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SIEPR Discussion Paper No. 07-26

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Evidence from M&A**

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April 2007

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Status, Relative Pay, and Wage Growth: Evidence from M&A

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Abstract

We use evidence from worker turnover following M&A events to show that workers' choices to exit or leave the firm depend on changes in workers' *relative* standing, or status, in terms of wage and rank. Our results show that social, rather than pecuniary, preference drives these choices. We also show that social preference varies with reference group. When workers' expected status within a group of co-workers in the same occupation increases, they are *less* likely to quit. In contrast, when workers' expected status compared to all workers within the same firm increases, they are *more* likely to quit. Moreover, for workers who lose status during M&A, the loss of social rewards is compensated by faster wage growth, suggesting a market for status.

This paper is based on individual-level wage data made available by the former Swedish Employers' Federation (SAF). We are grateful to Ari Hietasalo, Svenskt Näringsliv and Åke Kempe, Svenska Medlingsinstitutet for their extensive and exceptionally expert cooperation in preparing these data for analysis. We thank Robert Frank, Guillermina Jasso, Edward Lazear, Paul Milgrom, Paul Oyer, Dan Quint, Woody Powell, Katherine Shaw, Gary Solon, Steve Tadelis, Michael Waldman, Lise Vesterlund, Yoram Weiss, and participants of seminars at Colgate, Cornell, University of Michigan, NYU, Stanford GSB workshop, SUNY-Albany, SCANCORE seminar at Stanford University, and 2006 AEA meeting for helpful comments and suggestions. We also thank Minjung Park for excellent research assistance. All remaining errors are ours.

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1. Introduction

One of the most basic social phenomena in society is that people compare their circumstances and attributes with others. For example, they compare change in their relative standing, or status¹, with respect to wage, authority, or beauty, with co-workers, neighbors, or friends. The outcome of this comparison can lead to frustration or satisfaction, which in turn can affect job performance in such dimensions as turnover, cooperation, or effort choice. Although status is one of the most central concepts in sociology², it has been slow in making inroads to mainstream economics.³

To bridge this gap, we set out to answer four empirical questions in this paper: (1) Do workers' turnover choices depend on their relative standing with respect to wages, independent of absolute pay level?; (2) If so, what theories best account for their choices?; (3) Are they willing to sacrifice some of their absolute income to gain higher status?; (4) With whom and how do people compare?

If relative standing with respect to wages, hereinafter *status*, matters for people's preference for its social rewards (such as prestige, respect, equity) independent of pecuniary benefits (such as future income), that has immediate implications for personnel policy, organization structure, and market strategy (Martin 1981). Preference for status can not only affect aggregate consumption (Veblen 1949; Bourdieu 1984; Duesenberry 1949), wage compression (Frank 1985), involuntary unemployment (Akerlof and Yellen 1990), saving and growth (Fershtman et al. 1996), income distribution (Becker et al. 2005), and market competition (Podolny 2005) but it also requires rethinking measures of social welfare and economic growth. For example, in an extreme case where people only

¹ Status is often used as a generic term for relative standing. We will use status and relative standing interchangeably throughout the paper.

² See Jasso (1990) for a comprehensive survey of comparison theories in sociology.

³ Important exceptions include Akerlof and Yellen (1990), Baxter (1988), Duesenberry (1949), Gylfason and Lindbeck (1984), Frank (1985), Solow (1990), and Wood (1978), Veblen (1949). 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. Finally another involves assumptions made such as "individualism", particularly in neoclassical economics (Kjosavik 2003).

care about their relative standings, GDP growth may have nothing to do with the people's welfare (Durkheim 1951, Townsend 1979).

Although recent developments in experimental economics provide some evidence for social rewards or social preference, such as concerns for social status and fairness (see e.g. Sobel 2005, Fehr and Schmidt 2005), 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. In fact, most experiments intentionally prevent social interactions among their subjects. Therefore, while it may be shown that status matters in the lab, one could envision it playing an even greater role in the field or getting cancelled out by other types of social interactions. Thus, field evidence is needed to assess the empirical impacts of social preference, especially on job-related decisions.

However, the quantitative study of status and its social rewards presents at least three serious theoretical and empirical challenges. It is crucial for rigorous analysis and proper interpretation to understand these challenges. Thus, we first describe these challenges and then explain how this paper attempts to overcome these.

[1] Theoretically, status, as measured by relative wages, may affect workers' utility and behavior in two different ways: (i) *Social reward theories* would argue that status can provide *social* rewards, such as prestige or respect, independent of a person's pecuniary rewards or consumption. In other words, status can enter people's utility function as an independent variable, called social preference. (ii) *Pecuniary theories*, however, would argue that status mainly provides an instrumental value for future pecuniary rewards. For example, a worker with higher status may offer better signal of ability, which raises future wages (Podolny 2005⁴).

Note that both theories predict that workers' expected utility will increase with status, even after controlling for *current* absolute pay. Therefore, even if we identify the effect of status on people's actions or their self-reported happiness ratings controlling for

⁴ In contrast to our work that focuses on individuals' preferences and individuals within the firm, Podolny (2005) focuses on the firms' (or products') status in the market and how status distinctions in other related domains spill over into the market and affect market competition through signaling.

current income, it does not prove social reward theories. This observational equivalence is probably most responsible for many economists' reluctance to accept social preference⁵, but there exist surprisingly few quantitative studies that explicitly distinguish between social reward theories and pecuniary reward theories.

[2] Furthermore, the empirical identification of the effect of status itself is challenging, for at least two reasons. First, status is an endogenous variable. For example, status can be correlated with unobserved individual characteristics, such as ability. Also people can make conscious choice of their reference groups (such as friends, neighbors, or firms) within which status is measured. Then, status would be correlated with unobserved preferences of the individuals and unobserved characteristics of the reference group. Second, most workers' status varies because their own wages change over time, not because the wage distribution within a reference group changes. In other words, after controlling for absolute pay, there is not much variation in workers' status over time. Thus, for empirical identification, we need large exogenous changes of status, or an exogenous shock that affects other co-workers' wages, but not one's own. Most previous studies fail to find or utilize such a shock.

For example, many empirical studies on status either do not control for absolute income (e.g. Pritchard, Dunnette, and Jorgenson 1972, Valenzi and Andrews 1971) or make simple cross-individual comparisons without considering unobserved individual characteristics (e.g. Clark and Oswald 1996, Galizzi and Lang 1998, Martin 2003)⁶. Also when Luttmer (2005) attempts to control for unobserved individual characteristics for those who don't change reference group using individual fixed effects, his estimates lose statistical significance. Also many of these studies analyze the effect of status on subjective satisfaction (happiness) ratings, not on actions taken such as turnover decision. (see Frey and Stutzer 2002 for a survey.) However, it is well known that people often report relative satisfaction ratings instead of absolute satisfaction ratings in such surveys

⁵ For related discussion, see Postlewaite (1998) on using social preference as a reduced form of pecuniary reward theories.

⁶ 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.

or experiments, which potentially undermines the purpose of these studies. (see Tversky and Griffin 1991 and Frederick and Loewenstein 1999)⁷

[3] Another important challenge in the study of status is the identification of reference groups. That is, it is not obvious whether workers compare their wages with their co-workers in the same occupation in the same firm, or with co-workers in other occupations in the same firm, or with friends, or with neighbors. Moreover, it is quite possible that workers may care about their status within all these groups at the same time but for different reasons. For example, workers may care about their status within firm for its pecuniary rewards and status among neighbors for its social rewards. Since status within various reference groups are likely to be positively correlated, omitting a status within a particular reference group can bias the effect of status in other reference groups and its interpretation.

Most previous theoretical and empirical studies make the *ad hoc* assumption that there is just one reference group⁸, ignoring the possibility that different mechanisms can be operating for different reference groups. For example, most cross-individual analyses implicitly take people with similar observed characteristics in a survey that can be as large as the whole country, as a reference group. Akerlof and Yellen (1990) assumes workers in the same firm, while Summers (1988) assumes comparable workers in other firms as the reference group.

In this paper, we attempt to overcome these challenges using mergers and acquisitions, hereinafter M&A, as natural experiments. We measure workers' status by their relative standing with respect to wage (or occupation rank in a hierarchy) within their firm, and investigate whether changes in status caused by M&A affect workers' turnover decisions, controlling for changes in absolute pay. The analysis is based on more than 400 M&As in Sweden with more than 180,000 workers involved. We argue that an M&A event

⁷ Also see Bertrand and Mullainathan (2001) on the problems of using self-reported measures of happiness.

⁸ In theoretical works in sociology, there is a tradition of distinguishing multiple reference groups (see Merton (1949) 1957; Berger, Zelditch, Anderson and Cohen 1972; Jasso 1980). In economics, Frank (1985), for instance, discusses various reference groups. However, the field of multiple reference groups is plagued by paucity of data and hence a lack of empirical analysis.

provides a natural experiment to study the effect of social comparison processes such as changes in status. When M&A events occur, workers are introduced to a large pool of new co-workers, which changes each worker's status significantly. Furthermore, M&A decisions are mostly independent of an individual worker's (unobserved) characteristics. Thus, M&As generate large and exogenous variations in status, which allows us to identify its effects, especially on worker turnover decisions.

In addition, we propose an empirical test that can distinguish between social reward theories and pecuniary reward theories of status by studying the wage growth for workers after an M&A. Under the social reward theories, when a worker's status decreases after an M&A, the worker may receive less social rewards (such as prestige or respect). Therefore, in order to keep the workers, the firm would need to compensate with larger wages or faster wage growth. In contrast, under the pecuniary theories, when a worker's status decreases after an M&A, it would signal, for example, lower productivity of the worker, and lead to lower wages or slower wage growth. Thus, given an exogenous change in status, the response of subsequent wage (growth) allows us to empirically distinguish between the two types of theories.

The quantitative relation between status and absolute wage is interesting by itself, as it addresses an interesting concept of 'market for status'. For example, if workers are willing to sacrifice future income for higher status, and if different workers value status differently, then there can be a market for status where workers can trade status for higher absolute income. Frank (1985) and Becker et al. (2005) assume such a market in their theoretical models in order to explain the puzzles in wage compression and income distribution, but there has been little empirical evidence.⁹

M&A events are also ideal for the study of status because M&As change workers' *reference groups* only within the boundary of a firm. In other words, since it is unlikely that M&As will affect workers' status within family, friends, or neighbors, we do not need to worry about the potential bias from omitting workers' status in other reference groups outside firms. Thus, we mainly focus on workers' status in two reference groups

⁹ Zizzo and Oswald (2001) provide experimental evidence that subjects are willing to sacrifice their payoff to decrease others' payoffs.

within a firm: (i) status among co-workers in the same occupation in the same firm – simply called *status within occupation*, and (ii) status among all the workers in the same firm regardless of occupations – simply called *status within firm*.

Occupation and firm are particularly interesting as reference groups because workers in the same occupations are likely to be substitutable, but workers in different occupations are likely to be complementary. Therefore, the distinction of these two reference groups can shed light on which theory of status can dominate the other depending on the nature of complementarity with other workers in a reference group. Even though many theories in sociology acknowledge the heterogeneity of different reference groups, there exist few quantitative studies on the patterns of such heterogeneity, not to mention the causes for the heterogeneity.

A quick preview of our findings is as follows; when workers' expected status within occupation *decreases*, (i) the workers are *more* likely to quit. (ii) Those who chose to stay despite the loss of status, however, receive *faster*-than-average wage growth, as if they are being compensated for the loss of social rewards. As discussed above, these results are most consistent with the social reward theories of status, and difficult to reconcile with the pecuniary theories. Somewhat surprisingly when workers' expected status within firm *decreases*, we find the exact opposite. That is, (iii) workers are *less* likely to quit, and (iv) those who stay receive *slower*-than-average wage growth. As we discuss in the next section, these results are consistent with a social reward theory where workers care about their firms' quality/ status compared to other firms in the economy for its members' social rewards, such as the pride of working in a prestigious company. These results also highlight the importance of controlling for different reference groups in theoretical or empirical studies.

The rest of the paper is organized as follows: In section 2, we discuss different economic and sociological explanations of why people might care about status and derive testable empirical implications. In section 3, we describe our measurement of status and reference group. Section 4 describes the dataset. Section 5 presents the empirical results.

We also discuss an alternative explanation and other extensions in section 6. Section 7 concludes.

2. Theories and Empirical Hypotheses

In this section, we review different theories from economics and sociology of why people care about their status, especially relative standing in terms of wages, and derive empirical hypotheses for our analyses.

2.1 Status and Social Rewards

The relative standing of an individual, especially relative wage, can affect *social rewards* (such as prestige, equity, or relative deprivation), independent of pecuniary rewards.

For example, in *social status* theory, status within a particular group can signify prestige, honor, esteem, or respect. (e.g. see Goode 1978, Sorensen 1979, Jasso 2001) Therefore, the members of the group can positively value their status.

In *equity* theory, lower status can represent an individual's perceived inequity of monetary compensation. Thus, holding everything else constant, a lower status decreases the utility of the individual. In particular, when a person attempts to restore equity in other dimensions (e.g. by shirking in effort), status affects 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/her status is lower than the status of comparable others. Frank (1985) and Fershtman and Weiss (1998) also provide evolutionary justification for such a preference.¹⁰

One unique aspect of social rewards, often ignored in economics, is that peoples' concern for status and social rewards changes depending on the social/informational context. For example, consider a worker in a particular company. When the worker

¹⁰ For other theories and evidence, see Akerlof and Yellen (1990).

interacts with people outside the firm, the firm's group status within the economy may matter more than the worker's individual status within the firm, especially when people outside the firm do not observe the relative wage within the firm.

In this social context, a worker may prefer a *lower* status within the firm, holding everything else constant, in order to work with relatively higher-quality (and better-paid) co-workers who can raise the group status. This idea is captured by the concept of 'status group' in Weber 1922 [reprinted, 1978], or the 'halo effect' in Frank (1985)¹¹.

Similarly, in equity theory and relative deprivation theory, different social contexts offer different reference points. That is, when workers interact with people outside the firm, they may care about equity or fairness in terms of their firm's relative standing with respect to other firms.

2.2 Status and Pecuniary Rewards

Standard economics models, however, can explain concerns about status 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 status, not the absolute wage. Then, a higher status can signal higher quality and lead to larger future income. (see e.g. Stiglitz 1987, Podolny 2005) Also, one can easily model a tournament where the continuation payoffs increase as one gets promoted to higher levels. Then, a worker will positively value status (or relative standing within the promotion hierarchy) not because of the social rewards, but because of the future monetary (expected) income.

People may also negatively value their status not because of group status, but because of lower future income. For example, high status could mean that there is no more opportunity for future promotions or wage increases (Galizzi and Lang 1998). Then, workers, holding everything else constant, would prefer lower status. Also, if one can learn from higher quality (i.e. better paid) co-workers, people would prefer lower status. (Frank 1985) Also, in the context of M&A, if the average wage of workers in an

¹¹ See also Ridgeway (1991) and Jasso (2001).

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&A¹², even though their status within the firm would increase. Therefore, if this type of *wage compression* occurs after M&A, the increase in status would imply lower future wages and reduce the workers' expected utility.

Note that people's positive or negative valuations of status can be explained both by social rewards and by pecuniary rewards. The following table summarizes these theories.

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

	Social Reward Theory	Pecuniary 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

2.3 Empirical Hypotheses

As Table 1 summarizes, the fact that people positively (or negatively) value their status even after controlling for their current absolute pay does not necessarily imply that people have preferences for social rewards. In order to distinguish between social reward theories of status and pecuniary theories, we investigate how worker turnover and future income responds to an exogenous change in status, holding current pay constant.

Suppose that a worker's status in a company has increased for an exogenous reason. If workers positively value their status for its social rewards, their utility from the company would increase, and they would be less likely to quit. Furthermore, they would

¹² For example, American airline pilots opposed to the merger with Reno airline 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)

be willing to give up some future wage increase (or be less aggressive in pursuing a wage increase than others). Therefore, higher status would decrease the turnover probability and *decrease* subsequent wage growth rates.

In contrast, if workers positively value their status for its pecuniary rewards, their expected utility from the company would increase, and they would be less likely to quit, because they expect higher status would lead to higher wages in the future. In this case, higher status would decrease the turnover probability and *increase* subsequent wage growth rates.

Note that we can distinguish social reward theories of status and pecuniary theories by analyzing how an exogenous change in status affects wage growth rates in the immediate future¹³.

Similarly, suppose that workers *negatively* value their individual status within the firm because they care more about their firm's group status for its social rewards (e.g. pride of working in a prestigious company). Then, when status increase exogenously or when workers have to work with other lower-paid (and less-productive) co-workers, their utility will decrease, and they will be more likely to quit. Furthermore, in order for them to stay, they would need to be compensated by higher wages. Therefore, in this case, higher (individual) status would increase turnover probability and *increase* wage growth rates.

However, workers may negatively value their status for pecuniary reasons. For example, when status increase exogenously or when a worker has to work with more lower-paid (and less-productive) co-workers, s/he may expect lower future wage growth due to wage compression. Higher status could also mean no further opportunities of promotion. In this case, higher status would increase turnover probability and *decrease* wage growth rates.¹⁴

¹³ Making more detailed distinctions among social reward theories or among pecuniary theories is beyond the scope of this paper, and is pursued in a separate paper.

¹⁴ Galizzi and Lang (1998) find that when average wage in the establishment increases, workers are less likely to quit and have higher wage growth rates. However, they don't consider social reward theories. Also, as noted before, they do not control for unobserved individual characteristics or multiple reference groups.

Table 2 summarizes these different predictions that we will bring to the empirical analysis.

Table 2 Predictions of Alternative Theories

Measure	Effect	Theory	$\frac{\partial(\text{prob. of turnover})}{\partial s_i}$	$\frac{\partial(\text{wage growth})}{\partial s_i}$
$s_i = \text{status}$	$\frac{\partial U_i}{\partial s_i} > 0$	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)	+	-

3. Measurement

In order to estimate the effect of status on worker turnover and the future wage growth rate, we discuss how to measure status and define reference groups.

3.1 Status

Within a reference group, we measure each individual's status by the relative ranking of wages. Note that an individual does not need to observe everyone else's wage in order to compute his/her status. S/he only needs to know his/her own wage and the distribution of wages in the group. In particular, following the tradition in sociology, we define status as follows:

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

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 particular functional form has been widely used in sociology (e.g. Sørensen 1979, Jasso 2001), and based on the observation that “prestige payments rise steeply” (Goode 1978, p.142).

This formula captures two important aspects of status. (i) Because the status measure in (1) 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. (ii) A high relative ranking in a large group provides more 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 in N .

We also have used alternative measures, such as the relative ranking of wage itself ($= n/N$) and the deviation of absolute wage from the average wage ($w_i - \bar{w}$), but found no qualitative changes.¹⁵ Later, we also measure status not by the relative standing of wages, but by the relative standing in the occupation hierarchy, but do not find qualitative changes either.

3.2 *Expected Changes in Status*

In order to measure the effect of status, there should be exogenous variation in the status that is independent of workers’ unobserved characteristics. As discussed above, it is very difficult to find such exogenous variation in the field data. Most previous studies based on field data have used cross-individual variation. However, it is well-known that such variation is likely to be correlated with individual unobserved characteristics. One could

¹⁵ One can draw different sociological interpretations regarding status, equity, and distributional justice in general, depending on whether status is concave or convex in relative rank of wages (see Jasso 2001 for an overview). For the purpose of this paper, it is sufficient to show that our qualitative results are robust to various functional forms of status.

use time variation in the relative wage within individuals after controlling for individual fixed effects, but such variations are typically too small.

An important innovation of our paper is the use of M&A as an exogenous shock to status¹⁶. As discussed in the introduction, M&As provide natural experiments for studying the effect of status. Also, instead of directly asking for workers' subjective satisfaction rating, we infer their preference through their turnover behavior. In this way, we avoid the problem that people often report relative satisfaction ratings instead of absolute satisfaction ratings in surveys or experiments, which potentially undermines the purpose of our study¹⁷. Furthermore, the predictions on turnover, as summarized in Table 2, do not require any additional assumptions on how *marginal* utility depend on status.¹⁸

In studying the effect of status on worker turnover, however, we cannot observe the actual change in status for those who leave the firm during M&A. Since those who leave are likely the workers who care about status most, ignoring them can cause selection bias. Therefore, we estimate the effect of the *expected* change in status prior to the merger. More specifically, we measure a worker's *expected* post-merger status within firm based on relative ranking of wages among all the workers *in both firms combined* right before the merger.

For example, suppose firm A and firm B merge at the end of time t . Denote the total number of workers in firm A and B at time t by $N_{A,t}$ and $N_{B,t}$, respectively. Also, denote a worker's raw ranking (where 1 is the lowest and $N_{A,t} + N_{B,t}$ is the highest) of wages among all the workers in *firm A and B combined at time t* by $n_{A+B,t}$. Then, the expected post-merger status within a firm is specified as follows:

¹⁶ M&As are also often used in sociology to study the issues of social identity. However, these studies are based on workers' self-reported identity or satisfaction rating, and often do not control for monetary income. (e.g. Knippenberg and Leeuwen 2001)

¹⁷ Telly, French, and Scott (1971), Dittrich and Carrell (1979), and Galizzi and Lang (1998) also study the effect of status on turnovers. However, they all rely on cross-individual analysis without using exogenous variations of status. They don't control for multiple reference groups, and do not attempt to distinguish between social reward and pecuniary reward explanations either.

¹⁸ To draw other behavioral implications (such as saving or effort), one needs to make an additional assumption that the marginal utility, not the level of utility, depends on status. See Luttmer (2005) for more discussion.

$$E_t[s_{t+1}] = \ln\left(\frac{N_{A,t} + N_{B,t} + 1}{N_{A,t} + N_{B,t} + 1 - n_{A+B,t}}\right) \quad (2)$$

Then, we define the expected change in status as the difference between (2) and the worker's actual status right before the merger. That is, for a worker in firm A, the expected change in status within firm after the merger (denoted by $E[\Delta\text{status}_f]$) is:

$$\begin{aligned} E[\Delta\text{status}_f] &= E_t[s_{t+1}] - s_t \\ &= \ln\left(\frac{N_{A,t} + N_{B,t} + 1}{N_{A,t} + N_{B,t} + 1 - n_{A+B,t}}\right) - \ln\left(\frac{N_{A,t} + 1}{N_{A,t} + 1 - n_{A,t}}\right) \end{aligned} \quad (3)$$

where $n_{A,t}$ is the raw ranking of wages among workers in firm A at time t.

The effect of this expected change in status on turnovers and wage growth is the primary focus of this paper. Note that we can compute this expected change in status for everyone prior to an M&A including those who quit during the M&A, and avoid the potential selection bias problem. Furthermore, the use of expected changes in status filters out many merger specific shocks caused by unobserved merger or firm characteristics that affect both status and turnovers.

However, our measure of the expected status in (2) assumes that workers naively believe all the workers prior to an M&A will stay after the merger, or that the relative ranking of wages based on pre-merger wages would not change after the merger. But workers may be able to rationally expect who will leave the firms during M&A, and revise their expectation of status among those who will stay. Therefore, later in the paper, we develop an alternative measure of expected status where workers have perfect foresight on who will quit during M&As.

3.3 Reference Group

As discussed above, the reference group for status can change depending on the social/informational context. Furthermore, different status in multiple reference groups

can be at work simultaneously. Since we cannot determine *a priori* which reference groups are relevant in a given situation in which way, we need to control for status within different groups simultaneously and let the data speak to us.

In particular, we focus on the status in two reference groups simultaneously: (i) status among coworkers in the same occupation within the firm – called ‘status within occupation’ or *status_fo*, and (ii) status among workers in the whole firm regardless of their occupations – called ‘status within firm’ or *status_f*. Since M&As are largely exogenous to individual workers’ characteristics and preference, we can assume that workers’ status in various other reference groups outside firms (e.g. family, friends, or workers in other firms) are not correlated with the changes of *status_f* or *status_fo*. Otherwise, we would need to deal with potential omitted variable bias because there is no practical way of controlling for different status in all the relevant reference groups.

As in (3), when firm A and B merge, for a worker in firm A, the expected change in status within occupation *o*, denoted by $E[\Delta\text{status_fo}]$, is defined as follow:

$$\begin{aligned} E[\Delta\text{status_fo}] &= E_t[s_{t+1}^o] - s_t^o \\ &= \ln\left(\frac{N_{A,t}^o + N_{B,t}^o + 1}{N_{A,t}^o + N_{B,t}^o + 1 - n_{A+B,t}^o}\right) - \ln\left(\frac{N_{A,t}^o + 1}{N_{A,t}^o + 1 - n_{A,t}^o}\right) \end{aligned} \quad (4)$$

where $N_{A,t}^o$ represents the number of workers in occupation *o* in firm A at time *t*, and $n_{A+B,t}^o$ is the raw ranking of wages among workers in occupation *o* in both firm A and B combined at time *t*. Other variables are similarly defined.

Occupation and firm are particularly interesting as reference groups for at least two reasons. First, workers in the same occupation and/or the same firm are likely to have most close and frequent social interactions. Second, workers in the same occupations are likely to be substitutable, but workers in different occupations are likely to be complementary. Therefore, the distinction of these two reference groups can shed lights on how the nature of complementarity with other workers in a reference group affects workers’ preference for status. Even though many theories in sociology acknowledge the

heterogeneity of different reference groups, there exist few quantitative studies on the patterns of such heterogeneity, let alone the causes for the heterogeneity.

4. Data

To use M&A as the basis for empirical research on status, one needs detailed personnel records of both firms before and after the merger. Because personnel records are typically confidential, it is difficult to get personnel records from one company, and even more difficult to get personnel records from two companies especially both before and after the merger.

Thus, Swedish employer-employee match data are ideal for this study. These data are essentially the collection of personnel records of white-collar workers in *virtually all the firms* in the private sector of Sweden from 1970 to 1990 (except banking and insurance)¹⁹. The data served as the input to the centralized wage negotiations and were gathered from personnel records by The Swedish Federation of Employers and monitored by the labor unions²⁰. Thus, the data is of very high quality. For each worker, the data contain *annual* information on wage, age, gender, 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 each individual worker across and within firms and occupations throughout his/her career.

Occupation code (called BNT code) is a four-digit code, where the first three digits (occupation ID) describe types of tasks. The fourth (rank ID) describes the degree of skill needed to fulfill the tasks and the number of subordinates. The white-collar workers' occupations cover 51 three-digit occupation groups such as construction, design,

¹⁹ The data also excludes the executive team (e.g. CEO or CFO).

²⁰ During 1970s, the Swedish labor market system was based on two main principles, the solidaric wage policy and the central wage bargaining system. The first was based on the idea equal pay for equal work, and the second encompassed a three-step (central, industry, and regional) bargaining. However, the centralized bargaining system started to break down since 1983. Kwon and Meyersson Milgrom (2004) also shows large wage variations within each job between 1986 and 1989. The qualitative results of this paper do not change even when we focus on M&As between 1986 and 1989.

²⁰ The data also excludes the executive team (e.g. CEO or CFO).

and management. For more details, see appendix A. Within each occupation, the fourth digit rank code runs from 2 (highest) to 8 (lowest).

Information about education is largely missing. However, because of homogenous skill requirements in each occupation code, occupation code provides a reasonable control for education. The data also lacks information about firm tenure. However, due to the long and expansive span of the data, we can compute workers' tenure for those who enter the data (or labor market) after 1970.

In this study, we focus on the firms involved in mergers and acquisition. Our data do not include information about firm ownership. Therefore, we identify mergers and acquisition based on the changes in workers' firm IDs. That is, if more than 50% of workers change firm ID²¹, say from A to B, and if the old firm ID, A, disappears from the data, then we say "B has acquired A". We also refer to B as 'acquirer' and to A as 'acquired'. We also restrict our attention to firms with more than ten white-collar workers²². 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 firm A and B disappear. Therefore, we focus on clearly identified acquisition cases only.²³

This sample contains 443 acquisition cases and 186,679 workers. Figure 1 shows these numbers by year.

[Figure 1 here]

Table 3 shows the summary statistics of selected variables. At the firm level, acquiring firms are, on average, much larger than acquired firms. The average ratio of acquired to acquirer firm size is 0.61, but there are large variations. At the individual worker level, acquiring firms and acquired firms are comparable in workers' average age, rank, female

²¹ Even when we require more than 90% of workers to change firm ID, there is very little change in our results.

²² Focusing on firms with more than 100 white-collar workers does not change the qualitative results of the paper.

²³ Some firms are involved in more than one M&A during our sample period. Excluding M&As where the same firm is involved in more than one M&A within 6 years does not change our qualitative results.

ratio, and wages. Though the average rank and wage are slightly higher in acquiring firms, it can be largely explained by the differences in firm size.

At the worker level²⁴, workers in acquired firms have, on average, higher turnover rates than those in acquiring firms. Average turnover rates in the first year after M&A (turnover1) are 12.1% for acquiring firms and 15.5% for acquired firms. In comparison, the average turnover rate in Sweden is about 10%. Within three years, turnover rate (turnover3) is 32.6% for acquiring firms and 39.2% for acquired firms.

M&As lead to significant changes in workers' status, or relative standing with respect to wages. Because acquiring firms are much larger, most changes in status occur in acquired firms. When status is measured by (1), for an average worker in acquiring firms, M&A brings 2% and 3% changes in status within firm and within occupation, respectively. However, for an average worker in acquired firms, M&A brings 14% and 20% change in status within firm and within occupation, respectively. To gain some idea of the magnitude of our status measure, if a person is top 22nd ranked among 60 workers (or 63.3% below), the status would be 0.975. If the same person is ranked top 200th among 460 workers (or 56.5% below) after a merger with 400 workers, the change in status would be 0.145.

[Table 3 here]

Table 3 also shows the correlations among wages, status, and changes in status. Not surprisingly, the wage, status within firm (status_f), and status within occupation (status_fo) are all highly correlated. However, more importantly, the correlation between the expected changes in status within firm ($E[\Delta\text{status}_f]$) and the expected changes in status within occupations ($E[\Delta\text{status}_{fo}]$) is not high enough to cause a multicollinearity problem, but high enough to introduce omitted variable bias if one fails to control for both.

²⁴ The number of workers from acquired firms is much smaller than what the firm size ratio suggests. It 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 on larger firms only does not change our qualitative results.

For more details on the data and the institution, see Kwon and Meyersson Milgrom (2004, 2005).

5. Status and Turnover

5.1 *Turnovers*

We first compare general turnover patterns between firms involved in M&A and firms that have never been involved in M&A in order to see if M&A firms are representative and if M&As lead to any structural changes in turnover patterns. In Table 4, we use probit regressions to describe turnover patterns. Non-M&A firms are 30% random sample of the firms that have not been involved in any type of M&A during our sample period (1970-1990). Every regression includes occupation rank, occupation, industry, year, and region dummies.

[Table 4 here]

Columns [1] and [3] show no qualitative difference between non-M&A firms and M&A firms during non-M&A periods²⁵, which suggests that M&A firms are representative. Controlling for occupation and rank, the turnover rate decreases with age, firm size, and firm growth rate. Interestingly, turnover rate is lower for female workers and for part time workers given occupation and rank. However, in earlier studies, we show that they are generally in the occupations and ranks with high turnover rates (Kwon and Meyersson Milgrom 2004).

Columns [3] and [5] show that turnover patterns of M&A firms during non-M&A periods and M&A periods are generally similar, which implies that M&As do not change general turnover patterns significantly. One exception is that part-time workers are more likely to quit than full-time workers during M&A, though it was the opposite during non-M&A periods.

²⁵ 'non-M&A periods' are defined as years when there are no M&As within two years before and after .

We also control for wage in columns [2], [4], and [6]. The wage is generally not significant, and controlling for wage does not affect the estimated coefficients of other variables. This suggests that the potential correlation between wage and other unobserved individual characteristics do not affect our estimations.

[Figure 2 here]

Figure 2 shows how firm size and turnover rate change during M&As²⁶. Note that, on average, the combined firm size between acquirer and acquired does not change much between 3 years before and after the M&A. Thus, it appears that M&As are not systematically used as a layoff strategy or a firm growth strategy.

Turnover rates are higher for acquired firms, but note that even 3 years before an M&A, acquired firms have higher turnover rates. Therefore, the differences in turnover rates are likely due to the differences in firm size. Turnover rates also increase right after the M&A, even though Figure 2(a) suggests that the increase is not large enough to affect the combined firm size. Interestingly, turnover rates in acquiring firms increase even one year before the M&A. Thus, some workers seem to quit in expectation of upcoming M&As.

5.2 *Change in Status and Turnover*

In this section, we analyze the effect of the *expected changes* in status both within an occupation ($E[\Delta\text{status_fo}]$) and within a firm ($E[\Delta\text{status_f}]$) controlling for the pre-merger wage, and the pre-merger status both within an occupation (status_fo) and within a firm (status_f).

[Figure 3 here]

²⁶ The firm size and turnover rates in this figure are different from the average of our sample shown in Table 3, because M&As that do not have a complete 7 year history between 3 years before and after the M&A are excluded in this figure.

As discussed earlier, our identification depends on significant exogenous changes of status during M&A. Figure 3 shows the workers' *actual* change in status both within firm and within occupation from the previous year. Note that M&As bring significant additional changes in status, especially in acquired firms. For status within firm, the average change in status (in absolute terms) in the acquired firm is around 0.13 before the M&A, but it increases by almost 60% to 0.21 during the M&A (between periods 0 and 1). The expected changes in status as measured in (3) and (4) essentially capture this additional change in status caused by the M&A.

In Table 5, we first estimate the following *probit* regression for workers' turnovers within two years after the acquisition²⁷.

$$T_{ijt} = \alpha_1 Acquired_{jt} + \alpha_2 Status_{-f_{ijt-1}} + \alpha_3 E[\Delta Status_{-f_{ijt}}] + \alpha_4 Status_{-fo_{ijt-1}} + \alpha_5 E[\Delta Status_{-fo_{ijt}}] + \alpha_6 Wage_{ijt-1} + X'_{ijt-1} \cdot \gamma + Z'_{jt} \cdot \phi + \delta_t \quad (5)$$

where $T_{ijt} = 1$ if worker i from firm j quits within two years after an 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 female dummy variable, a part time dummy variable, occupation dummy variables, the ratio of before-and-after-merger occupation sizes, and county-level region dummy variables. Z_{jt} is a vector of firm characteristics that include post-merger (combined) firm size, ratio of before-and-after-merger firm sizes, ratio of workers who move to other plants in different regional codes during an M&A, and industry dummy variables. δ_t are time dummy variables for the year of the M&A. Standard errors are also adjusted for clustering within each M&A case.

[Table 5 here]

²⁷ We focus on turnovers within two years after an M&A because Figure 2(a) shows that turnover rates increase even one year after an M&A, especially in the acquired firms. However, even when we study only the turnover immediately after an M&A, the qualitative results do not change.

In Table 5 [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 no significant effect on worker turnover. However, Table 5 [2] shows that the expected changes in status within an occupation have a negative and significant effect on turnover probability. In Table 5 [3], we control for both the expected changes in status within a firm and within an occupation. Then, the expected change in status within a firm has positive and significant effect on turnover, but the expected change in status within an occupation has negative and significant effect on turnover.

[Table 6 here]

In Table 5, we have not controlled for the expected change in wages, because it is difficult to measure. Thus, in Table 6, we estimate the turnover probability using the actual change in wage and the *actual* change in status for those who still remain right after M&As. Note that those who quit during the M&A process are omitted because we don't observe actual changes in status and wages for them. Thus, we control for the potential selection bias using the Heckman two-step procedure or instrument variable estimation. The selection regression for (1) includes all the same control variables except that the expected changes in status are used instead of the actual changes in status. Also, the change in wage is not included in the selection regression. The qualitative results do not change from Table 5 column [3].

In column [2], we again control for actual changes in wages and actual changes in status. However, instead of using Heckman 2-step, we use the expected changes in status as instrument variables for actual changes in status. Column [2] shows the same qualitative results as column [1].

In all regressions, the workers from the acquired firm are, on average, more likely to quit. As discussed earlier, the difference existed even before the M&A. However, it is still possible that there exist structural changes of firms which have pushed certain types

of workers to quit more than others. If such structural changes are correlated with workers' status (e.g. high status workers get redundant or low status workers get laid off), we might be capturing the effect of such structural changes, not the effect of changes in status. We discuss this possibility in more details in later sections.

The level of wages is measured before the merger. However, there are still concerns about endogeneity. Thus, we have repeated the same regressions without controlling for the level of wages, but found little change. Other variables have expected signs, and the coefficients are robust across different specifications.

The effect of status change is economically significant. According to the estimates from Table 5 column [3], for an average worker, one standard deviation increase in status within firm raises the turnover probability by 10.2%. Also, one standard deviation increase in status within occupation reduces the turnover probability by 12.1%. Alternatively, based on the estimates from Table 6 column [1], for an average worker, one standard deviation increase in status within firm is equivalent to a decrease in monthly wage by 504.96 Kronor or a 15.9% decrease in average monthly wage. Also, one standard deviation increase in status within occupation is equivalent to an increase in monthly wage by 215.14 Kronor or a 6.8% increase in average monthly wage.

There are at least three noteworthy findings. First, an expected (or actual) increase in status within an occupation ($E[\Delta\text{status_fo}]$) decreases the turnover probability. This effect is consistent with the social reward explanation. Because workers within the same occupation perform similar tasks and because workers in the same occupation are substitutable, status can provide social rewards such as prestige and respect. Then, a higher status can lead workers to stay in the firm. However, recall that this finding is also consistent with the pecuniary explanation such as in signaling models. That is, higher status among substitutable workers could signal higher productivity and increase the future absolute income.

Second, somewhat surprisingly, an expected (or actual) increase in status within a firm ($E[\Delta\text{status_f}]$) increases turnover probability. This result is consistent with group

status theory. If workers do not directly compete with other workers in different occupations, and if workers in different occupations perform complementary tasks, then workers would prefer working with higher quality (and better paid) co-workers for better group reputation against other firms in the economy. Since higher status after the merger could mean the introduction of low-quality co-workers, it can cause the workers to leave the firm due to lower group status. However, again recall that this finding is consistent with the expected wage compression after M&As.

Third, notice the importance of distinguishing two reference groups. Without controlling for the expected changes in status within occupation, we find that the expected changes in status within firm are not significant. Thus, it demonstrates that the failure to control for different reference groups can cause significant bias in estimating the effect of status²⁸.

5.3 *Specification and Robustness Tests*

To confirm our estimation results, we perform various specification and robustness tests in Table 7.

[Table 7 here]

■ Hypothetical M&A

If two firms are *not* merging, then there is little reason workers would care about their status against workers in other firms, especially those in other occupations as well. Therefore, as a specification test, we repeat the same analysis as in Table 5 for hypothetical M&A 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 would not expect M&A with a specific firm five years later, they would not care about status against workers in the other firm at that time. In

²⁸ This may explain why Telly, French, and Scott (1971) and Dittrich and Carrell (1979) find the relative wage does not provide a significant explanation for turnover.

Table 7 [1], we repeat the same analysis as in Table 5 [3], pretending firms are merging five years before the actual M&A. If our specification and interpretation are correct, the expected changes in status both within occupation and within firm should not be significant in these hypothetical M&A. Indeed, table 7 [1] shows that the expected (hypothetical) changes in status both within occupation and within firm are not significant.

■ Rational Expectations

When we compute the expected change in status in equation (3), 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 5. Then, workers can predict the 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/her expected change based on the worker's expected post-merger status if s/he would have stayed (assuming all the others would not change their turnover decisions)²⁹. For example, suppose firms A and B merge at the end of time t . Denote the set of workers from both firms A and B who stay right after the merger, or at the end of time $t+1$, by $\Omega_{A+B,t+1}$. Also, denote the number of workers in $\Omega_{A+B,t+1}$ by $N_{\Omega,t+1}$. If a worker belongs to $\Omega_{A+B,t+1}$, his/her (rational) expected post-merger status within firm is

$$E_t^R [s_{t+1}] = \ln \left(\frac{N_{\Omega,t+1} + 1}{N_{\Omega,t+1} + 1 - n_{\Omega,t}} \right) \quad (6)$$

²⁹ Workers' (rational) expected post-merger status can still 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 merger, not the actual post-merger wages. Second, workers newly hired during mergers are not accounted for.

where $n_{\Omega,t}$ is the raw rank of wages at *time* t among workers who belong to $\Omega_{A+B,t+1}$.

If worker i does not belong to $\Omega_{A+B,t+1}$, we define $\Omega_{A+B,t+1}^+ = \Omega_{A+B,t+1} \cup \{i\}$. Then, worker i 's (rational) expected post-merger status within firm is

$$E_t^R[s_{t+1}] = \ln \left(\frac{N_{\Omega^+,t+1} + 1}{N_{\Omega^+,t+1} + 1 - n_{\Omega^+,t}} \right) \quad (7)$$

where $N_{\Omega^+,t+1}$ is the number of workers who belong to $\Omega_{A+B,t+1}^+$ and $n_{\Omega^+,t}$ is worker i 's raw rank of wages at *time* t among workers who belong to $\Omega_{A+B,t+1}^+$. The rational expected post-merger status within occupation can be computed in the similar matter.

Table 7 column [2] shows that there are no changes in the qualitative results when we use rational expectations to compute the expected changes in status.

■ Relative Standing in Occupation Hierarchy

So far, we have measured workers' status within an organization based on relative ranking of wage. However, workers may care more about their relative standing in the hierarchy of a firm, often represented by the job-titles. Also, suppose that, like the group reputation effect, status matters due to the perception of outsiders (e.g. friends, neighbors, or business partners outside the firm). Then, the relative standing within the hierarchy of a firm would be a better measure of workers' status because it is much more visible to outsiders than the relative standing with respect to wages is.

One of the unique features of the Swedish data is that it contains accurate information on rank within each occupation, ranging from 2 (highest) to 8 (lowest). The ranks are determined based on required skill levels and responsibility, and they are comparable across firms. However, ranks across different occupations are not exactly 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:

$$\text{status}^H_fo = \frac{\# \text{ of workers below one's own rank within the occupation}}{\text{total number of workers within the occupation}} \quad (8)$$

The expected post-merger status is computed in the same fashion as (4) using the workers' occupation ranks in both firm A and B combined.

In Table 7 [3], when we use status^H_fo and $E[\Delta\text{status}^H_fo]$ instead of status_fo and $E[\Delta\text{status_fo}]$, there are no changes in the qualitative results.

■ Controlling for Tenure

It is well-known that firm tenure has significant effect on turnover decisions (see, e.g., Farber 1999). Unfortunately, the Swedish data do not contain tenure information (or the date of hire). However, given the long span and the expansive nature of the data, we can construct 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. Thus, we repeat our analysis of firm turnovers using this sub-sample of M&As between 1986 and 1988, adding tenure and tenure-squared as control variables.

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

Table 7 column [4] shows that controlling for tenure using this sub-sample does not change the qualitative results. Therefore, the lack of control for tenure or the centralized wage bargaining system in the 1970s does not appear to be responsible for our results.

■ Involuntary Turnover

An alternative explanation for our findings is that workers are fired in a systematic way during an M&A. 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 get fired, perhaps because they have high skills. Then our estimates would be capturing these structural changes in worker composition, not the changes in status per se.

To control for this possibility, we repeat our analysis after excluding involuntary turnovers. We define turnovers as involuntary if the real wage of a worker decreases after turnover or if a worker does not show up in the dataset for at least one year before showing up again (= temporary unemployment).³⁰ About 20% of turnovers are involuntary according to our definition. This is relatively high given that it is very difficult for firms to fire workers in Sweden. Thus, probably we are over-estimating the number of involuntary turnovers.

In Table 7 column [5], we show that the qualitative results do not change even after we exclude involuntary turnover. While our definition of involuntary turnovers is not perfect, as we discuss below, the wage growth patterns after acquisition are not consistent with the involuntary turnover explanations either.

6. Wage Growth and Market for Status

As discussed in section 2, we can distinguish different theories of status, especially between social reward theories and pecuniary rewards theories, by analyzing how future wages respond to an exogenous change in status.

Figure 4 shows that in three years before an M&A, there is little difference in average wages between acquirer and acquired firms. However, the acquired firms' wage declines right before the acquisition, which suggests that the acquired firms are in financial trouble before being acquired. Interestingly, the wage difference between two

³⁰ We also have used alternative definitions (e.g. when wage does not increase as much as the predicted wage in the M&A firm) and found no change in the qualitative results.

firms at the time of M&A (period 0) persists even two years after the acquisition (period 3). In other words, there is no obvious wage compression or convergence after M&A.

[Figure 4 here]

To study the role of expected changes in status, we estimate the following wage regression:

$$\begin{aligned}
 WageG_{ijt} = & \beta_1 Acquired_{jt} + \beta_2 Status_f_{ijt-1} + \beta_3 E[\Delta Status_f_{ijt}] + \beta_4 Status_fo_{ijt-1} \\
 & + \beta_5 E[\Delta Status_fo_{ijt}] + \beta_6 Wage_{ijt-1} + X'_{ijt-1} \cdot \theta + Z'_{jt} \cdot \xi + \delta_t + \varepsilon_{ijt}
 \end{aligned} \tag{9}$$

where $WageG_{ijt}$ is the average annual wage growth rate between a year before M&A and two year after M&A. $Acquired_{jt} = 1$ 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 female dummy variable, a part time dummy variable, occupation dummy variables, and county-level region dummy variables. Z_{jt} is a vector of firm characteristics that include before-merger firm size and industry dummy variables. δ_t are time dummy variables for the year of M&A.

[Table 8 here]

From column [1] in Table 8, when their status within firm increases, workers experience a faster wage growth rate. However, when their status within occupation increases, workers experience slower wage growth rate. For example, for an average worker, one standard deviation increase in status within firm raises annual (nominal) wage growth rate from 6.37% to 10.62%. Also one standard deviation increase in status within occupation reduces annual (nominal) wage growth rate from 6.37% to 4.6%.

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 M&As,

there are potential concerns about selection bias. Thus, we first estimate the 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, and then correct for the selection bias. Column [2] shows, however, no qualitative changes in the results.

Based on earlier discussion as summarized in Table 2, these results combined with the results from turnover analysis suggest that workers care positively about their individual status against other coworkers in the same occupation for social rewards, such as prestige, respect, or equity. At the same time, they care negatively about their individual status against workers in other occupations within the firm because they care more about their firm's group status against other firms for its social rewards.

These findings are important for several reasons. First, to our knowledge, this is the first empirical evidence based on large field data showing that people care about their status for its social rewards, instead of instrumental value for future pecuniary income.

Second, to our knowledge, this is also the first empirical evidence to show that, depending on the complementarity or substitutability of co-workers within a group, people care more (or less) about their status against co-workers within the group than about the group status against people outside the group. These results have obvious implications for organization design and personnel policy. For example, a relatively-low-paid worker within an isolated department of substitutable co-workers will not be happy about his/her status within the department, which can lead to poor motivation and bad performance. However, if the same worker is allowed to interact with better-paid (higher quality) workers who have complementary skills or tasks in other teams, the worker will be happy about his status and better-motivated.

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, the workers' willingness to pay for higher status strongly suggests the possibility of such a market. These findings

also provide empirical support for Frank (1985) or Becker et al. (2005) which assume such a market.³¹

7. Discussions

7.1 *Learning vs. Equity*

The estimates of our analyses reject pecuniary theories of status, especially ones where status is used as a signal to the market for the pecuniary value of workers' skills or productivity (e.g. Podolny 2005)³². An implicit assumption of this signal theory is that workers have better information about their pecuniary value than the market.

However, when the market (or the firm) has better information about workers' pecuniary value than the workers themselves, the workers can use their status as to *learn* their own pecuniary value or productivity. In other words, if similar co-workers are getting paid more, people can take it to learn that their pecuniary (or market) value is higher and that they are getting under-paid. This learning model is more 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, but not because they have learned their market wage is higher but because they believe fair or just wage is higher. However, if one considers fair wage as market wage, it becomes conceptually difficult to distinguish between the learning model and equity theory.

Furthermore, if co-workers' wages increase, a person can become more likely to quit the firm or become more aggressive in bargaining wages, not because the person's lower status gives less social rewards, but because the person has learned that the

³¹ 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 the conflicts within the firm and help integration of companies after M&A. We pursue detailed analysis of this type of trade and its implication on conflict and post-merger integration in another paper.

³² Of course, this does not mean that the signaling model or any other pecuniary effect is irrelevant. Our results should be interpreted as social reward effect dominates pecuniary reward effects.

pecuniary/market value of his/her skills is higher. Therefore, our empirical findings on the status within occupation in the previous sections do not distinguish between the learning model and equity theory.

In order to distinguish these two theories, we argue that we need to 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 in other firms. However, under the 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 than others. In other words, for those who leave the firms during M&A, the wage change from the turnover should be *negatively* correlated with the expected change in status within occupation if they had stayed in the merged firm.

On the other hand, under the social preference theories, there is no clear prediction on how wages would change from turnovers because workers may change firms to get higher status within occupation (or lower status within firm) as well as larger absolute wage.

Therefore, if the wage changes of those workers who leave during M&As are *not* negatively correlated with the expected change in status within occupation, we can reject the learning model. However, if they are negatively correlated, then we would still not be able to distinguish between learning model and social preference theories.

Unlike typical personnel records, Swedish employer-employee match data allow us to track workers cross firms. Therefore, in Table 9, we analyze how the wage changes of those who left the merged firms depend on the expected change of status if they had stayed in the merged firms.

[Table 9 here]

From the first column of Table 9, those who would have had lower status within occupation if they had 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 voluntary turnovers or when we use rational expectation, the expected change in status within occupation has no significant effect on the wage changes from turnovers. Therefore, the learning model does not receive empirical support from our data.

7.2 *Turnover and Wage Growth*

Previous analyses suggest that firms can mitigate the effect of status on turnovers 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 would lead to more turnovers.³³

In order to test this hypothesis more directly, we estimate the turnover and the wage growth regressions in Table 5 and 8 by each M&A. Then, we regress the coefficients of ‘ $E[\Delta\text{status}_f]$ ’ in turnover regressions on the coefficients of ‘ $E[\Delta\text{status}_f]$ ’ in wage regressions. We also repeat the regression for the coefficients of ‘ $E[\Delta\text{status}_{fo}]$ ’ as follows:

$$\begin{aligned} \text{coef}[\Delta\text{status}_f]_{it}^{\text{turnover}} &= \alpha_f + \beta_f * \text{coef}[\Delta\text{status}_f]_{it}^{\text{wageG}} + \varepsilon_{it} \\ \text{coef}[\Delta\text{status}_{fo}]_{it}^{\text{turnover}} &= \alpha_{fo} + \beta_{fo} * \text{coef}[\Delta\text{status}_{fo}]_{it}^{\text{wageG}} + \nu_{it} \end{aligned} \quad (10)$$

As predicted by the hypothesis, Table 10 shows that both β_f and β_{fo} are negative and significant. That is, in M&As where absolute wages are not compensated by a change in status, workers are more apt to leave the firm.

[Table 10 here]

³³ 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, both the coefficients in turnover regression and wage regression would be smaller. Note, however, that this endogeneity would generate positive bias. Thus, given that β_f and β_{f_0} are already negative, the correction of the bias would still yield negative estimates, and would not alter the qualitative interpretation of the regressions.

This finding further confirms that workers care about their status for its social rewards, independent of absolute wages. If workers care about their status simply because it is correlated with future absolute wages, then both β_f and β_{f_0} would have been positive.

7.3 *Who Cares about Status?*

So far, we have shown that the broad patterns of our findings are consistent with social preference theories where people care about status for its social rewards such as prestige, respect, or equity. Now we consider whether there is heterogeneity of underlying social preference depending on worker characteristics³⁴. For example, do young workers care more or less about their status than old workers? Do male workers care more or less about their status than female workers? Answers to these questions are important not only in analyzing the social comparison process of different groups of workers but also in developing personnel policy of a firm.

In Table 11, we repeat our turnover analysis, including interaction terms between status variables and individual characteristics as follows:

³⁴ The effects of firm characteristics (e.g. firm size, industry, firm growth rate) and merger characteristics (such as physical distance, differences in occupation structure) not only on workers' turnover rates level but also on firms' post-merger integration process are pursued in a separate paper.

$$\begin{aligned}
T_{ijt} = & \alpha_1 Acquired_{jt} + \alpha_2 Status_f_{ijt-1} + \alpha_3 E[\Delta Status_f_{ijt}] + \alpha_4 Status_fo_{ijt-1} \\
& + \alpha_5 E[\Delta Status_fo_{ijt}] + \alpha_6 Wage_{ijt-1} + X'_{ijt-1} \cdot \gamma + Z'_{jt} \cdot \phi + \delta_t \\
& + \alpha_7 Status_f_{ijt-1} * x_{ijt-1} + \alpha_8 E[\Delta Status_f_{ijt-1}] * x_{ijt-1} + \alpha_9 Status_fo_{ijt-1} * x_{ijt-1} \\
& + \alpha_{10} E[\Delta Status_fo_{ijt-1}] * x_{ijt-1}
\end{aligned} \tag{11}$$

where x_{ijt-1} is one of the individual characteristics that we are interested in. Alternatively, we can control interaction terms with all the individual characteristics, but find no qualitative difference. In Table 11, we simply report $\hat{\gamma}_x$, $\hat{\alpha}_2$, $\hat{\alpha}_3$, $\hat{\alpha}_4$, $\hat{\alpha}_5$, $\hat{\alpha}_7$, $\hat{\alpha}_8$, $\hat{\alpha}_9$, and $\hat{\alpha}_{10}$, where $\hat{\gamma}_x$ is the coefficient of individual characteristic x . The variables of particular interest are the interaction between individual characteristics and $E[\Delta status_f]$ and the interaction between individual characteristics and $E[\Delta status_fo]$, or α_8 and α_{10} .

[Table 11 here]

■ *Age* We first consider whether age affects people's preference for status. From column [1] in Table 11, the interaction term between $E[\Delta status_f]$ and age is not significant. Recall the analyses in the previous sections showed that given their status within occupation, workers prefer working with highly-paid and better-quality workers in the firm because it raises the firm's prestige or respect in the economy. Therefore, the insignificance of the interaction between $E[\Delta status_f]$ and age suggests that age does not change workers' concerns for group reputation or the pride of working in a prestigious company.

However, the interaction term between $E[\Delta status_fo]$ and age is significant and positive. Because $E[\Delta status_fo]$ reduces the turnover probability, the positive coefficient of the interaction term implies that old workers care *less* about their status within occupations than young workers.

One could speculate that older workers who have already achieved high status, especially in other reference groups such as family or neighbors may care less about the change in their status within their own occupations. However, rigorous analysis of age

and status perception is beyond the scope of this paper and would be an interesting topic for future research.

■ *Gender* Second, we analyze whether there are gender difference in social preference. In column [2], the interaction term between $E[\Delta\text{status}_f]$ and a female dummy variable is significant and positive. Because $E[\Delta\text{status}_f]$ increases the turnover probability, according to our interpretation, the positive coefficient of the interaction term implies that female workers care *more* about their firm's status against other firms or the pride and respect of working in a prestigious company than male workers do.

On the other hand, the interaction between $E[\Delta\text{status}_{fo}]$ and a female dummy variable is not significant. Therefore, gender does not seem to affect workers' preference for status within occupation.

One interesting implication is that female workers in a high-paying company would be less aggressive in wage bargaining as they draw more utility from the status of the company itself than male workers. This predicts that gender wage gap would increase with the average wage level of the firms. We pursue empirical tests of related predictions and further analysis of the gender difference in status perception³⁵ in a separate paper.

■ *Status within Firm* Third, we ask whether workers who already have higher status within *firm* care more or less about the changes in status within firm or occupation. Recall that our status formula in (1) already captures the idea that workers with high relative ranking in wage care more about the changes in ranking. If the status formula in (1) fully captures this convexity, the interaction term between $E[\Delta\text{status}_f]$ and status_f should be insignificant. Thus, the coefficient of the interaction term provides a specification test for our status formula.

Column [3] shows that neither interaction between $E[\Delta\text{status}_f]$ and status_f nor between $E[\Delta\text{status}_{fo}]$ and status_f is significant. Therefore, the status formula in (1) seems to fully capture the convexity of preference for relative wage ranking within firm.

³⁵ For example, male and female workers may not only have different preference for status in a given reference group, but also have different reference groups in the first place.

■ *Status within Occupation* Fourth, we also ask whether workers who already have higher status within *occupation* care more or less about the changes in status within firm or occupation. Column [4] shows that neither interaction between $E[\Delta\text{status}_f]$ and status_{fo} nor between $E[\Delta\text{status}_{fo}]$ and status_{fo} is significant. As discussed above, this result implies that our specification of status in (4) fully captures the convexity of preference for relative wage ranking within occupation.

8. Conclusion

Using M&A as a natural experiment, our paper tests (i) whether people care about their status at all; (ii) whether they care about status for social rewards or pecuniary rewards; and (iii) which reference groups matter for workers' preference for status.

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

Our approach opens many new sets of questions. For example, even though our analyses are based on Swedish data, we can easily apply our methodology to other countries' data. In fact, it is possible that workers in other countries may care about their status for pecuniary rewards than social rewards. Then, we can study what cultural and economic factors in different countries explain potential heterogeneity in preference for

status. Ultimately, this line of research can lead us to the understanding of the building blocks of social preference in a society.

Furthermore, beyond economics and sociology, recent medical studies suggest that social status affects people's aging (see e.g. Cherkas et al. 2006), obesity (see e.g. Goodman 2003), and other health problems. However, these studies suffer from the same challenges we described in the introduction. Thus, our empirical methodology can contribute to this literature as well.

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 3 Summary Statistics**(a) Mean and Standard Deviation**

	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/Acqr)	0.61	(2.02)				
# of observations	443		443		443	

	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	
status_f	0.989	(0.961)	0.989	(0.966)	0.986	(0.903)
status_fo	0.969	(0.909)	0.971	(0.914)	0.946	(0.847)
abs(E[Δstatus_f])	0.030	(0.080)	0.020	(0.046)	0.147	(0.198)
abs(E[Δstatus_fo])	0.045	(0.112)	0.031	(0.071)	0.203	(0.265)
# of observations	186679		171473		15206	

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. ‘turnover3’ is a dummy variable for those who quit within three years. ‘status_f’ measures the status within firm right before the acquisition. ‘abs(E[Δstatus_f])’ measures the absolute value of the expected change in status within firm. Similarly, ‘status_fo’ measures the status within an occupation inside a firm right before the acquisition. ‘abs(E[Δstatus_fo])’ is similarly defined as ‘abs(E[Δstatus_f])’.

(b) Correlation

	Wage	Status_f	E[ΔStatus_f]	Status_fo	E[ΔStatus_fo]
Wage	1				
Status_f	0.9185	1			
E[ΔStatus_f]	0.1025	0.0241	1		
Status_fo	0.6822	0.7466	0.0074	1	
E[ΔStatus_fo]	0.1022	0.0697	0.5334	0.0162	1

Table 4 Turnovers in M&A firms and non-M&A firms: Probit Analysis
(dependent variable = 1 if quit the firm, = 0 otherwise)

	Non-M&A Firms		M&A Firms during non-M&A periods		M&A Firms during M&A	
	[1]	[2]	[3]	[4]	[5]	[6]
age	-0.00931 (0.00169)	-0.00879 (0.00173)	-0.00756 (0.00145)	-0.00741 (0.00148)	-0.14992 (0.00280)	-0.15104 (0.00285)
age squared	-0.00022 (0.00002)	-0.00023 (0.00002)	-0.00027 (0.00002)	-0.00027 (0.00002)	0.00173 (0.00003)	0.00174 (0.00003)
female	-0.09123 (0.00772)	-0.09252 (0.00777)	-0.10673 (0.00681)	-0.10707 (0.00685)	-0.05085 (0.01445)	-0.04741 (0.01456)
part time	-0.06151 (0.00948)	-0.06722 (0.01035)	-0.04391 (0.00856)	-0.04544 (0.00926)	0.25287 (0.01650)	0.26654 (0.01812)
wage		-2.29E-06 (1.58E-06)		-6.36E-07 (1.39E-06)		4.60E-06 (2.43E-06)
firm size	-0.00004 (1.97E-06)	-0.00004 (1.97E-06)	-0.00003 (8.97E-07)	-0.00003 (8.97E-07)	-0.00007 (3.27E-06)	-0.00007 (3.27E-06)
firm growth rate	-0.01355 (0.00652)	-0.01354 (0.00651)	-0.00185 (0.00230)	-0.00184 (0.00230)	-0.61996 (0.07818)	-0.62011 (0.07821)
occup. size	3.93E-07 (8.15E-07)	4.85E-07 (8.20E-07)	3.23E-06 (8.88E-07)	3.26E-06 (8.91E-07)	-3.72E-06 (1.90E-06)	-4.13E-06 (1.91E-06)
occup. growth rate	0.01000 (0.00509)	0.01008 (0.00509)	0.00375 (0.00438)	0.00378 (0.00438)	0.01169 (0.01162)	0.01138 (0.01164)
Number of Observations	1,129,009	1,129,009	1,761,621	1,761,621	186,679	186,679
Pseudo R2	0.0581	0.0581	0.0664	0.0664	0.0961	0.0961

Note: Each regression includes rank dummies, occupation dummies, industry dummies, year dummies, and region dummies. ‘Non-M&A firms’ are 30% random sample of workers in those firms that have never been involved in any form of M&A throughout the entire period (1970 to 1990). Turnovers due to firms’ spin-off, split, or bankruptcy are excluded. ‘non-M&A periods’ are the years when firms are not involved in M&A within two years before and after.

Table 5 Expected Change of Status and Turnover: Probit Analysis
 (dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

	[1]	[2]	[3]
Acquired	0.0327** (0.0128)	0.0324** (0.0128)	0.0348*** (0.0128)
status_f	-0.0130 (0.0118)		0.0478*** (0.0131)
E[Δstatus_f]	0.0093 (0.0400)		0.0995** (0.0471)
status_fo		-0.0631*** (0.0065)	-0.0740*** (0.0072)
E[Δstatus_fo]		-0.0916*** (0.0281)	-0.1246*** (0.0331)
wage (before-merger)	-4.63E-06 (1.04E-05)	2.47E-05*** (7.55E-06)	-1.42E-06 (1.03E-05)
age	-0.1836*** (0.0023)	-0.1823*** (0.0023)	-0.1819*** (0.0023)
age squared	0.0021*** (2.60E-05)	0.00216*** (2.65E-05)	0.00215*** (2.66E-05)
female	-0.085*** (0.0117)	-0.08165*** (0.0117)	-0.0802*** (0.0117)
part time	0.2977*** (0.0152)	0.2894*** (0.0150)	0.278*** (0.0153)
firm size (post-merger)	-0.00014*** (8.05E-06)	-0.00014*** (8.04E-06)	-0.00014*** (8.05E-06)
firm size squared	8.82E-09*** (9.66E-10)	9.12e-09 *** (9.65E-10)	8.89e-09*** (9.66E-10)
firm size change	-0.016* (0.0088)	-0.0187** (0.0087)	-0.01529* (0.0088)
occup. size change	-2.321*** (0.0353)	-2.322*** (0.0354)	-2.322*** (0.0354)
geo change ratio	0.348*** (0.0153)	0.3473*** (0.0153)	0.3463*** (0.0153)
Number of Observations	186679	186679	186679
Pseudo R squared	0.1394	0.1398	0.1399

***: significant at 1%, **: significant at 5%, *: significant at 10%
 Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: Each regression includes rank dummies, occupation dummies, industry dummies, year dummies, and region dummies. ‘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 firm size of two merging firms before the merger. ‘occupation size change’ measures the ratio of occupation size in the post-merger firm to the sum of occupation size of two merging firms before the merger. ‘geo change ratio’ measures the ratio of the number of workers who move to different regional code after the merger.

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

	<i>Heckman 2-step</i>	<i>IV Probit</i>
	[1]	[2]
Acquired	0.0666*** (0.0141)	0.0826*** (0.0112)
status_f	0.04202*** (0.0153)	0.024* (0.012)
Δ status_f	0.1156*** (0.0292)	0.1276* (0.0671)
status_fo	-0.0563*** (0.0081)	-0.0596*** (0.0095)
Δ status_fo	-0.05207*** (0.0126)	-0.1707*** (0.0671)
wage (before-merger)	-0.00002** (1.25E-05)	-4.7E-06 (8.45E-06)
Change in Wage	-0.00022*** (2.63E-05)	-0.00016*** (0.00003)
age	-0.17941*** (0.0028)	-0.16064*** (0.0036)
age squared	0.002132*** (3.29E-05)	0.00191*** (3.93E-05)
female	-0.1044*** (0.0128)	-.09912*** (0.0140)
part time	0.2712*** (0.0171)	0.2486*** (0.0295)
firm size (post-merger)	-0.00016*** (8.69E-06)	-0.00015*** (1.79E-05)
firm size squared	9.70e-09*** (1.05E-09)	8.21e-09*** (2.13E-09)
firm size change	-0.00961 (0.0104)	-0.00135 (8.16E-03)
occup. size change	-1.5705*** (0.0800)	-.84676*** (0.0254)
geo change ratio	0.1816*** (0.0210)	.07087*** (0.0320)
Number of Observations	186679	161640

***: significant at 1%, **: significant at 5%, *: significant at 10%
 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. The selection regression in column [1] includes all the same control variables except that the expected changes in relative wage are used instead of the actual changes in relative wage. Also, the change in wage is not included in the selection regression. In IV-probit estimation (column [2]), actual changes in status are instrumented by expected changes in status.

Table 7 Robustness

	Hypothetical Merger [1]	Rational Expectation [2]	Use status ^H _fo [3]	With Tenure [4]	Voluntary [5]
Acquired	0.0994*** (0.0238)	0.0745*** (0.0138)	0.0177 (0.0134)	-0.0628** (0.0254)	-0.0495*** (0.0181)
status_f	0.0768*** (0.0253)	0.0871*** (0.0143)	-0.019 (0.0126)	0.1267*** (0.0293)	-0.0124 (0.0167)
E[Δstatus_f]	0.0594 (0.0785)	0.1256*** (0.0337)	0.1259*** (0.0445)	0.4147*** (0.0953)	0.1274** (0.0648)
status_fo	-0.0773*** (0.0121)	-0.1062*** (0.0080)		-0.0650*** (0.0164)	-0.0836*** (0.0087)
E[Δstatus_fo]	-0.02 (0.0590)	-0.0913*** (0.0236)		-0.2372*** (0.0765)	-0.1122*** (0.0407)
status ^H _fo			-0.0285*** (0.0087)		
E[Δstatus ^H _fo]			-0.0936** (0.0400)		
Tenure				-0.0337*** (0.0046)	
Tenure squared				0.0025*** (0.0003)	
Number of Observations	70322	167619	186679	44578	152592
Pseudo R squared	0.1242	0.1239	0.1394	0.1899	0.1652

***: significant at 1%, **: significant at 5%, *: significant at 10%
Standard errors are in parentheses and adjusted for clustering within acquisitions.

Note: Each regression includes the same set of control variables as in Table 5. Column [1] is based on hypothetical M&A five years before the actual M&A. Column [2] is based on rational expectation of changes in relative wage. Column [3] uses the relative occupational rank within occupation instead of the relative wage. Column [4] controls for tenure and tenure-squared while restricting the sample to between 1986 and 1988 where tenure variables are available for most observations. Column [5] excludes the turnovers where workers experience a real wage reduction in the new firm or do not find a new firm.

Table 8 Status and Pay

(dependent variable = average annual wage growth rate between right before M&A and two years after M&A)

	OLS	Heckman 2-step
Acquired	0.0097** (0.0052)	0.0096* (0.0052)
status_f	0.0285*** (0.0053)	0.0284*** (0.0053)
E[Δ status_f]	0.0418*** (0.0096)	0.0416*** (0.0096)
status_fo	-0.0087*** (0.0013)	-0.0086*** (0.0013)
E[Δ status_fo]	-0.02003*** (0.0062)	-0.0198*** (0.006)
Number of Observations	124898	185230
R-squared	0.1286	

***: significant at 1%, **: significant at 5%, *: significant at 10%

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 the same control variables in OLS.

Table 9 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_f	61.206** (30.48)	118.238*** (30.1690)	111.324*** (42.114)	144.251*** (34.748)
E[Δstatus_f]	14.775 (55.5380)	148.396*** (51.623)	132.39** (73.672)	266.539*** (45.435)
status_fo	-.7475 (9.447)	-4.5813 (9.216)	-17.735 (16.271)	-20.264 (15.234)
E[Δstatus_fo]	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 1%, **: significant at 5%, *: significant at 10%
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 section 5.2 for more details. Voluntary turnovers are those who experience positive real wage change during the turnovers.

Table 10 Turnover and Wage Growth

	dependent variable			
	coef_E[Δstatus_f] (turnover)		coef_E[Δstatus_fo] (turnover)	
	OLS	Weighted	OLS	Weighted
coef_E[Δstatus_f] (wageG)	-3.3210*** (0.2576)	-4.2407*** (0.1745)		
coef_E[Δstatus_fo] (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 1%, **: significant at 5%, *: significant at 10%

Note: Variables are the estimated coefficients from the turnover and wage growth analyses in Table 5 and 7. Weighted regressions use the size of M&A (measured by the total number white collar employee right before M&A) as the weights.

Table 11 Who Cares about Status?: Probit Analysis
 (dependent variable = 1 if quit the firm within two years after M&A, = 0 otherwise)

	X				
	Age	Female	Total Pay	status_f	status_fo
X	-0.0020*** (0.0024)	-0.0826*** (0.0155)	-0.00004*** (0.0000)		
status_f	0.1253*** (0.0305)	0.0609*** (0.0135)	0.0053 (0.0201)	-0.0502*** (0.0189)	-0.0323* (0.0182)
E[Δstatus_f]	0.4211** (0.2127)	0.0770 (0.0487)	0.2665** (0.1264)	0.1917** (0.0821)	0.1989** (0.0860)
status_fo	-0.3558*** (0.0280)	-0.0861*** (0.0077)	-0.1050*** (0.0195)	-0.0796*** (0.0118)	-0.0826*** (0.0145)
E[Δstatus_fo]	-0.6356*** (0.1490)	-0.1201*** (0.0359)	-0.1517* (0.0922)	-0.1683*** (0.0550)	-0.2116*** (0.0663)
status_f * X	-0.0008 (0.0006)	-0.1030*** (0.0257)	0.000008** (0.000004)	0.0162*** (0.0047)	0.0326*** (0.0053)
E[Δstatus_f] * X	-0.0059 (0.0048)	0.4205** (0.1957)	-0.00003 (0.00003)	-0.0472 (0.0303)	-0.0581 (0.0378)
status_fo * X	0.0054*** (0.0006)	0.0766*** (0.0161)	0.000009** (0.000005)	0.0086 (0.0055)	-0.009** (0.0046)
E[Δstatus_fo] * X	0.0110*** (0.0033)	-0.0381 (0.0920)	0.000006 (0.00002)	0.0256 (0.0271)	0.0466 (0.0301)

***: significant at 1%, **: significant at 5%, *: significant at 10%

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

Note: Each column shows the probit analysis controlling for the interaction term between status variables and a variable X, where X represents Age, Female, Total Pay, Status_f, and Status_fo in each column.. Each regression includes all the variables in Table 5 as well.

Figure 1 # of M&A and # of Workers Involved

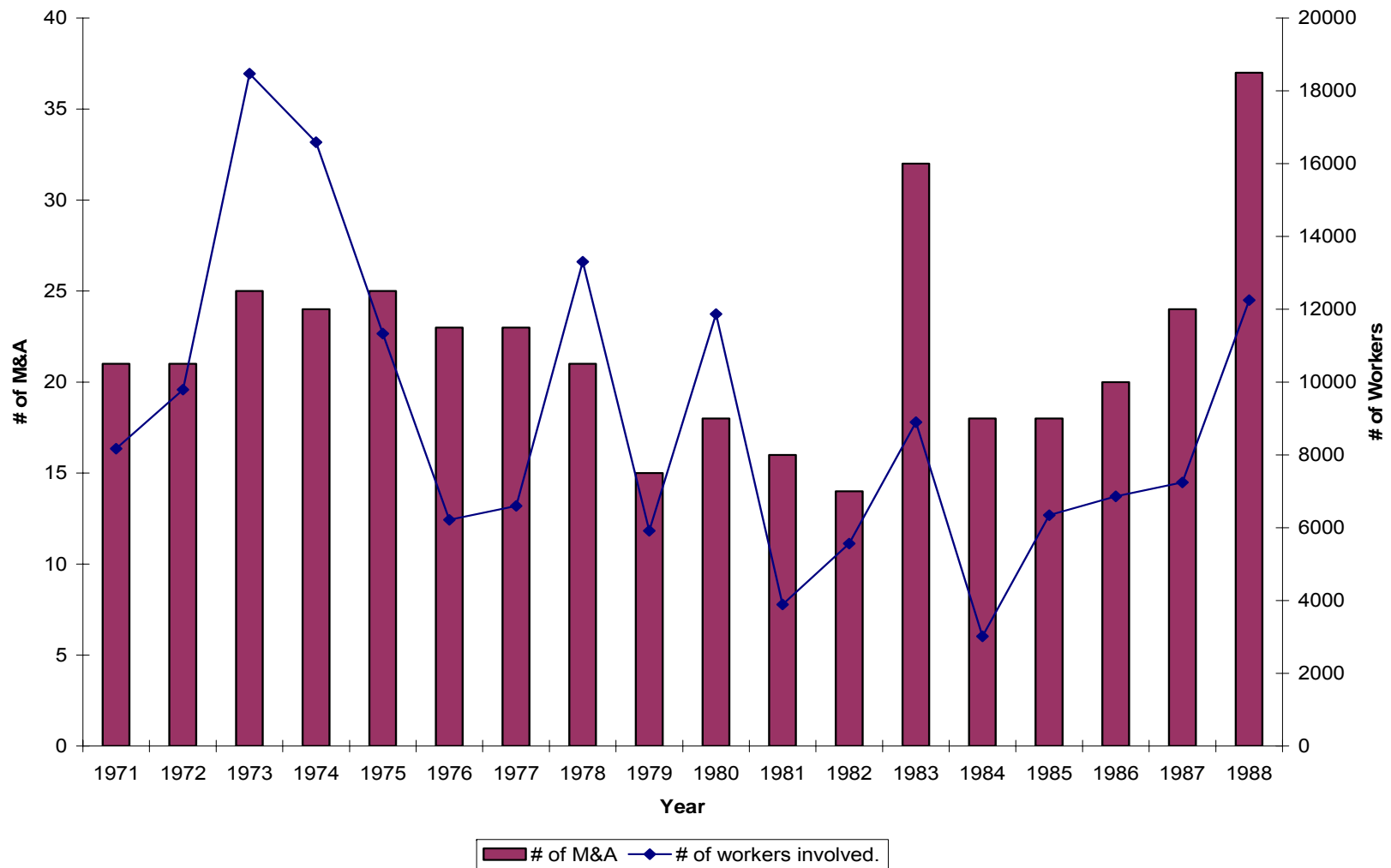
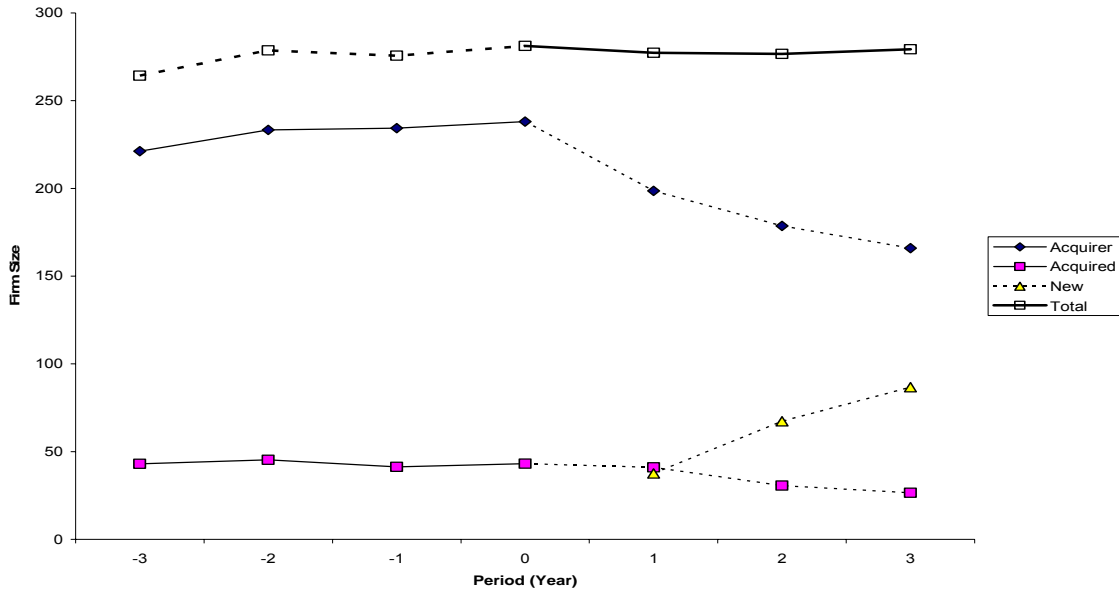
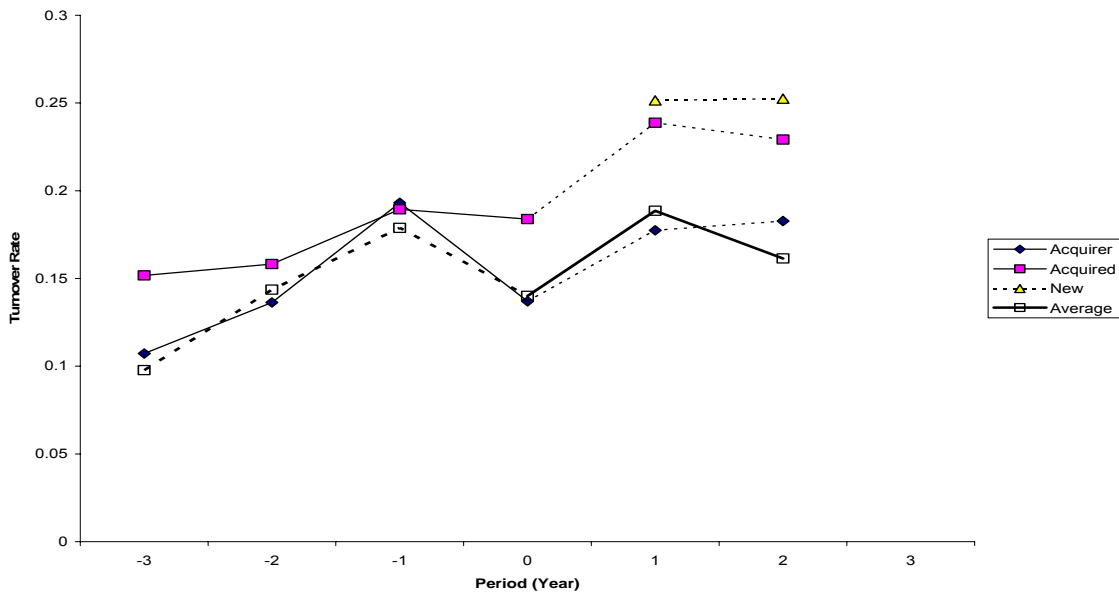


Figure 2 Firm Size and Turnover Rate



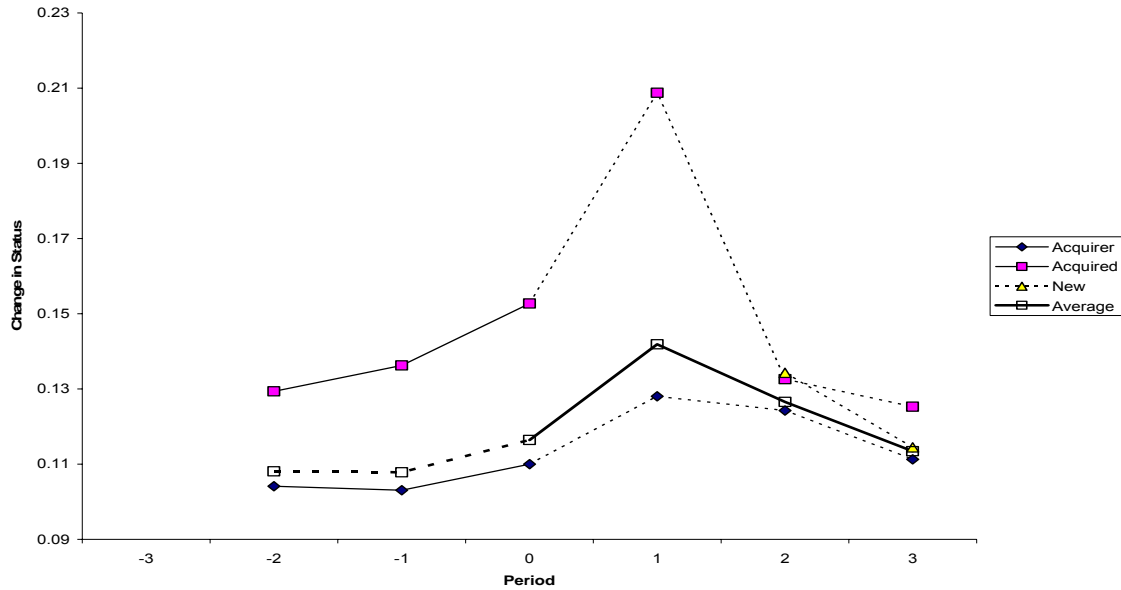
(a) Firm Size



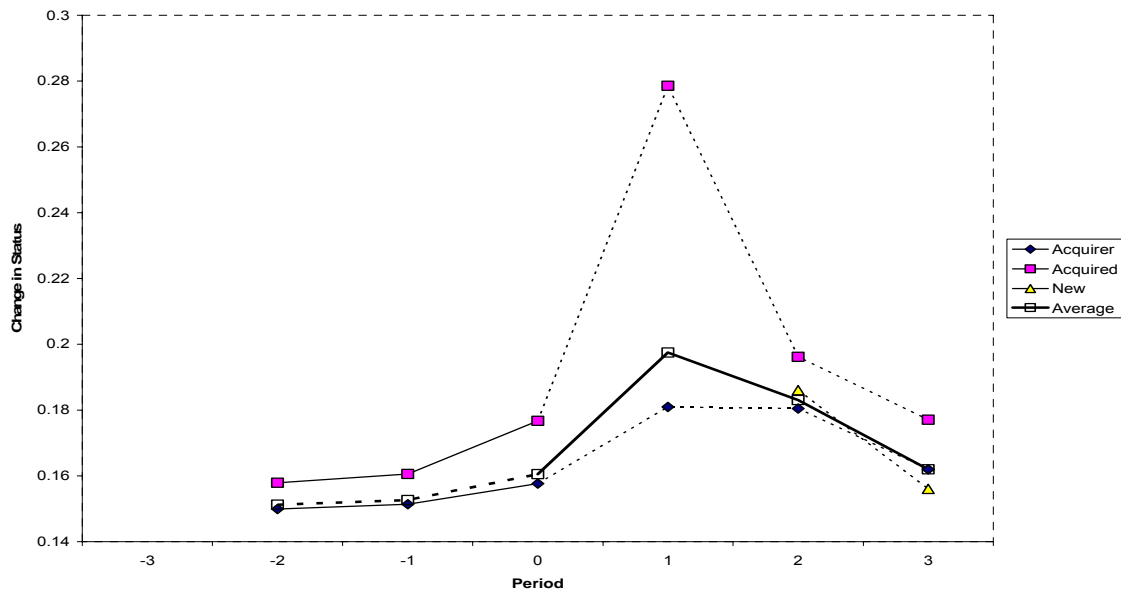
(b) Turnover Rate

Note: Firm size is measured by the number of white-collar workers in the firm. M&As take place between year 0 and year 1. The dotted lines after period 0 show the statistics of the *remaining* workers from acquirer or acquired firms and newly hired workers after M&A. “Average” before period 0 is the average between acquirer and acquired firms. “Average” after period 0 is the average of the combined firms.

Figure 3 Changes in Status and M&A



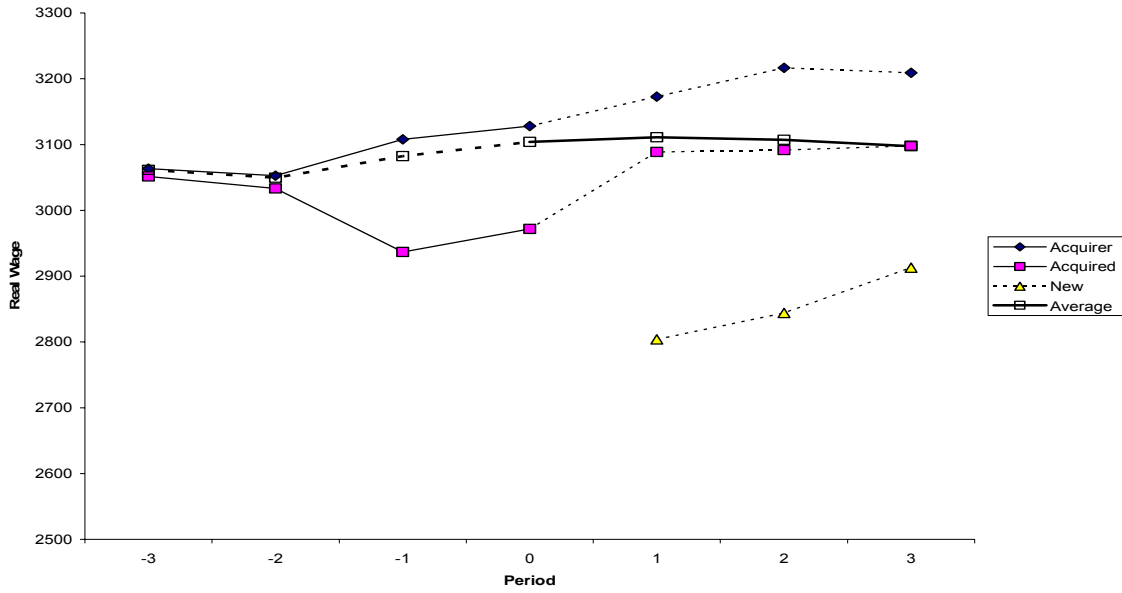
(a) Change in Status within Firm



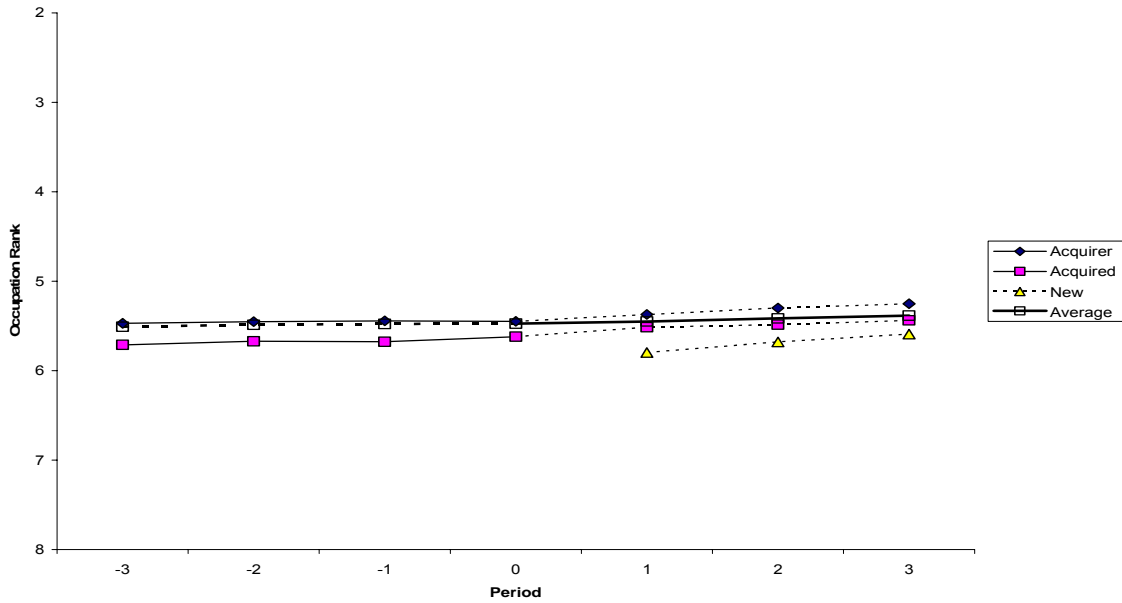
(b) Change in Status within Occupation

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

Figure 4 Wage and Rank



(a) Real Wage



(b) Occupation Rank

Note: Real wage is the monthly compensation measured in 1970 Kronor. “2” is the highest occupation rank and “8” is the lowest. M&As take place between year 0 and year 1. The dotted lines after period 0 show the statistics of the *remaining* workers from acquirer or acquired firms and newly hired workers after M&A. “Average” before period 0 is the average among workers in acquirer and acquired firms. “Average” after period 0 is the average of all the workers in the merged firms.