(w_{it}, s_{it})$	$U_i(w_{it}, w_{it+1}(s_{it}))$
$\frac{\partial U_i}{\partial s_{it}} > 0$	Status theory Equity theory	Signaling model Tournament model
$\frac{\partial U_i}{\partial s_{it}} < 0$	Group status theory Halo effect	Dead-end effect Learning effect Wage compression

Table 2 Predictions of Alternative Theories

Measure	Effect	Theory	$\frac{\partial(\text{prob. of turnover})}{\partial s_i}$	$\frac{\partial(\text{wage growth})}{\partial s_i}$
s_i = status	$\frac{\partial U_i}{\partial s_i} > 0$	Social Rewards (Prestige, Equity)	-	-
		Pecuniary Rewards (Signaling, Tournament)	-	+
	$\frac{\partial U_i}{\partial s_i} < 0$	Social Rewards (Group Status)	+	+
		Pecuniary Rewards (Dead-end, Learning)	+	-

Table 3 Summary Statistics

	Combined		Acquirer		Acquired	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
firm size	492.18	(902.62)	433.76	(851.85)	58.41	(120.43)
ratio (=Acqcd/Acqer)	0.61	(2.02)				
# of observations	443		443		443	

(a)

	Combined		Acquirer		Acquired	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
age	40.231	(11.464)	40.291	(11.452)	39.553	(11.584)
rank	5.471	(1.247)	5.463	(1.252)	5.562	(1.182)
female	0.238		0.238		0.240	
wage	3161.301	(1255.695)	3172.104	(1260.394)	3039.487	(1194.732)
turnover1	0.124		0.121		0.155	
turnover3	0.331		0.326		0.392	
# of observations	186679		171473		15206	

(b)

Note: Standard deviations are in parentheses. ‘firm size’ is measured by the number of white-collar workers in the company. ‘wage’ is the monthly real wage in 1970 Kronor. ‘turnover1’ is a dummy variable for those who quit within one year after a merger. ‘turnover3’ is a dummy variable for those who quit within three years.

Table 4 Computation of Expected Status: An Example

Firm	Occupation	wage	Pre-Merger		Expected Post-Merger	
			ranking within occupation	ranking within firm	ranking within occupation	ranking within firm
Acquiring	310	1600	3/3 (1.39)	4/5 (1.10)	5/5 (1.79)	8/9 (1.61)
		1500	2/3 (0.69)	3/5 (0.69)	4/5 (1.10)	6/9 (0.92)
		1400	1/3 (0.29)	2/5 (0.41)	2/5 (0.41)	4/9 (0.51)
	800	1700	2/2 (1.10)	5/5 (1.79)	4/4 (1.61)	9/9 (2.30)
		1300	1/2 (0.41)	1/5 (0.18)	2/4 (0.51)	3/9 (0.36)
Acquired	310	1450	2/2 (1.10)	3/4 (0.92)	3/5 (0.69)	5/9 (0.69)
		1200	1/2 (0.41)	2/4 (0.51)	1/5 (0.18)	2/9 (0.22)
	800	1550	2/2 (1.10)	4/4 (1.61)	3/4 (0.92)	7/9 (1.20)
		1100	1/2 (0.41)	1/4 (0.22)	1/4 (0.22)	1/9 (0.11)

Note: This table shows how we compute expected post-merger status based on wages before the merger. Ranking shows the relative ranking ($=n/N$ according to the notations in from equation (3)). Our status measure, equation (3), is in the parenthesis. For example, a worker with wage 1600 in the acquiring firm occupation 310 has status 1.39 within occupation and 1.10 within firm before merger. However, if two firms merge, holding wage constant, the worker's status after the merger will become 1.79 within occupation and 1.61 within firm.

Table 5 Summary Statistics for Status Measures

	Combined		Acquirer		Acquired	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
status_firm	0.989	(0.961)	0.989	(0.966)	0.986	(0.903)
status_occup	0.969	(0.909)	0.971	(0.914)	0.946	(0.847)
abs(E[Δstatus_firm])	0.030	(0.080)	0.020	(0.046)	0.147	(0.198)
abs(E[Δstatus_occup])	0.045	(0.112)	0.031	(0.071)	0.203	(0.265)
# of observations	186679		171473		15206	

(a) Mean and Standard Deviation

	Wage	Status_f	E[Δstatus_firm]	Status_fo	E[Δstatus_occup]
Wage	1				
status_firm	0.9185	1			
E[Δstatus_firm]	0.1025	0.0241	1		
status_occup	0.6822	0.7466	0.0074	1	
E[Δstatus_occup]	0.1022	0.0697	0.5334	0.0162	1

(b) Correlation Matrix

Note: Standard deviations are in parentheses. ‘status_firm’ measures status within firm right before a merger, following equation (3). ‘abs(E[Δstatus_firm])’ measures the absolute value of the expected change in status within firm. Similarly, ‘status_occup’ measures status within an occupation inside a firm right before a merger.

Table 6 Expected Change in Status and Turnover: Probit Analysis
(dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

	[1]	[2]	[3]
E[Change in Status_firm]	0.097 (0.043)**		0.184 (0.050)***
E[Change in Status_occup]		-0.062 (0.029)**	-0.120 (0.033)***
Status_firm	-0.028 (0.012)**		0.032 (0.014)**
Status_occup		-0.068 (0.007)***	-0.074 (0.007)***
Age	-0.184 (0.002)***	-0.183 (0.002)***	-0.183 (0.002)***
Age-squared	0.002 (0.000)***	0.002 (0.000)***	0.002 (0.000)***
Female	-0.084 (0.012)***	-0.080 (0.012)***	-0.079 (0.012)***
Part Time	0.304 (0.015)***	0.293 (0.015)***	0.284 (0.015)***
Wage (1K)	0.008 (0.011)	0.031 (0.008)***	0.011 (0.011)
Acquired	0.010 (0.013)	0.014 (0.013)	0.012 (0.013)
Firm Size (1K)	-0.140 (0.008)***	-0.140 (0.008)***	-0.140 (0.008)***
Firm Size-squared	0.008 (0.001)***	0.008 (0.001)***	0.008 (0.001)***
Firm Size Change	-0.017 (0.009)*	-0.018 (0.009)**	-0.016 (0.009)*
Occupation Size Change	-2.329 (0.035)***	-2.332 (0.035)***	-2.330 (0.035)***
Location Change	0.343 (0.015)***	0.342 (0.015)***	0.341 (0.015)***
Wage Dispersion	-0.007 (0.002)***	-0.008 (0.002)***	-0.007 (0.002)***
Wage Dispersion Change	0.018 (0.004)***	0.012 (0.004)***	0.018 (0.004)***
Observations	186679	186679	186679
Pseudo R-squared	0.1396	0.1400	0.1401

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: Each regression includes rank dummies (6), occupation dummies (67), industry dummies (33), year dummies (18), and region dummies (24). ‘firm size’ measures the firm size right after the merger. ‘firm size change’ measures the ratio of actual post-merger firm size to the sum of pre-merger firm sizes. ‘occupation size change’ measures the ratio of occupation size in the post-merger firm to the sum of pre-merger occupation sizes. ‘location change’ measures the ratio of the number of workers who move to different regional code after the merger. ‘wage dispersion’ measures the standard deviation of wages within firm. ‘wage dispersion change’ measures the actual change of wage dispersion after the merger.

Table 7 Actual Change of Status and Turnover: Probit Analysis
 (dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

	Heckman 2-step [1]	IV-estimation [2]
Change in Status_firm	0.134 (0.030)***	0.257 (0.056)***
Change in Status_occup	-0.052 (0.013)***	-0.166 (0.050)***
Status_firm	0.018 (0.016)	0.018 (0.021)
Status_occup	-0.057 (0.008)***	-0.059 (0.015)***
Age	-0.180 (0.003)***	-0.162 (0.004)***
Age-squared	0.002 (0.000)***	0.002 (0.000)***
Female	-0.103 (0.013)***	-0.098 (0.014)***
Part Time	0.281 (0.017)***	0.254 (0.031)***
Wage (1K)	-0.004 (0.013)	-0.001 (0.016)
Wage Change	-0.233 (0.027)***	-0.247 (0.010)***
Acquired	0.037 (0.015)**	0.053 (0.012)***
Firm Size (1K)	-0.164 (0.009)***	-0.149 (0.019)***
Firm Size-squared	0.009 (0.001)***	0.007 (0.002)***
Firm Size Change	-0.013 (0.011)	-0.017 (0.011)
Occupation Size Change	-1.592 (0.080)***	-0.862 (0.028)***
Location Change	0.176 (0.021)***	0.062 (0.031)**
Wage Dispersion	-0.009 (0.002)***	-0.010 (0.003)***
Wage Dispersion Change	0.019 (0.005)***	0.022 (0.005)***
Observations	186679	161640

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: In these regressions, the *actual* changes in status between right before and right after M&As are used, instead of expected changes. Each regression includes rank dummies, occupation dummies, industry dummies, year dummies, and region dummies. The selection regression in column [1] includes all the same control variables except that the expected changes in status are used instead of the actual changes. In IV-probit estimation (column [2]), actual changes in status are instrumented by expected changes in status.

Table 8 Voluntary Quits

(dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

Exclude if	firm size drop	real wage drop	less wage growth
	[1]	[2]	[3]
E[Change in Status_firm]	0.153 (0.056)***	0.201 (0.063)***	0.074 (0.074)
E[Change in Status_occup]	-0.137 (0.036)***	-0.110 (0.041)***	-0.109 (0.047)**
Status_firm	0.036 (0.015)**	0.010 (0.016)	0.037 (0.016)**
Status_occup	-0.085 (0.008)***	-0.083 (0.008)***	-0.088 (0.009)***
Observations	163953	158063	151157
Pseudo R-squared	0.1199	0.1643	0.1679

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: The independent variables are the same as those in column [3] in Table 6. The coefficients of other variables are not reported.

Table 9 Different Measures of Status

(dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

	Wage Rank	Deviation	Hierarchy Rank	Rational Exp.
	[1]	[2]	[3]	[4]
E[Change in Status_firm]	0.528 (0.178)***	0.079 (0.068)	0.120 (0.044)***	0.126 (0.034)***
E[Change in Status_occup]	-0.443 (0.109)***	-0.243 (0.045)***	-0.106 (0.040)***	-0.091 (0.024)***
Status_firm	-0.126 (0.041)***	-0.198 (0.026)***	-0.020 (0.013)	0.087 (0.014)***
Status_occup	-0.201 (0.025)***	-0.038 (0.011)***	-0.035 (0.009)***	-0.106 (0.008)***
Observations	186679	186679	186679	167619
Pseudo R-squared	0.1402	0.1401	0.1396	0.1239

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: The independent variables are the same as those in column [3] in Table 6. The coefficients of other variables are not reported.

Table 10 Specification Test
 (dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

	Hypothetical	Tenure	Distance
	[1]	[2]	[3]
E[Change in Status_firm]	-0.062 (0.085)	0.400 (0.094)***	0.163 (0.050)***
E[Change in Status_occup]	0.010 (0.059)	-0.144 (0.073)*	-0.123 (0.033)***
Status_firm	0.037 (0.025)	0.104 (0.029)***	0.040 (0.014)***
Status_occup	-0.069 (0.012)***	-0.053 (0.016)***	-0.081 (0.007)***
Tenure		-0.034 (0.005)***	
Tenure-squared		0.003 (0.000)***	
Distance (occupation)			-0.217 (0.020)***
Distance (education)			0.490 (0.016)***
Distance (county)			0.243 (0.010)***
Distance (gender)			-0.413 (0.105)***
Distance (age)			0.789 (0.054)***
Distance (rank)			0.968 (0.052)***
Observations	70322	44578	186679
Pseudo R-squared	0.1181	0.1877	0.1507

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: All the independent variables in column [3] in Table 6 are also controlled. The coefficients of other variables are not reported.

Table 11 Status and Pay

	OLS	Heckman 2-step	
	[1]	[2]	[3]
E[Change in Status_firm]	0.045 (0.011)***	0.042 (0.010)***	0.046 (0.012)***
E[Change in Status_occup]	-0.020 (0.006)***	-0.020 (0.006)***	-0.020 (0.006)***
Status_firm	0.029 (0.006)***	0.028 (0.005)***	0.030 (0.006)***
Status_occup	-0.009 (0.001)***	-0.009 (0.001)***	-0.008 (0.001)***
Age	-0.003 (0.001)**	-0.003 (0.001)*	-0.002 (0.001)*
Age-squared	-0.000 (0.000)*	-0.000 (0.000)*	-0.000 (0.000)*
Female	-0.049 (0.004)***	-0.049 (0.004)***	-0.049 (0.004)***
Part Time	0.084 (0.006)***	0.084 (0.006)***	0.084 (0.006)***
Wage (1K)	-0.054 (0.005)***	-0.054 (0.005)***	-0.055 (0.005)***
Acquired	0.009 (0.006)	0.010 (0.005)*	0.008 (0.006)
Firm Size (1K)	0.000 (0.004)	0.001 (0.004)	0.003 (0.004)
Firm Size-squared	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Distance Measures	no	no	yes
Observations	124898	186679	186679

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: Each regression includes age, gender, part time dummy, occupation dummy, firm size, industry dummy, year dummy, and region dummy. Heckman first-stage (selection) regression includes change in firm size, change in occupation size, and ratio of location change as well as all the same control variables in OLS.

Table 12 Wage Change of Leavers

(dependent variable = change in real wage of those who change firms within 2 years after M&As)

	Naïve Expectation		Rational Expectation	
	All Turnover	Voluntary Turnover	All Turnover	Voluntary Turnover
Acquired	1.1847 (14.248)	14.992 (16.0480)	-0.6944 (15.989)	8.006 (16.877)
status_firm	61.206** (30.48)	118.238*** (30.1690)	111.324*** (42.114)	144.251*** (34.748)
E[Δstatus_firm]	14.775 (55.5380)	148.396*** (51.623)	132.39** (73.672)	266.539*** (45.435)
status_occup	-0.7475 (9.447)	-4.5813 (9.216)	-17.735 (16.271)	-20.264 (15.234)
E[Δstatus_occup]	64.75* (35.29)	15.563 (33.335)	-62.228 (45.286)	-54.328 (44.420)
Number of Observations	16448	11636	10811	7972
R-squared	0.1977	0.2367	0.1954	0.2165

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: Each regression includes age, gender, part time dummy, occupation dummy, firm size, industry dummy, M&A year dummy, firm change year dummy, and region dummy. Naïve expectation is based on the expectation that all workers will remain after M&A. Rational expectation is based on the ex-post correct expectation on who will remain after M&A. See page 23 for more details. Voluntary turnovers are those who experience positive real wage change during the turnovers.

Table 13 Turnover and Wage Growth

	dependent variable			
	coef_E[Δstatus_firm] (turnover)		coef_E[Δstatus_occup] (turnover)	
	OLS	Weighted	OLS	Weighted
coef_E[Δstatus_firm] (wageG)	-3.3210*** (0.2576)	-4.2407*** (0.1745)		
coef_E[Δstatus_occup] (wageG)			-1.6580*** (0.4638)	-1.5718*** (0.4019)
constant	-1.4874 (1.1986)	-3.2633 (1.2927)	-0.4528 (0.6769)	-0.4095 (0.4469)
N	227	227	227	227
R-squared	0.4249	0.7242	0.0537	0.0595

* significant at 10%; ** significant at 5%; *** significant at 1%

Note: Variables are the estimated coefficients from the turnover analysis in Table 6 and wage growth analyses in Table 11, estimated by each acquisition. Weighted regressions use the size of M&A (measured by the total number white collar employee right before M&A) as the weights.

Figure 1 **Number of M&A and Number of Workers Involved**

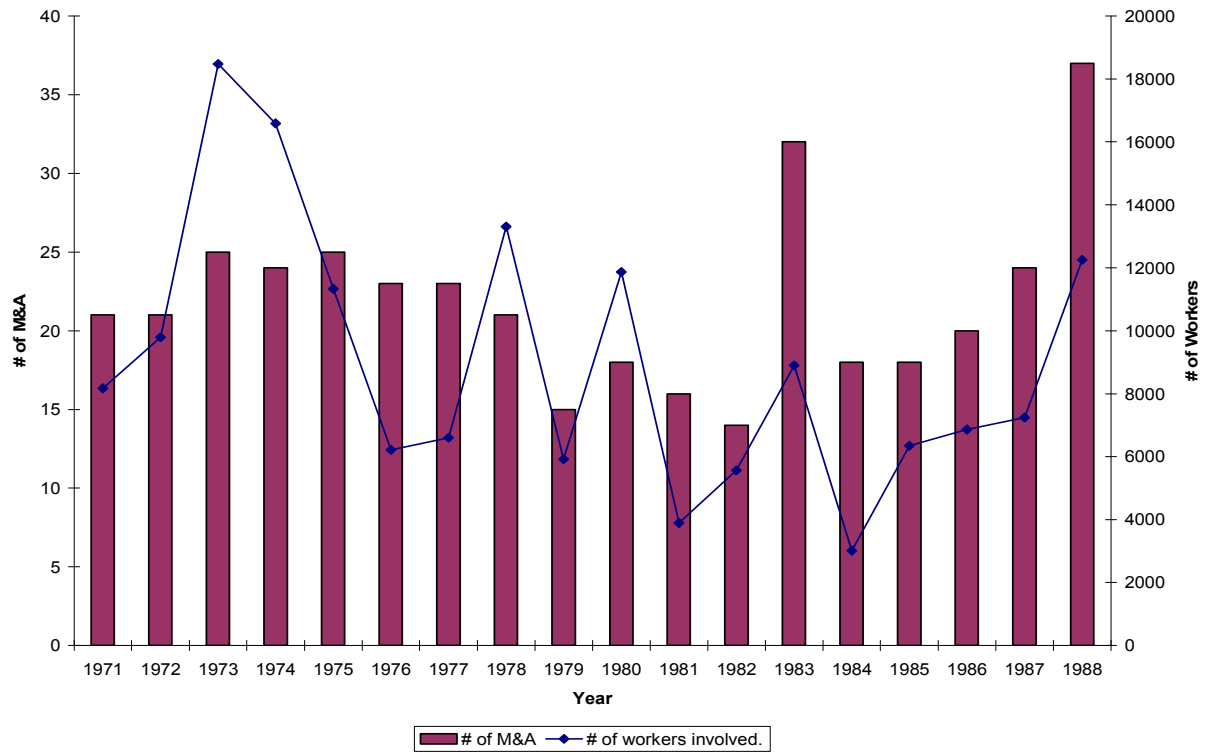
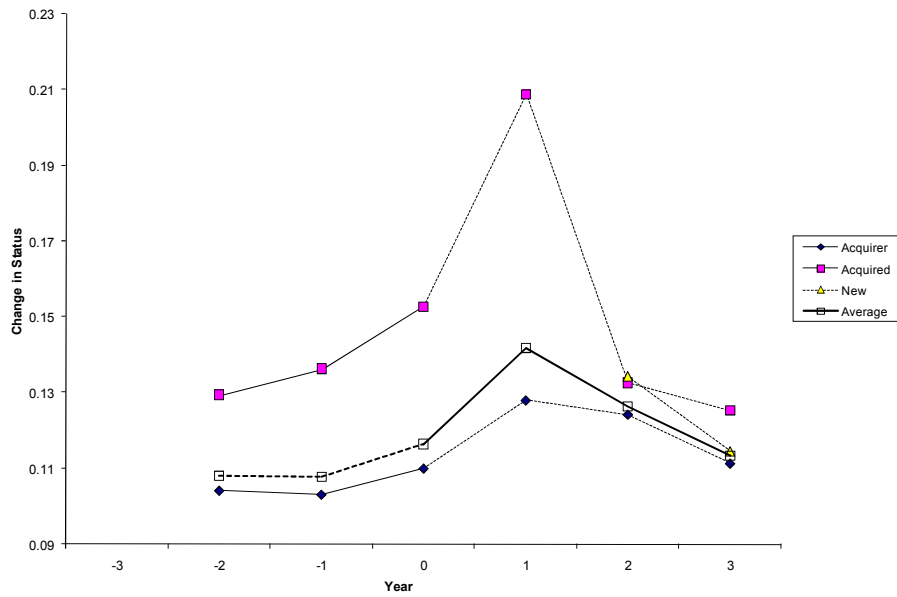
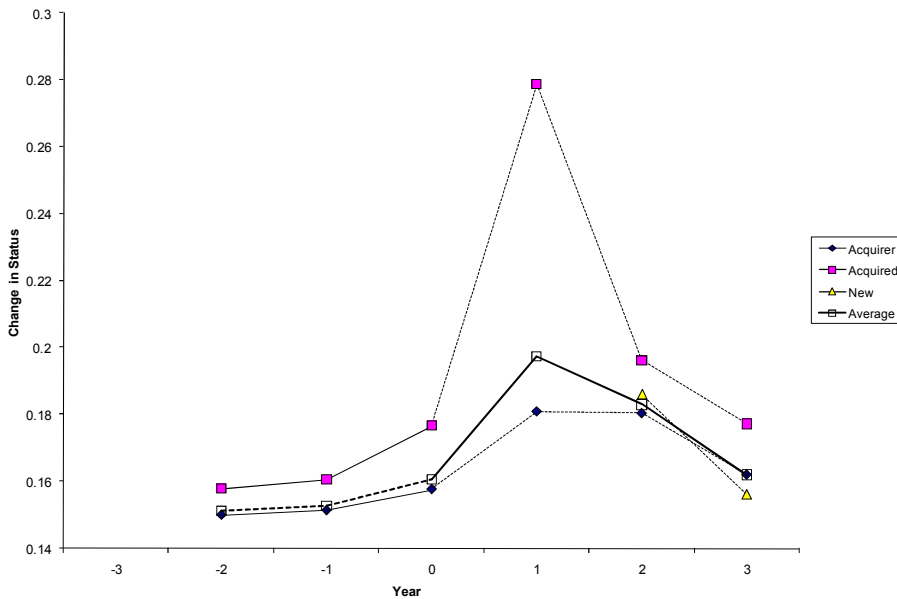


Figure 2 **Changes in Status and M&A**



(a) Change in Status within Firm



(b) Change in Status within Occupation

Note: “Change in Status” measures the *absolute* value of actual change in status (from the previous year) within firm or occupation. M&A take place between year 0 and year 1. The dotted lines after year 0 show the statistics of the *remaining* workers from acquirer or acquired firms and newly hired workers after M&A. “Average” before year 0 is the average among workers in acquirer and acquired firms. “Average” after year 0 is the average of all the workers in the merged firms.