

Job Satisfaction and Promotions

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Abstract

This paper estimates the impact of promotions and promotion expectations on job satisfaction using the 1996-2006 waves of the NLSY79 dataset. Having received a promotion in the past two years increases the probability a worker will be very satisfied with her work by ten percentage points. This result holds while controlling for the worker's current wage, wage relative to her peer group and her lagged wage. Thus, the effect of promotion receipt on job satisfaction is independent from any accompanying wage increase. This finding indicates that employers may be able to use promotions as another mechanism to raise worker satisfaction. Workers who believe a promotion is possible in the next two years also report higher job satisfaction. Furthermore, the effect of promotion receipt and promotion expectations does not depend on whether the respondent believed a promotion was possible over the past two years. These results suggest that the effect of promotions on job satisfaction does not depend on fulfilling the worker's expectations. Employers may be able to raise job satisfaction by maintaining the belief that a promotion is possible, even if that promotion does not materialize, suggesting that perceived fairness in promotion processes may play a large role. These results are robust to dynamic panel estimation techniques accounting for potential endogeneity of the promotion variables.

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Job satisfaction has received significant attention from economists in recent years. Part of the interest in job satisfaction is due to the correlation between satisfaction and employee behavior. More satisfied workers are less likely to leave their employer (Clark 2001, Shields and Ward 2001, Pergamit and Veum 1989, Akerloff et al 1988, McEvoy and Cascio 1985, Freeman 1978), have lower rates of absenteeism (Clegg 1983) and have higher productivity (Mangione and Quinn 1975). In this context, reported job satisfaction can be seen as a revelation of workers' preferences over jobs. Workers reporting a high degree of satisfaction with the job are signaling their preference for the current job, which is also exhibited in the lower quit rates of highly satisfied workers. In the absence of more direct measures, job satisfaction provides the closest proxy for the utility individuals derive from their employment. Understanding the determinants of economic wellbeing is a key concern of economic science, and job satisfaction is a key facet of overall wellbeing.

Promotions are also an important aspect of a worker's career and life, affecting other facets of the work experience. They constitute an important aspect of workers' labor mobility, most often carrying substantial wage increases (Kosteas 2009, Blau and DeVaro 2007, Cobb-Clark 2001, Francesconi 2001, Pergamit and Veum 1999, Hersch and Viscusi, 1996, McCue 1996, Olson and Becker 1983 and others) and can have a significant impact on other job characteristics such as responsibilities and subsequent job attachment (Pergamit and Veum 1999). Firms can use promotions as a reward for highly productive workers, creating an incentive for workers to exert greater effort. Promotions will only be an effective mechanism for eliciting greater effort if workers place significant value on the promotion itself. Otherwise,

firms would simply use pay increases to reward effort and productivity.¹ Given all of the dimensions in which promotions can affect workers' careers and compensation, relatively little attention has been paid to the importance of promotions as a determinant of job satisfaction.

While several studies have investigated the determinants of job satisfaction, relatively little attention has been paid to the role of promotions and promotion expectations. Tournament theory postulates that firms use the prospect of a promotion as an incentive for workers to exert greater effort. This paper estimates the effect of a promotion and promotion expectations on job satisfaction using the 1996-2006 waves of the National Longitudinal Surveys of Youth 1979 cohort (NLSY79).

Estimating the effect of both promotions and promotion expectations on job satisfaction helps us to understand the importance of promotions as a mechanism for eliciting greater effort from workers. Specifically, finding that promotions lead to greater job satisfaction, even after controlling for wages and wage increases, supports the notion that workers value the promotion in and of itself. This gives firms a non-pecuniary tool for extracting effort and other positive behavior from their workers. Accurate estimates of these effects provide an indication of how effective promotions might be in eliciting effort. Furthermore, promotion expectations can also play a powerful role. Workers who realize they are not going to win a promotion this time around may decrease work effort, unless they believe they are still in the hunt for a future promotion.

Controlling for wages and other firm and individual characteristics, we find that a promotion increases the probability a worker will be highly satisfied with her job by a full ten percentage points; approximately equal to the effect of a fifty percent wage increase. This

¹ Of course, promotions also serve to place individuals into different jobs, where their skills can be used to greater effect. However, not all promotions carry an increase in supervisory responsibilities or significant changes in tasks, indicating that promotions may also serve other functions.

finding indicates that workers value the promotion itself, above and beyond the wage increase that normally accompanies a promotion. Thus, promotions may be more cost effective than wage increases in keeping workers happy. Promotion expectations also affect job satisfaction; workers who believe a promotion is possible in the next two years are more likely to be highly satisfied. Furthermore, we find that past promotions continue to have an impact on job satisfaction; however, the effect fades over time. Finally, it does not appear that expectations can explain the gender premium in job satisfaction (women report higher job satisfaction, *ceteris paribus*). Promotion receipt had the same effect on job satisfaction for workers who believed a promotion was possible in the next two years as for those who did not believe a promotion was possible. These results are robust under various cuts of the data and when dynamic panel estimation is used to control for the potential endogeneity of the promotion and promotion expectations variables.

The rest of the paper is organized as follows. Section two provides the theoretical background, discusses the literature and develops the empirical model. Section three describes the dataset and provides summary statistics while section four presents and discusses the results of the estimation. Finally, section five draws conclusions from the paper's findings and discusses avenues for future research.

Literature review and background

Understanding job satisfaction is important because of the correlation between job satisfaction and employee behaviors (such as absenteeism, quit intentions and productivity) cited in the introduction. Self-reported job satisfaction is also one of the few measures of worker well-being available to researchers, and may be the best proxy for the utility from working available

to social scientists. Our conceptual model accounts for this relationship. Following Clark and Oswald (1996), job satisfaction is represented through a sub-utility function (u), where overall utility (v) is a function of job satisfaction and non-work related variables (μ). This gives us $v = v(u, \mu)$, where the non-work related variables may reflect health and family characteristics. The utility from working takes the form

$$u = u(y, h, i, j), \tag{1}$$

where y is income from work, h are the hours worked, i is a vector of individual characteristics and j is a vector of job/workplace characteristics. The individual characteristics include factors such as education, age, ability, marital status, gender and race. The firm/employment characteristics include tenure, union membership and firm size measures. Using the 1977 and 1973 Quality of Employment Surveys, respectively, Idson (1990) and Scherer (1976) both find a negative correlation between establishment size and job satisfaction. This correlation can be (at least partly) attributed to differences in the structure of work across plants of varying size. Since promotion rates are positively correlated with plant size, it is important to include controls for the latter.

Viewing the literature on job satisfaction in the broader context of life satisfaction or happiness suggests other variables are crucial for a well-specified empirical model. The literature on happiness has shown that well-being depends on relative, rather than absolute income, and that the effects of income growth are fleeting. These findings have also come through in the job satisfaction literature, showing that relative wages can be equally or more important to worker satisfaction than absolute income (Brown et al 2008, Cappelli and Sherer 1988, Clark and Oswald 1996, and others). Hammermesh (2001) finds that earnings shocks have a significant impact on satisfaction, however the effect is temporary. The first observation is

important since any empirical model investigating the effects of promotions on job satisfaction must accurately account for earnings. It also suggests a mechanism through which promotions might affect employee satisfaction: promotions raise the worker to a higher position relative to those who do not receive one. We may expect that people derive satisfaction not only from having a higher income relative to their peers, but also higher rank, among other things. The latter finding is also informative; we ask whether the effects of a promotion on job satisfaction are transitory. Therefore, the basic specification also includes the individual's relative wage. Another specification includes a lagged promotion variable to capture whether the effects of a promotion are transitory, permanent or fading over time. The augmented model also controls for the lagged promotion beliefs.

Clark (1997), Sousa-Poza and Sousa-Poza (2003) and Long (2005) emphasize the importance of expectations in job satisfaction. All three papers find evidence supporting the hypothesis that part of the difference in job satisfaction between men and women (the latter report higher job satisfaction) is due to the fact that women have lower expectations. Long's study finds the gender difference only holds for less-educated workers in Australia. None of these studies, however, directly controls for expectations. Stutzer (2004) finds that individuals with higher income aspirations have lower life satisfaction. We can extend this logic to promotion expectations as well. Our sample shows that men have greater promotion expectations. The rate at which men report a promotion is possible is 62.6 percent, as opposed to 53.7 percent for women. However, men and women are equally likely to report having received a promotion. Thus, men are more likely to have unfulfilled expectations regarding promotions. We test for the importance of unfulfilled expectations by estimating the augmented model

separately for individuals who believed a promotion was possible and those who did not believe it was possible.

As an indirect measure of the link between job satisfaction and future quits, a couple of papers have also investigated the importance of satisfaction with advancement opportunities on future job attachment, with mixed results. Clark (2001) finds that both satisfaction with pay and job security are the most important job satisfaction categories for determining future quits, while satisfaction with promotion opportunities is not a significant factor. Using cross-sectional data on British nurses, Shields and Ward (2001) find that dissatisfaction with promotion and training opportunities have a stronger effect on intentions to quit than dissatisfaction with workload or pay. Shields and Ward also find that nurses who report promotion prospects as the most important work characteristic do not have significantly different job satisfaction than those who report other employment characteristics as most important.

There are only a couple of papers estimating the impact of promotions on overall job satisfaction. Using data from the 1989 and 1990 waves of the NLSY, Pergamit and Veum (1989) find a positive correlation between promotions and job satisfaction. However, their empirical model only controls for promotions and the type of job change. Francesconi (2001) analyzes the effects of promotions on changes in job satisfaction using British household data. To my knowledge, the current paper is the only one to conduct a comprehensive study on the relationship between job satisfaction and promotions using US data. It is also the first paper to consider the importance of promotion expectations and how these expectations may affect the relationship between promotion receipt, or lack thereof, and job satisfaction. De Souza (2002) estimates the effect of promotions on worker satisfaction, focusing on promotion satisfaction in a small sample of managers. De Souza finds that managers who received a promotion are more

satisfied with promotion opportunities and have greater promotion expectations for the future.

De Souza also considers other aspects of employee satisfaction, but does not analyze overall job satisfaction.

Data and variable construction

We use the 1996-2006 waves of the National Longitudinal Surveys of Youth 1979 (NLSY79). The individuals in the survey were 14 to 22 years of age in 1979, so that the full sample consists of individuals in their thirties and forties. Inclusion of the lagged promotion, promotion belief and wage variables leads to a loss of one additional observation per respondent and as a result, the estimation uses information on job satisfaction from 1998-2006. Information on job satisfaction and promotions is available for 30,379 individual-year observations over that time frame. However, observations are excluded if any of the dependent variables are missing, the respondent worked fewer than 1,500 hours in the past calendar year, or the reported real hourly wage was less than five or greater than two-hundred and fifty dollars per hour. The hours and wage restrictions leads to an additional loss of 3,318 observations.² The final sample contains 18,364 observations on 5,388 individuals.

There is a single job satisfaction variable, which records the respondent's overall job satisfaction and takes four possible values: 0 (very unsatisfied), 1 (somewhat unsatisfied), 2 (somewhat satisfied) and 3 (very satisfied). Approximately ninety-three percent of the observations in the final sample record workers being satisfied with their job (see table 1). There is a fairly even split between those who are somewhat and those who are very satisfied. Thus, an alternative approach is to construct an indicator variable for whether the respondent is very

² Estimates including individuals who do not meet the annual hours worked and wage range criteria yield similar results. Indeed, results using various subsets of regressors, with larger sample sizes, all yield similar results for the promotion variables.

satisfied with her job. We use this indicator variable as the dependent variable when fitting the model using the probit estimator.

The promotion variable comes from a series of questions which ask the respondents about job changes. First, each respondent is asked whether she has experienced a position change with her current/most recent employer in the past two years. If she replies in the affirmative, she is also asked whether this position change was a promotion, demotion, or at the same level. The promotion variable takes a value of one if the respondent reports a position change that is a promotion and zero otherwise (including if she reports no position change). We could also construct a demotion variable, however, demotions are rare, occurring only once per thousand observations.

The dataset also contains information on promotion expectations. Respondents are asked whether they believe a promotion is possible in the next two years. Using this information, we create a promotion belief variable that takes a value of one if the respondent believes a promotion is possible, and zero if she does not. We also create a lagged promotion expectations variable, by taking the promotion expectation variable from the previous observation for that individual. If the sample contains consecutive observations for an individual, so that there are two years between the observations, then the promotion receipt variable and the lagged promotion expectations variable will cover the same period of time.

The dataset also contains information on the highest grade completed by the individual at the time of the interview. Past research on job satisfaction has shown that more highly educated workers have lower job satisfaction; with the proposed explanation that more highly educated workers have greater expectations and are therefore more likely to be disappointed. Given these findings, it is important to control for educational attainment. However, we should consider the

possibility that the relationship is nonlinear. Therefore, instead of simply including a single schooling variable, we create three dummy variables for educational attainment. The first variable takes a value of one if the respondent completed 13-15 years of school and zero otherwise, representing individuals with more than a high school education but who have not completed college. The second variable represents college graduates, taking a value of one if the individual completed sixteen years of school and zero otherwise. Finally, the third variable takes a value of 1 if the respondent reports having completed more than sixteen years of school and zero otherwise. Those with a high school education or less make up the excluded group in the empirical model.

The literature suggests the empirical model should control for three income variables: own income, relative income and past income. The data contain information on the hourly wage, which is converted into 2006 dollars by using the CPI deflator. The lagged wage is created by taking the respondent's hourly wage from the previous observation that is available for that individual. Both of these wage variables are included in logarithmic form. Rather than the comparison group wage, the estimation uses the difference between the individuals log hourly wage and the log of the average wage for that individual's comparison group. The comparison groups are created by grouping workers according to eleven broad occupation categories, four age groups (less than 37, 37-39, 40-42 and greater than 42 years of age), and four education groups (high school or less, some college, college and college plus- more than four years of college). The mean hourly wage is constructed for each of these groups for each year of the sample, generating 545 out of 880 possible comparison groups.³ The relative wage is then constructed as the difference between the log hourly wage and the log of the comparison group

³ There are 880 possible comparison groups (11x4x4x5). However, some groups will not contain any observations. For instance, we are unlikely to find many workers with more than a college degree who are manual laborers.

mean hourly wage. Alternatively, we could have constructed the relative wage by estimating a Mincerian wage equation and estimating wage residual using the parameter estimates. Both approaches have been used in the literature, to similar effect.

The job satisfaction literature has established that women generally report greater job satisfaction than men with equivalent characteristics. One potential explanation for this observation is that dissatisfied women are more likely to quit than men, since the latter are still more likely to be the primary income earner in the household. Clark (1997) tests this assertion by estimating a Heckman selection model, and fails to find sample selection to be a significant factor. An alternative explanation is that men have greater expectations over various aspects of their work and careers, including promotion potential, therefore they run a greater risk of being disappointed when their expectations are not met. We can test this assertion by either including an interaction term between the promotion expectations variable and the female indicator variable, or by estimating the model separately for men and women.

Other key variables include the Armed Forces Qualifying Test (AQT) percentile score, which was administered to all individuals participating in the NLSY79. The variable is reported as the percentile, taking values between zero and one-hundred. Job tenure on the current or most recent job (the one for which all data is collected) is reported in years. There is an indicator variable which takes a value of one if the individual was a member of a union or employee association and zero otherwise. There are also two firm size variables. The first is a dummy variable which takes a value of one if the firm has multiple locations and zero otherwise. The second records the number of employees at the respondent's location (as opposed to the total number of employees at the firm across all locations). There are also indicator variables for gender and race (black and Hispanic).

Table 1 provides the response frequencies for the job satisfaction variable for the full sample as well as by gender and separately for blacks and non-blacks. In every case, in over ninety percent of the observations, respondents report being either somewhat or very satisfied with their job. They report being very unsatisfied less than two percent of the time. Contrary to other studies, the breakdown by gender shows highly similar levels of job satisfaction for men and women (columns 2 and 3 respectively). In contrast, the results by race show a difference in job satisfaction between blacks and non-blacks, with the latter reporting higher levels of job satisfaction. A t-test rejects the equality of means between the two samples separated by race.

Table 2 presents the summary statistics for the full sample and by whether the individual is highly satisfied with her job. The mean job satisfaction value is roughly 2.4, reflecting the frequencies reported in table 1. Individuals report receiving a promotion in the past two years in seventeen percent of the observations, and believe a promotion is possible in the next two years nearly fifty-nine percent of the time. The average hourly wage (in 1996 dollars) is 20.63 while the average hours worked in the calendar year prior to the interview were 2,329. Roughly twenty-five percent of the observations are on individuals who attended some college, while 13.2 percent were for those who completed four years of college. Ten percent of the observations are on people with more than four years of college. The respondents in the sample range in age from 31 to 49 years, with an average age slightly under forty years, while the average tenure on the current/most recent job is 7.3 years. Unionization is potentially important, as 18.2 percent of the observations involve union members. In terms of firm characteristics, the average number of employees at the respondent's location is 1,189, while individuals report their firm has multiple locations in 71.2 percent of the sample.

Table 2 also provides summary statistics for the sub-samples based on whether the individual reports being very satisfied with work. A few key differences between the two groups stand out. First, very satisfied workers are promoted with higher frequency, but do not hold higher expectations over future promotion possibilities. They earn a higher hourly wage, but have similar annual hours of work, on average. Finally, a larger fraction of the sample of very satisfied workers have completed more than sixteen years of school, relative to those who are not highly satisfied. Surprisingly, we do not see a substantial difference in the average job tenure between the two groups, with the not-very-satisfied workers having somewhat higher average job tenure (8.5 versus 7.07 years).

Results and discussion

Table three presents the results of the basic specification. The model is estimated using OLS, fixed effects (FE) and ordered probit estimators with job satisfaction as the dependent variable. A fourth set of results is obtained using the probit estimator with an indicator variable for whether the respondent was very satisfied with her job as the dependent variable. Coefficients and standard errors are reported for the OLS and FE estimates, while the marginal effect on being highly satisfied and corresponding standard errors are reported for the ordered probit and probit models. As a robustness check, the model was estimated only using observations where the individual did not change employers since the last interview, yielding highly similar results.

Each of the four estimators yields similar results for the promotion variable. The OLS and FE estimators both show that receiving a promotion raises job satisfaction by 0.12 units, on average. According to the FE estimates, receiving a promotion has nearly the same impact on

job satisfaction as a fifty percent increase in the hourly wage. Promotion belief has a similar effect on job satisfaction; workers who believe a promotion is possible in the next two years have a 0.124 point higher job satisfaction score. Contrary to expectations and previous research, the estimates indicate that having a higher wage relative to the comparison group results in lower job satisfaction. Similar results are obtained when the comparison group average wage is included in place of the difference from the comparison wage. The negative sign persists even after including occupation indicators (results not presented here), however in that case the coefficient on the wage difference is not statistically significant. This suggests the comparison wage is capturing some aspects of worker's occupation that also affects job satisfaction.

Other variables, for the most part, have the predicted signs. In the OLS estimates, more educated workers are less satisfied with their jobs. However, this effect does not persist in the FE estimates. Part of the difference is due to the lack of precision for these coefficient estimates, which is likely due to the fact that there is relatively little change in educational attainment for workers in their thirties and forties (recall that the mean age in the sample is just below forty years). However, there is also a marked difference in the coefficient estimates themselves, supporting the hypothesis that educational attainment may be correlated with unobservable, time-invariant characteristics which also affect job satisfaction. Thus, it appears that more educated workers are less satisfied with their jobs, but it does not appear that becoming more educated leads to lower job satisfaction. Workers with higher ability are less satisfied with their jobs; again this may be due to unfulfilled expectations. Older workers are more satisfied with their jobs, while satisfaction appears to initially decline with job tenure and then rise. According to the OLS estimates, union members have lower job satisfaction. However, the FE results show that people who become union members also have a corresponding increase in satisfaction,

although the coefficient is only significant at the ten percent level. The OLS results show that workers in larger firms are less satisfied with their jobs, corroborating findings from previous research. However, the coefficients on the firm size variables are no longer significant in the FE model. Finally, women and Hispanics are more satisfied with their work, *ceteris paribus*, while blacks are less satisfied.

The marginal effects from the probit models have a slightly different interpretation; they represent the effect of the independent variable on the probability a person will be highly satisfied with his job. In the probit and ordered probit models, receiving a promotion is associated with a 9.2 and 10.1 percentage point increase in the probability a worker will be highly satisfied with her job. Promotion belief continues to affect job satisfaction; however the effect is smaller than the estimates using the OLS and FE models. Again, it appears that a promotion has the same effect on job satisfaction as a roughly fifty percent increase in the hourly wage. The estimates for the remaining variables are similar to those using the least squares models.

Next, we ask whether the effect of a promotion on job satisfaction is fleeting, and whether promotion expectations affect this relationship. Table four presents the results of the augmented model fitted using ordered probit estimation. Again, the marginal effect is reported with the standard errors in parentheses. The results show that lagged promotions (those reported in the previous interview, in most cases conducted two years earlier, so that the lagged promotions were received three to four years ago) continue to have a positive correlation with job satisfaction. However, the effect is much smaller; a promotion received three to four years ago (column 2) only leads to a 2.5 percentage point increase in the probability of having very high job satisfaction. Thus, it appears that the effect of promotions is fading. This finding

reinforces previous research which has found that increases in income have only a temporary effect on life and job satisfaction. Finally, we estimate the augmented model separately for workers who in the previous interview reported that they believed a promotion would be possible in the next two years (column 4) from those who did not (column 3). In both cases, receiving a promotion is associated with a higher probability of being very satisfied with work. The effect is slightly larger for those who did not believe a promotion was possible; however, the difference is not substantial. Interestingly, lagged promotions only continue to have a positive impact on job satisfaction on workers who believed another promotion would be possible in the next two years.⁴ Overall, these findings suggest that expectations do not have a significant impact on the relationship between promotion receipt and job satisfaction.

Arellano-Bond dynamic panel estimates

The estimation used up to this point has assumed the promotion variables are exogenous. However, it is possible that the promotion variable is correlated with unobserved factors which can also affect job satisfaction, or that a higher degree of job satisfaction raises the probability of a promotion. For example, a worker who is more satisfied with his work may be more likely to put in greater time and effort at work. While we can control for hours worked, we do not have any measures for work effort. Alternatively, job satisfaction may increase as an individual becomes more adept at his job; people tend to enjoy doing things at which they excel. This increase in ability is also likely to raise the chances of receiving a promotion. The Arellano-Bond (AB) estimator controls for this potential endogeneity by taking advantage of the data's panel structure.

⁴ Estimating the model by pooling the observations for these two groups and including an interaction term between promotion receipt and lagged promotion expectations does not yield a statistically significant coefficient on the interaction term.

I will briefly describe the AB estimator; readers interested in a more detailed description should see Arellano and Bond (1991). The AB estimator takes into account the potential serial correlation of the error terms when the lagged value of the dependent variable is included as a regressor: $y_{it} = c + \beta y_{it-1} + \gamma x_{it} + \varepsilon_{it}$, where x_{it} is a vector of explanatory variables. The AB estimator first differences the equation and then uses lagged values of each regressor as an instrument for that variable. Arellano and Bond also provide a test for the validity of the model by testing for second order serial correlation in the error terms, which I also use to select the number of lags for the productivity variable which should be included as regressors.⁵ The estimator only makes use of consecutive observations when first differencing the variables. This feature of the estimator, along with the use of lagged values as instruments leads to a significant reduction in sample size.

The AB model assumes that the dependent variable depends on its previous values. In this case current job satisfaction is affected by past job satisfaction, even if working conditions change. This assumption means that workers' job satisfaction does not fully adjust to the new circumstances. This idea is consistent with the findings from the life and job satisfaction literature (including this paper) that individuals take time to adjust to new circumstances. For example, a worker may not like his job because he does not like his supervisor. If the supervisor is fired, the worker may eventually find that he likes the new boss, but still harbors some of the old dissatisfaction with the job.

The results from the AB estimation are presented in table 5. Columns 1-2 make use of all available observations, with the latter including the lagged promotion variable as a regressor. Columns 3 and 4 split the sample according promotion belief. The results in both columns 1 and

⁵ In each set of estimates, the tests show that only a one-period lag of the job satisfaction variable is needed to make the model valid.

2 continue to show a positive correlation between recent promotions (in the past two years) and job satisfaction. The results in column 1 (which exclude lagged promotion receipt as an explanatory variable) are highly similar to those obtained when using the FE estimator. They show that receipt of a promotion in the past two years leads to a nearly 0.095 point increase in reported job satisfaction, while believing that a promotion is possible raises reported job satisfaction by 0.124 points. Thus, promotion receipt has the same impact on job satisfaction as a nearly sixty percent increase in the hourly wage, while belief that a promotion is possible is equivalent to a roughly seventy-seven percent wage increase. While the relative wage and the lag wage continue to show a negative correlation with job satisfaction, the coefficients are not statistically significant. Older workers are more satisfied with their jobs, while job satisfaction initially declines then rises with job tenure.

The results in column 2 show an even stronger impact of promotion receipt and promotion expectations on job satisfaction; promotion receipt has the same impact on job satisfaction as a seventy-five percent wage increase. The estimates continue to show a lingering, but declining impact of promotion receipt on job satisfaction. Promotions reported during the previous interview raise current job satisfaction by 0.046 points. In both cases, lagged job satisfaction has a positive and statistically significant correlation with current job satisfaction, supporting the hypothesis that job satisfaction does not fully adjust to new circumstances, but is mean reverting. In both models, tests fail to reject the null hypothesis that the errors exhibit second degree serial correlation, supporting the empirical models' validity.

Columns 3 and 4 split the sample into individuals who in the previous interview reported that they did not believe a promotion was possible and those who did, respectively. In both cases, promotion receipt and expectations have a positive effect on job satisfaction. The effects

are greater for those who did not believe a promotion was possible, suggesting that expectations play a significant role. Additionally, past promotion receipt only has a positive impact on job satisfaction for individuals who believed a promotion was possible during that same time period. Furthermore, the results indicate that job satisfaction only depends on past job satisfaction for those individuals who did not believe a promotion was possible during their previous interview. Other variables show both qualitatively and quantitatively similar coefficient estimates for the two groups.

Given these results, we estimate a model pooling both groups and including interaction terms between each of the promotion and promotion belief variables and lagged promotion belief.⁶ These results generally support the comparisons drawn from the estimates in columns 3 and 4. Lagged job satisfaction has an impact on current job satisfaction only for workers who reported in the previous interview that a promotion would not be possible over the next two years. The coefficient on the interaction term between promotion receipt and lagged promotion belief is positive, but not statistically significant; therefore we can not conclude that promotion receipt has a stronger effect on job satisfaction if it is unanticipated. The estimates also show that past promotions have a negative impact on current job satisfaction if the individual did not believe another promotion would be possible, but a positive one if he did believe another promotion would be possible. These results lend further support to the theory, supported elsewhere in the empirical literature, that expectations play a significant role in determining a workers job satisfaction.

⁶ We do not include interaction terms with the other variables since the results in columns 3 and 4 do not show significant differences in the coefficient estimates.

Job satisfaction and reason for promotion

The NLSY also provides information on the (self-reported) reason for the promotion. Of particular interest is whether individuals who believe their promotion was performance based or received because they requested it will see a greater increase in job satisfaction after having received a promotion. To test for these effects, we include dummy variables indicating whether the person believed the promotion was performance based or received because the individual asked for it in addition to the reported promotion receipt variable. Thus, all other reasons for receiving a promotion serve as the comparison category. These categories are the most frequently cited reason for receiving a promotion, with nearly sixty-eight percent of people receiving a promotion reporting that it is due to performance, and roughly sixteen percent saying it was given because the respondent requested it.

All estimates include the same full set of explanatory variables used in the basic model; however, for the sake of brevity, only the results for the promotion receipt and belief variables and the hourly wage are reported. The results, presented in table 6, are mixed. The OLS, probit and ordered probit models indicate that receiving a promotion has a greater impact on job satisfaction if the respondent believes she received that promotion based on her performance. The coefficient continues to be positive in both the fixed effects and AB estimates, but is no longer statistically significant. Thus it appears that individuals who believe their promotion was received due to performance also show greater job satisfaction, but the correlation is due to some other, unobservable individual characteristics.

Quits and job satisfaction

The empirical literature cites a strong link between job satisfaction and both quits and quit intentions. We show that the link between job satisfaction and quits also holds in this dataset. An indicator variable for quitting the most recent job is created from two other variables. The respondent is asked whether he/she is currently with the most recent employer listed (which corresponds to the job information reported in the survey). If the respondent indicates that she is no longer with the employer, she is asked to state the reason, given the option of selecting several reasons for quitting. The quit variable takes a value of one if the individual reports that she is no longer with the most recent employer and indicates that she quit (for any reason) and zero otherwise. Given the short time frame, we should not expect see a high rate of quits, or of job separations more generally. In the primary sample, we observe quits in only two percent of the observations. Removing the hours worked and wage restrictions (which leads to a larger sample size of 20,967 observations) results in a sample where quits are reported in slightly over four percent of the observations. Since the hours worked and wage restrictions eliminate a large fraction of the quits, we estimate the quits equation using both samples. The job satisfaction variable taking values between one and four is used as a regressor instead of the very satisfied indicator variable.

The model is estimated using both the probit and logit models, for both samples. Marginal effects are reported with standard errors in parentheses. The results, presented in table 7, show a strong correlation between quits and both job satisfaction and promotion expectations. All four models show a negative, highly statistically significant correlation between job satisfaction and quitting, with the marginal effect ranging between -0.0056 and -0.01; a one point increase in job satisfaction is associated with upwards of a one percentage point decrease in the

probability a worker will quit. This is an economically significant result given the four percent quit rate observed in the expanded sample. Workers who believe a promotion is possible in the future are also less likely quit, even after controlling for job satisfaction. Again, worker expectations are an important determinant of worker behavior. The results also show that job satisfaction may in fact be the most important determinant of voluntary job separations of all the explanatory variables included in the model.

The correlation between job satisfaction and quitting may reflect unobservable individual characteristics; however the fixed effects logit is not a viable alternative in this case since the vast majority of the individuals in this sample never report having quit their jobs (the total sample size falls to roughly seven hundred observations). The model was estimated using both OLS and FE estimation and in both cases, the negative correlation between job satisfaction and quits persists. In fact, the correlation becomes stronger when moving from the OLS to the FE estimator, indicating that failure to account for unobserved individual fixed effects biases the estimates towards zero. Thus, the estimates provided above may actually understate the importance of job satisfaction in predicting whether workers will quit in the near future.

Conclusions

This paper estimates the effect of promotions and promotion expectations on job satisfaction. Both receipt of a promotion in the last two years and the expectation that a promotion is possible in the next two years result in higher job satisfaction, even while controlling for current and lagged wages. The effect of a promotion is roughly equal to a fifty percent increase in the hourly wage. Combined with the correlations between job satisfaction and positive employee behaviors, these results suggest that promotions can be a very effective

way for firms to elicit effort from its employees. Additionally, it appears that firms can maintain a high level of job satisfaction even for workers not receiving a promotion if they can maintain the worker's belief that a promotion is possible. These results persist even after applying Arellano-Bond estimation to account for the potential endogeneity of the promotion receipt and promotion expectations variable.

The results in this paper are consistent with the empirical literature's finding that expectations play an important role in determining a worker's job satisfaction. The finding that promotions have a lasting, but diminishing impact on job satisfaction fits with the previous papers which found that income changes have a temporary effect on job and life satisfaction. Together, these observations provide strong evidence that people grow accustomed to their circumstances and require frequent improvements in their economic situation in order to maintain a high level of satisfaction.

Finally, consistent with previous research, we also found a strong, negative correlation between quits and both job satisfaction and promotion expectations. In fact, these were the most important factors in the model in determining whether a worker quit her most recent job by the time of the survey interview. Taken together, the job satisfaction and quits estimates indicate that promotions can serve as an important mechanism for employers to keep their workers happy and to reduce turnover. More research is needed to provide a more thorough and detailed analysis of the links between worker turnover, promotions and job satisfaction as they relate to other aspects of the employment relationship, such as benefits and training. Such analyses will help to shed light on the relative importance workers' attach to promotions and other job characteristics.

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Table 1: Job satisfaction response frequency

Response	All	Men	Women	Non-Black	Black
Very unsatisfied	1.71	1.55	1.9	1.5	2.32
Somewhat unsatisfied	5.52	5.2	5.91	5.21	6.44
Somewhat satisfied	45.06	46.9	42.83	44.11	47.22
Very satisfied	47.71	46.35	49.35	49.18	43.42
Mean	2.39	2.38	2.4	2.41	2.32
Observations	18,364	10,060	8,304	13,657	4,707

Table 2: Summary statistics

	Full Sample		Very Satisfied		Not Very Satisfied	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Job satisfaction	2.387	0.67	--	--	--	--
Very satisfied indicator	0.477	0.5	--	--	--	--
Promotion	0.17	0.384	0.204	0.403	0.139	0.346
Promotion belief	0.586	0.493	0.619	0.486	0.556	0.497
Hourly wage	20.63	13.76	21.9	15.29	19.47	12.09
Wage difference*	1	0.487	1.03	0.524	0.974	0.449
Lag hourly wage	19.9	17.02	20.91	20.36	18.98	13.19
Hours worked	2,329	558.7	2,347	565	2,312	552
Some college indicator	0.251	0.434	0.251	0.433	0.252	0.434
College indicator	0.132	0.339	0.138	0.345	0.127	0.333
More than college indicator	0.101	0.302	0.125	0.331	0.079	0.27
AFQT score percentile	43.35	28.26	44.65	28.53	42.16	27.95
Age	39.54	4.04	39.6	4.02	39.49	4.05
Tenure (in years)	7.3	6.28	7.07	6.26	7.5	6.3
Union member	0.182	0.386	0.171	0.377	0.191	0.393
Firm has multiple locations	0.712	0.453	0.7	0.459	0.725	0.446
Number of employees	1,189	8,099	1,147	8,070	1,228	8,126
Married	0.737	0.44	0.752	0.432	0.725	0.447
Female	0.452	0.498	0.468	0.499	0.438	0.496
Black	0.256	0.437	0.233	0.423	0.277	0.448
Hispanic	0.189	0.391	0.209	0.407	0.17	0.376
Observations	18,364		8,761		9,603	

Means and standard deviations are presented for the full sample and by whether the individual reports being highly satisfied with her job.

*Presented as the ratio of the real hourly wage to the comparison group mean hourly wage.

Table 3: Job satisfaction determinants

Variable	OLS	Fixed Effects	Ordered Probit	Probit
Promotion	0.12** (0.013)	0.121** (0.013)	0.092** (0.0099)	0.101** (0.01)
Promotion belief	0.149** (0.011)	0.124** (0.012)	0.098** (0.0073)	0.072** (0.008)
Log hourly wage	0.293** (0.032)	0.258** (0.04)	0.214** (0.023)	0.211** (0.025)
Log wage difference	-0.12** (0.03)	-0.089* (0.036)	-0.085** (0.022)	-0.079** (0.024)
Lag log hourly wage	-0.038** (0.014)	-0.015 (0.016)	-0.027** (0.011)	-0.02† (0.011)
Log hours worked	0.076** (0.026)	0.074* (0.032)	0.065** (0.019)	0.095** (0.019)
Some college indicator	-0.032* (0.014)	-0.0023 (0.064)	-0.024* (0.0098)	-0.025* (0.011)
College indicator	-0.08** (0.023)	-0.049 (0.092)	-0.059** (0.016)	-0.057** (0.018)
More than college indicator	-0.066** (0.028)	-0.022 (0.107)	-0.041* (0.02)	-0.024 (0.022)
AFQT score percentile	-0.077** (0.025)		-0.058** (0.018)	-0.065** (0.019)
Age	0.0011 (0.0022)	0.029* (0.014)	0.0013 (0.0017)	0.0027 (0.0017)
Tenure (in years)	-0.0061* (0.0026)	-0.021** (0.003)	-0.0056** (0.0018)	-0.01** (0.002)
Tenure squared	0.00022† (0.00012)	0.00038** (0.00014)	.00021** (0.00008)	0.00038** (0.00009)
Union member	-0.042** (0.014)	0.045† (0.025)	-0.027** (0.01)	-0.027* (0.011)
Firm has multiple locations	-0.062** (0.011)	-0.014 (0.014)	-0.044** (0.0082)	-0.04** (0.009)
Log number of employees	-0.02** (0.0026)	-0.0034 (0.0038)	-0.015** (0.0019)	-0.015** (0.002)
Married	0.034** (0.012)	-0.03 (0.019)	0.023** (0.0081)	0.021* (0.0089)
Female	0.026* (0.011)		0.023** (0.0082)	0.04** (0.0089)
Black	-0.062** (0.014)		-0.042** (0.0095)	-0.038** (0.01)
Hispanic	0.047** (0.013)		0.035** (0.01)	0.041** (0.011)
R-squared	0.0586	0.039	0.0331	0.0414

Estimation uses 18,364 observations on 5,388 individuals.

Coefficients with standard errors in parentheses are reported in columns 1 and 2.

Marginal effect on being highly satisfied provided in columns 3 and 4 with standard errors in parentheses.

All models include industry and year indicators.

Table 4: Job satisfaction and lagged promotion variables.

Variable	1	2	3	4
Promotion	0.083** (0.011)	0.082** (0.012)	0.1** (0.023)	0.077** (0.014)
Promotion belief	0.099** (0.0081)	0.103** (0.009)	0.091** (0.014)	0.113** (0.012)
Lagged promotion	0.026* (0.011)	0.025* (0.011)	0.0089 (0.022)	0.032 (0.013)
Lagged promotion belief		0.00071 (0.0089)		
Pseudo R-squared	0.0341	0.0351	0.044	0.0341
Observations	14,918	13,301	5,301	8,000

Marginal effects for being very satisfied using ordered probit estimation are presented with marginal effects in parentheses.

All models include industry and year indicators.

Full set of regressors included in each model; selected estimates provided for brevity.

Columns 2-4 only use observations where consecutive observations are available.

Column 3 uses observations only on those who did not believe a promotion was possible in their last interview.

Column 4 uses observations only on those who did believe a promotion was possible in their last interview.

Table 5: Job satisfaction estimates using the Arellano-Bond estimator

Variable	1	2	3	4	5
Lagged job satisfaction	0.062** (0.019)	0.058** (0.02)	0.107** (0.036)	0.018 (0.024)	0.184** (0.025)
Lagged job satisfaction*lagged promotion belief					-0.182** (0.013)
Promotion	0.095** (0.019)	0.119** (0.02)	0.159** (0.044)	0.102** (0.021)	0.1* (0.042)
Promotion*lagged promotion belief					0.048 (0.044)
Promotion belief	0.124** (0.017)	0.123** (0.017)	0.14** (0.028)	0.097** (0.023)	-0.151** (0.031)
Promotion belief*lagged promotion belief					0.3** (0.036)
Lagged promotion		0.046* (0.018)	0.0063 (0.036)	0.059** (0.021)	-0.131** (0.037)
Lagged promotion*lagged promotion belief					0.252** (0.042)
Log hourly wage	0.161* (0.065)	0.157* (0.065)	0.202† (0.113)	0.138† (0.071)	0.154* (0.07)
Log wage difference	-0.045 (0.056)	-0.044 (0.056)	-0.065 (0.097)	-0.028 (0.063)	-0.066 (0.059)
Lag log hourly wage	-0.013 (0.028)	-0.015 (0.028)	0.036 (0.051)	-0.033 (0.031)	-0.023 (0.03)
Log hours worked	0.092† (0.051)	0.089† (0.051)	0.124 (0.082)	0.075 (0.058)	0.082 (0.054)
Some college indicator	-0.206† (0.123)	-0.105† (0.028)	-0.171 (0.192)	-0.239 (0.163)	-0.239† (0.124)
College indicator	-0.306 (0.188)	-0.303 (0.187)	-0.502 (0.389)	-0.24 (0.212)	-0.318 (0.196)
More than college indicator	-0.252 (0.223)	-0.254 (0.222)	0.635 (0.478)	-0.138 (0.251)	-0.276 (0.243)
Age	0.037* (0.018)	0.037* (0.018)	0.045 (0.029)	0.035 (0.021)	0.039* -0.019
Tenure (in years)	-0.034** (0.0059)	-0.034** (0.0059)	-0.046** (0.01)	-0.026* (0.0072)	-0.04** (0.0063)
Tenure squared	0.00083** (0.00029)	0.00085** (0.00029)	0.0011* (0.00047)	0.00081* (0.0004)	0.001** (0.00031)
Union member	0.017 (0.041)	0.02 (0.041)	0.032 (0.074)	0.0076 (0.046)	0.035 (0.043)
Firm has multiple locations	-0.024 (0.023)	-0.023 (0.023)	-0.043 (0.037)	-0.019 (0.027)	-0.036 (0.024)
Log number of employees	0.0026 (0.006)	0.0023 (0.0060)	0.0062 (0.011)	-0.00018 (0.0067)	0.0039 (0.0064)
Married	-0.051 (0.031)	-0.052† (0.031)	-0.048 (0.052)	-0.051 (0.038)	-0.055† (0.033)
H2 test of autocorrelation	0.04 (0.97)	-0.04 (0.97)	1.24 (0.21)	-0.21 (0.83)	-0.13 (0.89)

Number of observations	8,227	8,227	3,223	5,004	7,705
Number of individuals	3,524	3,524	1,991	2,592	3,292

Job satisfaction is the dependent variable.

All models control for industry and year effects.

Column 3 (4) uses observations only on those who did not (did) believe a promotion was possible in their last interview.

Table 6: Job satisfaction including reason for promotion variables.

Estimator	OLS	FE	Ord Probit	Probit	AB
Promotion	0.073** (0.025)	0.116** (0.026)	0.056** (0.019)	0.064** (0.02)	0.108** (0.03)
Promotion belief	0.15** (0.012)	0.122** (0.013)	0.099** (0.0081)	0.072** (0.009)	0.123** (0.017)
Lagged promotion	0.033* (0.014)	0.049** (0.015)	0.025* (0.011)	0.036** (0.011)	0.045* (0.018)
Reason for promotion: performance	0.054* (0.027)	0.025 (0.029)	0.045* (0.021)	0.047* (0.023)	0.017 (0.032)
Reason for promotion: requested	-0.02 (0.036)	-0.047 (0.036)	-0.017 (0.027)	-0.014 (0.029)	-0.005 (0.018)
Log hourly wage	0.29** (0.034)	0.235** (0.046)	0.214** (0.025)	0.211** (0.027)	0.155** (0.065)
Lag job satisfaction					0.058** (0.02)
H2 test					0.01 (1.00)
R-squared/ Pseudo R-squared	0.0604	0.0395	0.0343	0.0423	
Observations	14,914	14,914	14,914	14,914	8,219
Individuals	5,108	5,108	5,108	5,108	3,523

Marginal effects for being very satisfied using ordered probit estimation are presented with marginal effects in parentheses.

All models control for industry and year effects.

Full set of regressors included in each model; selected estimates provided for brevity.

Table 7: Quits and job satisfaction

	1	2	3	4
Job satisfaction	-0.0068** (0.00095)	-0.0056** (0.00082)	-0.010** (0.0012)	-0.0087** (0.0011)
Promotion belief	-0.0047** (0.0014)	-0.004** (0.0013)	-0.0082** (0.0019)	-0.0071** (0.0017)
Log hourly wage	-0.0073† (0.004)	-0.007* (0.0033)	0.00031 (0.004)	0.0000094 (0.0036)
Log wage difference	-0.0029 (0.004)	-0.0021 (0.0034)	-0.0072† (0.0044)	-0.0059 (0.0039)
Lag log hourly wage	0.00049 (0.0018)	0.00071 (0.0016)	-0.0021 (0.0016)	-0.0021 (0.0014)
Log hours worked	-0.0092* (0.0036)	-0.0082* (0.0032)	-0.025** (0.0016)	-0.019** (0.0014)
Some college indicator	0.0017 (0.0019)	0.0015 (0.0016)	0.00071 (0.0024)	0.00087 (0.0021)
College indicator	0.0074 (0.0045)	0.0064 (0.004)	0.00059 (0.004)	0.000078 (0.0036)
More than college indicator	0.01† (0.0061)	0.0088† (0.0052)	0.0037 (0.0053)	0.0029 (0.0048)
AFQT score percentile	0.00018 (0.003)	0.00039 (0.003)	-0.0019 (0.004)	0.000092 (0.004)
Age	-0.0006* (0.00029)	-0.00049† (0.00025)	-0.00099** (0.00039)	-0.00079* (0.00035)
Tenure (in years)	-0.0026** (0.00035)	-0.0022** (0.00032)	-0.0034** (0.00048)	0.0029** (0.00047)
Tenure squared	0.000082** (0.00002)	0.000068** (0.00002)	0.0001** (0.00002)	0.000075 (0.00003)
Union member	-0.0013 (0.002)	-0.0016 (0.0018)	-0.0046† (0.0025)	-0.0043† (0.0024)
Firm has multiple locations	0.00055 (0.0013)	0.00033 (0.0011)	-0.00077 (0.0019)	-0.0011 (0.0017)
Log number of employees	-0.00088* (0.00036)	-0.00067* (0.00032)	-0.0012* (0.00048)	-0.00095** (0.00044)
Married	-0.0026† (0.0015)	-0.002 (0.0013)	-0.0042* (0.002)	-0.0032† (0.0018)
Female	0.0044** (0.0016)	0.0031* (0.0013)	0.0078** (0.002)	0.0071 (0.0019)
Black	0.00057 (0.0018)	0.00043 (0.0015)	0.0013 (0.0024)	0.0014 (0.0022)
Hispanic	0.001 (0.0018)	0.00091 (0.0016)	0.0000006 (0.0024)	0.00012 (0.0022)
Estimator	Probit	Logit	Probit	Logit
Hours and wage restrictions	Yes	Yes	No	No
R-squared	0.1409	0.141	0.2051	0.1979
Observations	17,920	17,920	20,967	20,967

Marginal effects provided with standard errors in parentheses.
All models control for industry and year effects.