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Employment relations and wages: What can we learn from subjective assessments?

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Employment Relations and Wages: What Can We Learn from Subjective Assessments?

Upjohn Institute Working Paper 13-196

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ABSTRACT

This paper studies the link between hourly wages and workers' subjective assessments of how easy it would be to find another job as good as the present one, and how easy it would be for an employer to replace an employee. First, using high-quality data, I study the correlates of these two assessments. Second, I study whether respondents who report better outside opportunities and respondents who think they are difficult to replace receive higher wages. The results appear to be consistent with predictions of at least three theoretical frameworks: human capital theory, search theory, and a "locus of control" model.

JEL Classification Codes: J31, J41, J50, M51

Keywords: Wages, Employment Relations, Outside Options, Human Capital, Locus of Control, Labor Market Frictions

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1 INTRODUCTION

Jacob Mincer's earnings function (Mincer 1974) has for decades provided the canonical framework within which labor economists have modeled earnings and estimated the returns to education (Rosen 1992; Heckman, Lochner, and Todd 2008; Polachek 2007). It has also provided the framework for understanding the relationship between earnings and a host of other factors, including nonwage job characteristics (Duncan and Holmlund 1983); marriage (Korenman and Neumark 1991, 1992); computer use (Krueger 1993, DiNardo and Pischke 1997); handedness (Goodman 2012); religion (Chiswick 1983, Tomes 1984); "locus of control" (Coleman and DeLeire 2003, Cebi 2007); personality traits (Gensowski 2013); beauty (Hamermesh and Biddle 1994); and sleep (Biddle and Hamermesh 1990), among many others.

This paper uses the Mincer wage function framework to explore what can be learned from responses to two novel survey questions that were included in the 2000 wave of the Swedish Standard of Living Survey (or, LNU). The first question asks the respondent to assess her own ability to find employment as good as her current job. The second question asks the respondent to judge how easy it would be for her employer to replace her with an equivalent substitute. I study whether respondents who report better outside opportunities receive higher wages and whether respondents who think they are easy to replace tend to have lower wages, holding all other factors constant.

These two questions were included in LNU as a part of a module surveying employment relations, and previously have only been used in a paper asking whether reciprocal dependency

relations between employers and workers are predictors of class inequality.¹ Although originally developed for use in a sociological study, these two subjective assessments are of interest to economists because the responses to them can easily be interpreted as outside options in the context of search and matching models or as indicators of human capital in the human capital theory.

I start by studying the correlates of the subjective questions and relate the findings to the predictions of human capital theory, models with search frictions, and a “locus of control” model.² Understanding the correlates of these questions is important because later we want to interpret their relationship with wages. In the next step, I estimate a set of wage equations, which include the two subjective assessments as well as other variables commonly found in Mincer wage regressions. In this part of the analysis, the main focus is to understand whether the subjective questions have additional explanatory power to other correlates of wages. Finally, in order to understand heterogeneity, I estimate separate wage equations for different demographic groups.

It is worthwhile to point out that the two questions on subjective assessments of labor market prospects are unique to LNU. Typically, data on what constitutes better outside opportunities or on which workers are hard to replace are not observed, and researchers have to impute it by using econometric techniques. As the two questions ask about expectations, they capture these prospects as perceived directly by the respondent.

¹ Tåhlin (2007) contrasts predictions of competing theories of class: the “class as employment relations” theory and a model defining class in terms of skill development. He does not find support for the class as employment relations theory.

² See, for example, Andrisani (1977), Coleman and DeLeire (2003), and Cebi (2007).

Although using questions about subjective perceptions may strike some as unorthodox, the approach of this paper follows the tradition in labor economics that elicits information about how wages are set by directly asking workers and employers about their experiences. Such an approach was used in Bewley's (1999) seminal study on wage rigidity and, more recently, Hall and Krueger's (2012) study of the wage-setting process of recently hired workers.

The paper finds support for all of the three theoretical frameworks considered. The four major empirical findings are as follows:

- 1) Better-educated workers are more likely to report good chances of reemployment and tend to have higher wages. Workers who have recently received employer-provided training perceive themselves to be more difficult to replace and at the same time tend to have higher wages. These findings are broadly consistent with the predictions of Becker's theory of general and firm-specific human capital.
- 2) Conditional on other observables, women report worse chances of reemployment than men and believe they would be easier to replace with an equivalent worker. However, conditional on women assessing their labor market standing as weaker, there is little difference between men and women in how these self-reported assessments correlate with wages.
- 3) Compared to residents of Sweden's capital, Stockholm, inhabitants of other areas report worse outside opportunities, consistent with urban areas having better developed labor markets. Compared to Stockholm, residents of Sweden's two next-largest cities (Gothenburg and Malmo) report being more difficult to replace.

- 4) Wages tend to rise more rapidly with the subjectively perceived better chances of reemployment for more educated compared with less educated workers. At the same time, wages do not vary with the subjectively perceived ease of replacement for the better educated compared with the less educated. These findings are consistent with subjective assessments of individual labor market conditions being proxies for external-internal locus of control studied by Coleman and DeLeire (2003) and Cebi (2007).

The rest of the paper is organized as follows. I begin by describing the data used, and focus on the two questions central for this paper, as they lay the groundwork for further discussing theoretical considerations. Section 3 discusses the theoretical background. I begin by discussing two well-known frameworks, the human capital theory and models with labor market frictions, and conclude by discussing how personality traits, such as the external-internal locus of control scale of attitudes, might matter for labor market outcomes. In the context of each model, I discuss how theory can help answer what the potential correlates of subjective assessments are and how the subjective assessments relate to wages. Section 4 describes the empirical framework. In order to understand the determinants of the subjective assessments, I start by fitting ordered probit models. Later, I estimate a set of wage equations including the subjective assessments. Section 5 presents and discusses the results. The final section concludes.

2 DATA

The data used for this paper come from the year 2000 wave of the Swedish Level of Living Survey (LNU), which includes information on about 5,000 individuals aged 18–75 randomly selected from the Swedish population. The survey covers dimensions such as health, education,

and working conditions. Because the survey is administered face-to-face, it is considered to be of high quality (see Fritzell and Lundberg [1994]).

The 2000 wave of LNU contains two novel questions regarding so-called reciprocal dependence relations in the workplace (Tåhlin 2007). Two questions ask the respondents to assess their chances of reemployment and replaceability in the current job:

- 1) How easy do you think it would be for you to get a job as good as your current one if for some reason you had to leave your employer?
- 2) How easy do you think it would be for your employer to replace you if you left?

Responses to both questions are measured on an ordinal scale ranging from 1 to 5, indicating “very difficult” to “very easy.”

The 2000 wave of LNU includes 5,142 individuals, of whom 2,973 report a positive wage. For this study I drop individuals older than 65, because until 2000, 65 was the statutory retirement age in Sweden. Furthermore, I drop self-employed workers and those employed in farming. The analysis sample consists of 2,260 observations.

Table 1 presents the summary statistics for the analysis sample. A detailed description of the variables is in Appendix A. One particular feature of the Swedish labor market visible in Table 1 is the high degree of unionization (about 85 percent of the sample) and a relatively large public sector.

Table 2 shows the variation in the two variables of interest, abbreviated as “Ease of finding as good a job” and “Ease of being replaced.” In Table 2, we see that the majority of answers to the subjective assessments are concentrated around the categories “fairly difficult” and “not particularly difficult,” making the two distributions roughly normal with a somewhat

long right tail. Cohen’s kappa coefficient of agreement between these ordinal variables equals 0.0153, suggesting only slight “agreement” between the two measures. Believing that one could find as good a job is virtually uncorrelated with believing that one could be replaced easily.

3 BACKGROUND

A natural starting point for understanding worker heterogeneity is the human capital theory (Becker 1974). The human capital model predicts that, on the margin, workers with more general human capital—hence better reemployment opportunities—will have higher wages. Furthermore, if a worker has firm-specific human capital, this can make her difficult (more costly) to replace, and theory predicts such workers to receive a wage premium. Empirically, one would expect that measures of general and firm-specific human capital be important predictors of the subjective assessments.

A second, and not necessarily exclusive, explanation for the variation in outside opportunities and ease of replacement is offered by models with labor market frictions. If it is costly for workers to move among employers, then theory predicts there to be an upward-sloping labor supply curve to the individual employer. This situation gives the employer monopsony power.³ Under this scenario, higher mobility costs imply a lower wage rate compared to a situation with zero mobility costs. Costly mobility can be due to geographical location and choice of occupation. Since on average women devote more time to household activities,

³ Note that such monopsony power does not require a market with only one buyer (classical monopsony). A “friction-based monopsony” can occur even if there are several firms competing for workers, but because of labor market frictions there is an upward-sloping labor supply curve to the individual firm. The distinction between classical monopsony and the friction-based “new monopsony” is discussed in Manning (2003).

mobility can also be more costly for women than for men. Empirically, one can expect gender, occupation, and geographic location to correlate with chances of reemployment for the worker.

Labor market frictions might also affect the employers. The standard job-matching model with wage bargaining includes frictions on both sides of the labor market (Pissarides 2000). In the job-matching model, the equilibrium wage is increasing with the outside opportunity of the worker (a function of the ease of reemployment), and falling with the outside opportunity of the firm (a function of the ease with which the firm can find replacement).⁴

As argued above, the ease of reemployment could depend on choice of occupation and gender. Though the objective of most search and matching models is not to model human capital investment, it is not unreasonable to think that in reality a worker's outside option will also depend on her general human capital, whereas the employer's outside option will depend on whether the employer has invested in firm-specific human capital. Hence, the ease of replacing a worker could correlate with geographic location, occupation, industry, and firm-specific human capital of the worker.

A third explanation for why we observe variation in the answers to the subjective assessments is because of differences in psychological traits. The psychological concept of "locus of control" offers one explanation (see Andrisani [1977] and Coleman and DeLeire [2003]). Cebi (2007, p. 919) defines locus of control as measuring "the extent to which an individual believes she has control over her life (internal control) as opposed to believing that luck controls her life (external control)." According to "external-internal" classification of

⁴ The issue of whether wages are sensitive to outside options has recently been the subject of some controversy. Hall and Milgrom (2008) argue that wages in the standard job-matching model are too sensitive to labor market conditions and that this explains the poor performance of the model in replicating observed data. The

attitudes, people with strongly internal locus of control view of their own initiative as the driving force behind life's events and personal success.

Previous literature has measured the external-internal attitudes along a scale made up of several items eliciting the subjectively perceived link between one's own effort and outcomes.⁵ To be clear, the subjective assessments studied in this paper are not part of the locus of control scale used by Coleman and DeLeire (2003) and Cebi (2007). However, one may justifiably speculate that a respondent of LNU who reports better outside opportunities could have a higher degree of internal locus of control. On the other hand, if a respondent assesses the likelihood of being replaced with a substitute as high, it could indicate a more external attitude.

As in the standard human capital theory, in which it is rooted, the Coleman-DeLeire locus of control model predicts wages to rise with more human capital and makes two additional predictions, summarized in Cebi (2007, Figure 1) and adapted below in Figure 1. The two predictions are as follows:

- 1) The skilled-unskilled wage gap will be higher for individuals with an internal locus of control than the skilled-unskilled wage gap for individuals with an external locus of control: $\Delta w_{internal} > \Delta w_{external}$, all other things being equal.
- 2) The skilled-unskilled wage gap for individuals with an external locus of control will be small: $\Delta w_{external} \approx 0$, all other things being equal.

The hypothesis is that holding the level of education and other factors affecting wages fixed, the wage premium due to more education will rise with being more internal. However,

subjective assessments may hence offer some insight as to whether wages correlate with the subjectively perceived outside option of the worker, or with the subjectively perceived outside option of the employer, or both.

holding education fixed, the wage premium due to additional education will be small for external types.

In sum, at least three models can provide guidance to understand the variation in workers' perceptions and why it would matter for wages. When interpreting the results, I will return to this discussion.

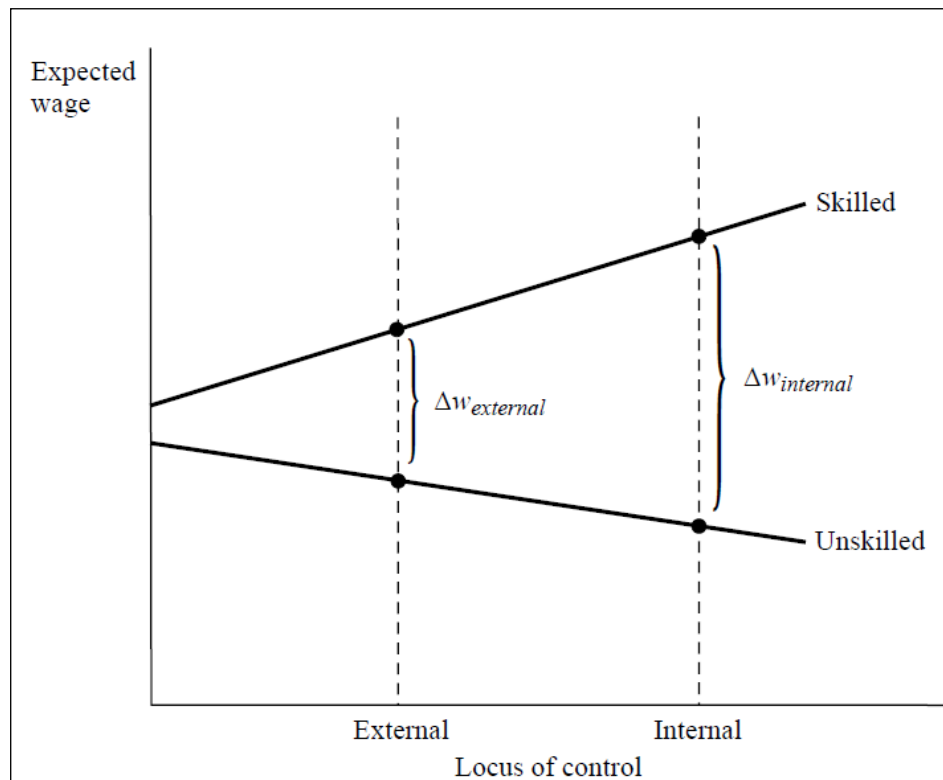


Figure 1 Relationship between the expected wage and locus of control for skilled and unskilled workers in the Coleman-DeLeire model.

⁵ While Coleman and DeLeire (2003) find that locus of control is an important determinant of educational attainment and future labor market outcomes, Cebi (2007) does not find that locus of control predicts educational attainment.

4 METHODS

First, in order to understand what explains the variation in the categorical variables, I estimate an ordered probit. The ordered probit assumes that there exists an unobserved continuous measure, $y^* = x\beta + e$, and that the observed response categories, $y = j$ ($j = 1, \dots, J$), correspond to intervals along this continuous measure. The model estimates the likelihood of observing a particular response as a function of the regression parameter β and the threshold parameters (also called cut-offs).

In addition to the ordered probit, I also report the results from an OLS model, where I rescale the dependent categorical variable so that a marginal change in a regressor can be interpreted as a standard deviation change in the subjective assessment. This transformation gives qualitatively very similar results to the regression parameters in the ordered probits.⁶ Table 3 shows the mapping between the original and rescaled variables. Note that the transformed values of the dependent variables are not equidistant, but scaled by the fraction of the sample reporting a given response.

Second, I use OLS to estimate a wage function using the log of wages, the two subjective assessments, and a set of controls:

$$\log w = \alpha + \beta_1 \text{ease of finding as good a job} + \beta_2 \text{ease of being replaced} + \text{controls} + \varepsilon.$$

⁶ This transformation, called a “probit-adapted” OLS (POLS), was first suggested by van Praag and Ferrer-i-Carbonell (2006, 2008) and applied by Luechinger (2009) and Pischke (2011) in studies of life satisfaction. The basic idea is to transform each value of the observed ordered variable y_i to a conditional mean using the fraction of the sample that reports a given response: $y_i = j$ and assuming that the underlying latent variable is standard normal. The transformed dependent variable is then regressed on the explanatory variables using a simple OLS. Note that although regressing this transformed variable on explanatory variables treats the transformed dependent variable as a cardinal measure, this is not very different from the implicit cardinalization in the ordered probit.

Since “Ease of finding as good a job” and “Ease of being replaced” are categorical variables, I create 0-1 variable for each of the multiple categories. The omitted category for both of the categorical variables is the category “very difficult.”

The prediction from the human capital model and models with labor market frictions is that the estimates of β_1 will be positive and β_2 negative.⁷ The control vector consists of variables measuring productivity of work such as years of education, labor market experience, and tenure. It also contains a set of regressors thought to influence wage setting such as union membership, sector affiliation, and socioeconomic categories. I also control for whether the respondent has been unemployed in the past. Regional fixed effects are added as controls for the local labor market conditions. I control for the number of times the respondent has switched industries where he or she was employed in the past eight years (that is, since the last wave of LNU). Including these regressors is expected to reduce the significance of the estimates of β_1 and β_2 if the subjective assessments reflect similar information to other observables.

The demographic information in LNU allows me to break the analysis up by different groups. In order to see if there is heterogeneity in the results, I estimate a wage equation and add interaction terms between “Ease of finding as good a job” and “Ease of being replaced” and various indicators, such as educational attainment, tenure, and gender:

$$\log w = \alpha + \beta_1 \text{ease of finding as good a job} + \beta_2 \text{ease of being replaced} + \delta_1 (\text{ease of finding as good a job} \times \text{interaction variable}) + \delta_2 (\text{ease of being replaced} \times \text{interaction variable}) + \text{interaction variable} + \text{controls} + \varepsilon.$$

⁷ The Coleman-DeLeire model does not make a sharp prediction with respect to how an internal (external) locus of control affects wages; instead, it makes a prediction with regard to how the internal (external) locus of control will affect wages, depending on one’s educational attainment. I return to this discussion below.

The estimates of δ_1 and δ_2 capture possible heterogeneity in how the self-assessed variables correlate with wages for various groups.

By interacting the subjective assessments with a dummy indicating a high level of educational attainment, I can study whether the coefficients on the interaction terms in the wage regression behave as predicted by the Coleman-DeLeire locus of control model. If “Ease of finding as good a job” is a proxy for an internal attitude, the model predicts wages to be increasing in the interaction term between more education and chances of reemployment (prediction 1). If “Ease of being replaced” is a proxy for an external attitude, then interacting “Ease of being replaced” with educational attainment should produce a statistically small wage differential (prediction 2). In the context of the wage equation above, if the interaction variable is set to equal an indicator of educational attainment, the Coleman and DeLeire (2003) model predicts that $\delta_1 > \delta_2 \approx 0$.

The subjective assessments were only asked in the 2000 wave of LNU, and this study can only use cross-sectional variation to describe the associations between them and observables. Hence, any results are best interpreted as descriptive correlations. If the two questions remain in LNU, future research could study how the results change if one controls for the respondents fixed effects. The effects would then be identified from changes over time in the self-reported answers, raising, however, the question why such a change has occurred in the first place. Since LNU is conducted on average once a decade, even when a new wave will become available, controlling for other changes that might have occurred in the labor market will present an additional caveat.

5 RESULTS

In this section, I first discuss the results from estimating the ordered probit. In the latter part of the section, I turn to estimating the relationship between the subjective assessments and wages.

5.1 The Determinants of Subjective Assessments

Table 4 shows the results from estimating an ordered probit and OLS models using the answers to “Ease of finding as good a job” and “Ease of being replaced” on a set of controls listed in the table. The estimates in Table 4 suggest that having more years of education is associated with a steep increase in the respondent’s belief that he or she could find equivalent employment. At the same time, more years of education do not statistically predict the belief that a respondent would be difficult to replace.

Table 4 shows that compared to men, women perceive their chances of finding equivalent employment much more pessimistically than men. Also, they deem the employers’ chances of replacing them with an equivalent worker as greater than men. This subjectively perceived weaker labor market standing could indicate that women face a higher degree of monopsony power than men (see; Hirsh, Schank, and Schnabel 2010; Ransom and Sims 2010; and Ransom and Lambson 2011).

Having an additional year of tenure on the job is associated with subjectively perceived fewer chances of finding a job that is as good as the current one. It also appears that there is hardly any correlation with how easy it is to replace a tenured worker. However, another proxy for firm-specific human capital, the indicator for having recently obtained employer-provided training, correlates very negatively with how easy a respondent reports he or she is to replace. A higher socioeconomic status (relative to the reference category, unskilled blue-collar worker)

correlates positively with the ease of finding as good a job and negatively with the ease of being replaced.

Noticeably, being a member of a trade union or working in the private sector does not seem to correlate with the “Ease of finding as good a job” but does correlate positively with the perceived likelihood of being replaced. This might be interpreted as meaning that those workers who evaluate that they are easier to dismiss are more drawn to become union members. Finally, having been recently unemployed correlates negatively with the assessment of the chances of finding equally good work.

Compared to working in the manufacturing industry (the reference category), working in the construction industry correlates positively with how easy one thinks it is to find equivalent work. Working in the public service sector or with sales also correlates positively with subjective chances of reemployment, but negatively with the ease of replacing a worker. Also, the analysis of the region of residence offers some insights. Living anywhere outside of Stockholm correlates negatively with how easy it is to find equivalent employment, but compared to those living in Stockholm, workers in Gothenburg and Malmo (Sweden’s two next large cities) believe they are more difficult to replace.

On balance, the findings are broadly in-line with theoretical predictions of search theory as well as human capital theory. By and large, the better educated and those living in Stockholm report having the greatest ease in finding equivalent employment, while at the same time report being not as easy to replace. Recent employer-provided training correlates negatively with the ease of becoming replaced. Additionally, there are noticeable differences with respect to gender:

conditional on other factors, women perceive their position in the labor market to be weaker than men.

Based on the available data, it is difficult to distinguish between the predictions of the human capital theory and models with labor market frictions. The predictions of the two theories may overlap in the sense that workers with more human capital have better outside options and are more difficult to replace. The results, however, indicate that, conditional on the available proxies for human capital (years of education, experience, tenure, and recent employer-provided training), other correlates, such as gender, socioeconomic status, and region of residence are statistically predictive of the subjective assessments. Not surprisingly, these associations might indicate a presence of frictions on the Swedish labor market. Clearly, the cross-sectional nature of these associations precludes interpreting them as causal effects. It is still interesting that “naïve” questions about labor market prospects correlate closely with observables according to patterns predicted by the human capital model and the search and matching literature.

5.2 Wage Regressions

Having established these associations, one would like to know how the subjective assessments relate to wages. Table 5 shows results from estimating the basic wage equation. In Table 5, for the different categories of “Ease of finding as good a job” we see an approximately linear shape of the different levels of the estimates. Across the regressions, the coefficients on the values of the variable “Ease of finding as good a job” has a positive sign, while “Ease of being replaced” has a negative sign.

Controlling for human capital variables decreases the coefficients on the values of “Ease of finding as good a job” and “Ease of being replaced” in absolute value. This is indicative of

subjective assessments in part being proxies for human capital. As expected, the estimate for women is negative. Adding coefficients on union membership, an indicator of private sector membership, the number of industry switches, and whether the person was recently unemployed reduces the regressors of main interest further. Furthermore, including the different dummies (regional, industry, and socioeconomic status) reduces the coefficients in absolute terms on both “Ease of finding as good a job” and “Ease of being replaced”; their coefficients are, however, still jointly significant. This suggests that the variation captured by the additional controls in columns (3) and (4) in part reflects the variation contained in the variables “Ease of finding as good a job” and “Ease of being replaced.” The null hypothesis whether the factors of “Ease of finding as good a job” and “Ease of being replaced” are jointly zero is strongly rejected (see the p -values on the last row of Table 5).

It is informative to evaluate the magnitude of the coefficients in the context of a Mincer wage function using Swedish data. Column (5) of Table 5 shows the coefficients of a Mincer regression estimated for the same sample as column (4), but without variables “Ease of finding as good a job” and “Ease of being replaced.” The estimated coefficient of return to schooling is about 2 percent. As the Swedish wage distribution is compressed, this result is typical.⁸ Note that overall the coefficients in column (5) are similar to those of column (4).

On the whole, the findings suggest that wages correlate positively with the ease of reemployment and negatively with the ease of being replaced. When increasing the set of regressors, the predictive power of the subjective variables diminishes, but they remain jointly predictive of wages. If subjectively perceived labor market conditions can be taken for proxies of

⁸The estimates of the return to schooling in Sweden since the 1980s are around 2–4 percent. For a discussion on the causal returns to education in Sweden, see Björklund (2000). Note also that as the Swedish wage

the outside option of the worker and the outside option of the employer, then the results suggests that there is a link between wages and the subjectively perceived outside option of the worker and of the employer.

5.3 Wage Regressions by Groups

I begin by looking at the differences between men and women. I also consider differences between those with little tenure at their current workplaces—thus, presumably hired recently—to those with seniority. I also look at the differences between private and public sector employees, and unionized and nonunionized workers. In order to relate the results to the Coleman-DeLeire model, I also consider the heterogeneous effects by different levels of educational attainment.

Table 6 reports the interaction terms from a regression similar to column (4) in Table 5. The interaction terms of interest are those interacting answers to the subjective assessments with dummies indicating gender, short versus long tenure, private versus public sector affiliation, union membership, and whether the respondent has a upper-secondary education or not. I omit the coefficients on the other controls.

The interaction terms in Table 6 prove to be mostly insignificantly different between men and women. That is, conditional on the fact that men and women deem their labor market standing differently, with women reporting a weaker position than men, there is no statistically significant gender difference in how this self-reported labor market standing correlates with wages. This could to reflect that, even in Sweden, women are more likely to work in the public sector, and conditional on such difference, the subjectively perceived chances of reemployment and substitutability do not correlate differently with wages by gender.

distribution is narrow, the R^2 in a Mincer regression is usually higher than one would expect to see in U.S. data.

Table 6 shows that there are some differences between those who work in the private sector and those who do not. There are differences between unionized workers and those who are not members of a union. The coefficients on “Ease of finding as good a job” are significantly smaller compared to those who are not members of a union.

Next, I interact the subjective assessments with different levels of educational attainment. The coefficients show that for those with at least an upper-secondary education (that is, “skilled”), wages increase more with the ease of reemployment. In contrast, the interactions between educational attainment and “Ease of being replaced” are for most part not significantly different from zero. Furthermore, the coefficients on “Ease of finding as good a job” and “Ease of being replaced” are not statistically different from zero. The results are in line with the predictions of the Coleman-DeLeire model, which suggests that the wage premium for the better educated should be increasing in the internal locus of control and tend to zero for the better educated who have an external locus of control. Viewed through the lens of this model, the finding suggests that that person-specific outlook on what determines labor market outcomes matters for wages.

To see if wages of newly hired workers are more sensitive to subjectively perceived labor market conditions than wages of tenured workers, the last column in Table 6 reports the estimates of the interaction between a “low tenure” indicator (those with less than three years of tenure) and the subjective assessments. There appears to be little evidence that for on-going employer-employee contracts, wages are less responsive to subjectively perceived labor market conditions.

6 CONCLUSION

This paper seeks to understand the heterogeneity in answers to two novel questions of workers' assessments of their labor market opportunities. The first asked respondents about their perceived chances of finding a job as good as the current one, and the second asked about their employers' chances of finding a replacement. Using rich demographic data, I study the determinants of variation of these questions and whether they correlate with wages and interpret the findings within three frameworks of wage determination.

There is a strong positive correlation between more education and more years of experience and the self-reported chances of reemployment. Furthermore, wages increase with the self-reported chances of reemployment, and this positive association is stronger for better-educated respondents. These findings can be explained by the human capital model but are also consistent with the predictions of the locus of control model (Coleman and DeLeire [2003] and Cebi [2007]), where the self-reported chances of reemployment are proxies for an "internal" attitude (that is, believing that personal effort and initiative are the driving forces behind life's outcomes). The results also indicate a positive relationship between having recently received employer-provided training and the difficulty in being replaced by the employer. This relationship is also consistent with the predictions of the human capital model with firm-specific investments. Finally, there is a link between the self-reported chances of reemployment and the likelihood of becoming replaced and gender. The results show that compared to men, women tend to view their position in the labor market as weaker. Yet, conditional on women reporting a weaker position, there are no statistically significant differences in how the self-reported answers correlate with wages.

The results in this paper are best to be thought of as an analysis in the spirit of Bewley (1999) and Hall and Krueger (2012). The studies survey workers (Hall and Krueger 2012) and employers (Bewley 1999) about their experiences with wage negotiations. The broader aim of their research intended to inform labor economists about the empirical basis for the wage-setting behavior commonly assumed in labor market models. For example, the standard matching model predicts wages to be sensitive to the vacancy and unemployment rate. This link, however, depends on an existing relationship between wages and outside options, which Hall and Milgrom (2008) argue is weak. The results of this paper offer suggestive evidence that such link does exist. Naturally, one would also like to know how sensitive wages are to the “true” probability of reemployment and the “true” probability of getting replaced, and what this sensitivity depends on. One may hope that approaching this question by first researching subjective assessments about labor market prospects is a potential start.

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APPENDIX A: DESCRIPTION OF VARIABLES

Wage: Gross hourly wage. Constructed from questions on gross fixed monthly and weekly pay, bonus pay and remuneration for inconvenient working hours, divided by hours usually worked. (1 SEK = 7 USD.) (Survey question)

Ease of finding as good a job: Answer to question, “How easy do you think it would be for you to get a job as good as your current one if you for some reason had to leave your employer?” 1 = Very difficult to 5 = Very easy. (Survey question)

Ease of being replaced: “How easy do you think it would be for your employer to replace you if you left?” 1 = Very difficult to 5 = Very easy. (Survey question)

Age: Age of the respondent. (Registry information)

Education: How many years of full-time education do you have? (Survey question)

Skilled: Equals one if upper-secondary education or higher. (Survey question)

Experience: How many years altogether have you spent in gainful employment? Years of labor market experience. (Survey question)

Tenure: Years of job tenure. Calculated from the year of employment at present work. (Survey question)

Low tenure: Equals one if tenure is less than 3 years. (Survey question)

Employer-provided training: Have you in the past 12 months received training during paid work time? (Survey question)

Private: Equals one if employed in the private sector. (Survey question)

Union member: Equals one if a member of a trade union. (Survey question)

Woman: Equals one if a woman. (Survey question)

Married: Equals one if married. (Registry information)

Unemployed 1999? Equals one if unemployed at any time during 1999. (Survey question)

Socioeconomic status (SES) categories: Categories: unskilled blue-collar, skilled blue-collar, a supervisor, white-collar, “higher-level” white-collar. (Survey question)

Industry: Swedish Industry Classification (SNI 92): Farming, Forestry, Fishery; Mining, Oil; Manufacturing; Utilities; Construction; Wholesale, Retail, Restaurant; Transport, Communications; Bank, Insurance, Real Estate Management; Public Services, Education. (Survey question)

No. of industry switches: How many times a respondent switched 1-digit industry of employment in the past eight years. (Registry information)

Region: The region of residence: Stockholm; Gothenburg; Malmo; medium-sized city; southern urban area; northern urban area; northern rural area. (Survey question)

RESULTS

Table 1 Descriptive Statistics

| Variable | Mean | S.d. |
|--|--------|-------|
| Wage (SEK/hour) | 121.23 | 61.47 |
| Ease of finding as good a job (1–5) | 2.78 | 1.22 |
| Ease of being replaced (1–5) | 2.5 | 0.98 |
| Years of education | 12.64 | 3.25 |
| Skilled (if upper secondary or more; 0–1) | 0.38 | 0.49 |
| Years of experience | 21.67 | 11.68 |
| Years of tenure | 11.26 | 10.35 |
| Low tenure (if less than 3 years; 0–1) | 0.27 | 0.45 |
| Employer-provided training in last 12 months (0–1) | 0.53 | 0.5 |
| Private sector (0–1) | 0.57 | 0.49 |
| Age (years) | 43.3 | 10.83 |
| Woman (0–1) | 0.48 | 0.5 |
| Married (0–1) | 0.62 | 0.49 |
| Union member (0–1) | 0.85 | 0.36 |
| Unemployed in 1999? (0–1) | 0.05 | 0.23 |
| No. of times switched industry in past 8 years | 1.07 | 1.6 |
| <i>Socioeconomic status (SES)</i> | | |
| Unskilled blue-collar worker | 0.21 | |
| Skilled blue-collar worker | 0.18 | |
| Skilled blue-collar worker, a supervisor | 0.16 | |
| White-collar worker | 0.25 | |
| “Higher-level” white-collar worker | 0.20 | |
| <i>Industry</i> | | |
| Farming, Forestry, Fishery | 0.01 | |
| Mining, Oil | 0.00 | |
| Manufacturing | 0.21 | |
| Utilities | 0.01 | |
| Construction | 0.05 | |
| Wholesale, Retail, Restaurant | 0.10 | |
| Transport, Communication | 0.07 | |
| Bank, Insurance, Real Estate Management | 0.02 | |
| Public Services, Education | 0.52 | |
| <i>Region of residence</i> | | |
| Stockholm | 0.18 | |
| Gothenburg | 0.10 | |
| Malmö | 0.06 | |
| Medium-sized city | 0.39 | |
| Southern urban area | 0.17 | |
| Northern urban area | 0.05 | |
| Northern rural area | 0.05 | |
| Number of observations | 2,260 | |

SOURCE: Swedish Level of Living Survey (LNU), 2000.

Table 2 Distribution of Answers to “Ease of finding as good a job” and “Ease of being replaced”

| | Ease of being replaced | | | | | Total | % |
|-------------------------------|------------------------|------------------|---------------------|-------------|-----------|-------|-------|
| | Very Difficult | Fairly Difficult | Not Part. Difficult | Fairly Easy | Very Easy | | |
| Ease of finding as good a job | | | | | | | |
| Very difficult | 47 | 100 | 128 | 51 | 39 | 365 | 16.15 |
| Fairly difficult | 58 | 276 | 256 | 70 | 21 | 681 | 30.13 |
| Not part. difficult | 52 | 245 | 192 | 35 | 10 | 534 | 23.63 |
| Fairly easy | 84 | 209 | 105 | 48 | 9 | 455 | 20.13 |
| Very easy | 65 | 96 | 30 | 20 | 14 | 225 | 9.96 |
| Total | 306 | 926 | 711 | 224 | 93 | 2,260 | 100 |
| % | 13.54 | 40.97 | 31.46 | 9.91 | 4.12 | 100 | |

SOURCE: Swedish Level of Living Survey (LNU), 2000.

Table 3 Transformation of Answers to “Ease of finding as good a job” and “Ease of being replaced”

| Ease of finding as good a job | |
|-------------------------------|----------------------------|
| Original value | Transformed value |
| Very difficult = 1 | Very difficult = -1.52 |
| Fairly difficult = 2 | Fairly difficult = -0.51 |
| Not part. difficult = 3 | Not part. difficult = 0.21 |
| Fairly easy = 4 | Fairly easy = 0.86 |
| Very easy = 5 | Very easy = 1.76 |
| Ease of being replaced | |
| Original value | Transformed value |
| Very difficult = 1 | Very difficult = -1.61 |
| Fairly difficult = 2 | Fairly difficult = -0.44 |
| Not part. difficult = 3 | Not part. difficult = 0.55 |
| Fairly easy = 4 | Fairly easy = 1.36 |
| Very easy = 5 | Very easy = 2.14 |

NOTE: Transformation uses the “probit-adapted OLS” (POLS) method described by van Praag and Ferrer-i-Carbonell (2006). Each original value of the observed ordered variable is converted to a conditional mean by using the share of the respondents that report a given category and assuming that the underlying latent variable is standard normal.

Table 4 Ordered Probit and OLS Estimates of Correlates of Workers' Subjective Assessments

| Independent variables | Ease of finding as good a job | | Ease of being replaced | |
|------------------------------------|-------------------------------|-----------------------|------------------------|-----------------------|
| | Oprobit | OLS ^a | Oprobit | OLS ^a |
| Education (years)/1,000 | 130.2** (53.08) | 105.5** (43.52) | 6.820 (47.91) | 2.795 (40.25) |
| Education Sq. /1,000 | -2.967 (1.892) | -2.349 (1.562) | -0.561 (1.674) | -0.376 (1.395) |
| Experience (years)/1,000 | -10.42 (8.605) | -10.15 (7.165) | -18.90** (8.375) | -16.08** (7.150) |
| Exp. Sq./1,000 | -0.00900 (0.188) | 0.0240 (0.154) | 0.521*** (0.175) | 0.442*** (0.149) |
| Tenure (years)/1,000 | -16.20*** (3.077) | -13.46*** (2.550) | 2.125 (3.022) | 1.710 (2.577) |
| Employer-provided training | 0.0814* (0.0475) | 0.0692* (0.0403) | -0.141*** (0.0480) | -0.119*** (0.0408) |
| Woman | -0.155*** (0.0491) | -0.129*** (0.0417) | 0.250*** (0.0508) | 0.211*** (0.0427) |
| Married | -0.0637 (0.0495) | -0.0571 (0.0421) | -0.0391 (0.0498) | -0.0324 (0.0424) |
| <i>Socio-economic status</i> | | | | |
| Skilled blue-collar | 0.241*** (0.0798) | 0.200*** (0.0669) | -0.322*** (0.0811) | -0.276*** (0.0699) |
| Skilled blue-collar (a supervisor) | 0.0304 (0.0778) | 0.0214 (0.0650) | -0.336*** (0.0803) | -0.289*** (0.0690) |
| White-collar | 0.138* (0.0764) | 0.113* (0.0643) | -0.555*** (0.0788) | -0.473*** (0.0670) |
| “Higher-level” white-collar | 0.155* (0.0861) | 0.129* (0.0727) | -0.599*** (0.0864) | -0.507*** (0.0733) |
| Private Sector | 0.0547 (0.0631) | 0.0459 (0.0533) | -0.127** (0.0642) | -0.108** (0.0544) |
| <i>Industry</i> | | | | |
| Farming, Forestry, Fishery | -0.120 (0.259) | -0.0738 (0.204) | -0.450* (0.262) | -0.381* (0.219) |
| Mining, Oil | -0.0695 (0.348) | -0.0582 (0.273) | 0.332 (0.236) | 0.291 (0.207) |
| Utilities | -0.197 (0.233) | -0.169 (0.184) | 0.143 (0.204) | 0.129 (0.178) |
| Construction | 0.302*** (0.108) | 0.251*** (0.0915) | -0.0243 (0.114) | -0.0197 (0.0971) |
| Wholesale, Retail, Restaurant | 0.201** (0.0782) | 0.171** (0.0666) | -0.173** (0.0845) | -0.146** (0.0720) |
| Transport, Communication | 0.231** (0.104) | 0.194** (0.0880) | -0.0128 (0.110) | -0.0131 (0.0939) |
| Bank, Insurance, Real est. | 0.184 (0.146) | 0.157 (0.125) | 0.0216 (0.138) | 0.0180 (0.118) |
| Pub. Service, Education | 0.179** (0.0699) | 0.150** (0.0591) | -0.196*** (0.0728) | -0.165*** (0.0616) |
| Union member | -0.00915 (0.0660) | -0.00872 (0.0563) | 0.118* (0.0706) | 0.0987* (0.0592) |

Table 4 (Continued)

| Independent variables | Ease of finding as good a job | | Ease of being replaced | |
|--------------------------------|-------------------------------|-----------------------|------------------------|----------------------|
| | Oprobit | OLS ^a | Oprobit | OLS ^a |
| <i>Region of residence</i> | | | | |
| Middle sized cities | -0.202*** (0.0680) | -0.170*** (0.0578) | -0.0368 (0.0668) | -0.0307 (0.0569) |
| Southern urban areas | -0.195** (0.0787) | -0.167** (0.0669) | -0.121 (0.0790) | -0.102 (0.0672) |
| Northern urban areas | -0.322*** (0.115) | -0.273*** (0.0969) | -0.0420 (0.112) | -0.0340 (0.0960) |
| Northern rural areas | -0.307*** (0.106) | -0.265*** (0.0897) | -0.00177 (0.119) | 0.000818 (0.102) |
| Gothenburg | -0.101 (0.0921) | -0.0877 (0.0785) | -0.167* (0.0875) | -0.139* (0.0738) |
| Malmö | -0.194* (0.116) | -0.165* (0.0984) | -0.244** (0.105) | -0.203** (0.0879) |
| Unemployed in 1999? | -0.258** (0.112) | -0.220** (0.0942) | 0.155 (0.127) | 0.129 (0.110) |
| No. of times switched industry | -0.0261 (0.0183) | -0.0228 (0.0157) | 0.00987 (0.0193) | 0.00747 (0.0165) |
| <i>Cut-offs</i> | | | | |
| Constant/Cut-off 1 | -0.344 (0.388) | -0.576* (0.319) | -1.738*** (0.353) | 0.511* (0.299) |
| Cut-off 2 | 0.642* (0.389) | | -0.461 (0.354) | |
| Cut-off 3 | 1.310*** (0.391) | | 0.573 (0.355) | |
| Cut-off 4 | 2.121*** (0.393) | | 1.283*** (0.353) | |
| Observations | 2,260 | 2,260 | 2,260 | 2,260 |
| R-squared | | 0.139 | | 0.098 |

NOTE: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The estimations use the following reference category for dummy variables: an unmarried man who has vocational training, lives in Stockholm, was employed in 1999, now works in the manufacturing industry, and does not belong to a union.

^aOLS rescales the dependent variable by using the “probit-adapted OLS” (POLS) method described by van Praag and Ferrer-i-Carbonell (2006). A change in a regressor shows the standard deviation change in “Ease of finding as good a job” and “Ease of being replaced.”

Table 5 Estimated Mincer Wage Equations with Worker's Subjective Assessments

| Independent variables | (1) | (2) | (3) | (4) | (5) |
|--------------------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Ease of finding as good a job</i> | | | | | |
| Fairly difficult | 0.0228 (0.018) | 0.0043 (0.016) | -0.009 (0.015) | -0.00573 (0.014) | |
| Not part. difficult | 0.0651*** (0.020) | 0.0439** (0.018) | 0.0164 (0.017) | -0.00171 (0.015) | |
| Fairly easy | 0.0825*** (0.019) | 0.0659*** (0.019) | 0.0387** (0.018) | 0.0258 (0.016) | |
| Very easy | 0.132*** (0.028) | 0.0963*** (0.025) | 0.0697*** (0.023) | 0.0590*** (0.021) | |
| <i>Ease of being replaced</i> | | | | | |
| Fairly difficult | 0.00323 (0.024) | 0.0177 (0.021) | 0.018 (0.019) | 0.0116 (0.017) | |
| Not part. difficult | -0.0482** (0.024) | -0.0185 (0.021) | 0.0115 (0.019) | 0.0157 (0.017) | |
| Fairly easy | -0.147*** (0.028) | -0.0697*** (0.025) | -0.0318 (0.022) | -0.00673 (0.021) | |
| Very easy | -0.221*** (0.031) | -0.134*** (0.028) | -0.0888*** (0.027) | -0.0446* (0.025) | |
| <i>Other controls</i> | | | | | |
| Education (years) / 1,000 | | 41.47*** (2.584) | 44.07*** (2.402) | 21.48*** (2.480) | 22.13*** (2.507) |
| Experience (years) / 1,000 | | 16.22*** (1.819) | 16.30*** (1.853) | 16.97*** (1.654) | 16.48*** (1.641) |
| Exp. Sq. / 1,000 | | -0.184*** (0.036) | -0.225*** (0.035) | -0.269*** (0.032) | -0.261*** (0.031) |
| Tenure (years) / 1,000 | | 0.459 (0.762) | 1.164* (0.706) | 0.28 (0.616) | 0.095 (0.614) |
| Employer-provided training | | 0.0604*** (0.013) | 0.0656*** (0.011) | 0.0441*** (0.010) | 0.0468*** (0.010) |
| Woman | | | -0.118*** (0.016) | -0.0975*** (0.015) | -0.101*** (0.015) |
| Married | | | 0.0279 (0.017) | 0.0179 (0.015) | 0.0175 (0.015) |
| Married × woman | | | -0.0486** (0.021) | -0.0410** (0.019) | -0.0398** (0.019) |
| Union member | | | -0.0912*** (0.020) | -0.0643*** (0.018) | -0.0638*** (0.018) |
| Private sector | | | 0.137*** (0.012) | 0.0805*** (0.013) | 0.0823*** (0.014) |
| Unemployed in 1999? | | | -0.0327 (0.020) | -0.00371 (0.018) | -0.00814 (0.018) |
| No. of times switched industry | | | -0.0236*** (0.004) | -0.0198*** (0.004) | -0.0209*** (0.004) |
| Constant | 4.720*** (0.024) | 3.910*** (0.045) | 3.973*** (0.052) | 4.297*** (0.051) | 4.311*** (0.046) |
| Regional, SES, and industry dummies? | No | No | No | Yes | Yes |
| Observations | 2,260 | 2,260 | 2,260 | 2,260 | 2,260 |
| Adjusted R-squared | 0.052 | 0.25 | 0.394 | 0.536 | 0.533 |
| p-value ^a | 0 | 0 | 0 | 0.002 | |

NOTE: Dependent variable: logarithm of wages. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

^aTest of joint significance of the coefficients on "Ease of finding as good a job" and "Ease of being replaced" being equal to zero.

Table 6 Estimated Interaction between Selected Characteristics and Worker's Subjective Assessments

| Interaction variable | Woman | Private | Union member | Skilled | Low tenure |
|---|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Interaction variable | -0.0813** (0.0380) | -0.00717 (0.0362) | 0.0767 (0.0613) | 0.0605 (0.0426) | -0.0603 (0.0422) |
| <i>Ease of finding as good a job</i> | | | | | |
| Fairly difficult | 0.0239 (0.0221) | -0.0302* (0.0177) | 0.125** (0.0509) | -0.0206 (0.0149) | -0.00717 (0.0155) |
| Not part. difficult | 0.00326 (0.0239) | -0.0178 (0.0194) | 0.142*** (0.0530) | -0.0160 (0.0173) | -0.00309 (0.0174) |
| Fairly easy | 0.0349 (0.0237) | 0.00446 (0.0213) | 0.173*** (0.0578) | 0.0271 (0.0176) | 0.0139 (0.0183) |
| Very easy | 0.0711** (0.0312) | 0.0344 (0.0271) | 0.203*** (0.0604) | 0.0204 (0.0239) | 0.0562** (0.0270) |
| <i>Ease of finding as good a job × variable</i> | | | | | |
| Fairly difficult × variable | -0.0571** (0.0281) | 0.0435 (0.0270) | -0.145*** (0.0527) | 0.0918*** (0.0349) | 0.0109 (0.0351) |
| Not part. difficult × variable | -0.00783 (0.0295) | 0.0279 (0.0289) | -0.162*** (0.0552) | 0.0755** (0.0353) | 0.00846 (0.0367) |
| Fairly easy × variable | -0.0167 (0.0306) | 0.0366 (0.0305) | -0.166*** (0.0597) | 0.0377 (0.0355) | 0.0419 (0.0356) |
| Very easy × variable | -0.0209 (0.0418) | 0.0399 (0.0414) | -0.164** (0.0641) | 0.123*** (0.0452) | 0.0159 (0.0451) |
| <i>Ease of being replaced</i> | | | | | |
| Fairly difficult | 0.00619 (0.0255) | -0.0300 (0.0219) | 0.0200 (0.0538) | 0.0234 (0.0179) | -0.000785 (0.0200) |
| Not part. difficult | 0.0144 (0.0278) | -0.0243 (0.0220) | 0.0424 (0.0591) | 0.0206 (0.0182) | 0.00322 (0.0202) |
| Fairly easy | 4.02e-05 (0.0326) | -0.0406 (0.0269) | -0.133* (0.0721) | 0.0176 (0.0227) | -0.00529 (0.0261) |
| Very easy | -0.0855** (0.0416) | -0.0659* (0.0360) | -0.0575 (0.0711) | -0.0235 (0.0261) | -0.0603* (0.0313) |
| <i>Ease of being replaced × variable</i> | | | | | |
| Fairly difficult × variable | 0.0125 (0.0320) | 0.0707** (0.0327) | -0.0103 (0.0560) | -0.0290 (0.0369) | 0.0423 (0.0376) |
| Not part. difficult × variable | 0.00317 (0.0337) | 0.0680** (0.0340) | -0.0317 (0.0615) | -0.0115 (0.0392) | 0.0429 (0.0395) |
| Fairly easy × variable | -0.00923 (0.0406) | 0.0567 (0.0407) | 0.140* (0.0748) | -0.0927* (0.0480) | 0.00238 (0.0438) |
| Very easy × variable | 0.0714 (0.0496) | 0.0345 (0.0491) | 0.0140 (0.0753) | -0.0484 (0.0579) | 0.0508 (0.0518) |
| Constant | 4.291*** (0.0548) | 4.349*** (0.0505) | 4.171*** (0.0728) | 4.539*** (0.0425) | 4.316*** (0.0515) |
| Observations | 2,260 | 2,260 | 2,260 | 2,260 | 2,260 |
| Adjusted R-squared | 0.536 | 0.536 | 0.540 | 0.528 | 0.535 |

NOTE: Dependent variable: logarithm of wages. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. The table shows coefficients on interaction terms between “Ease of finding as good a job” and “Ease of being replaced” and different groups: women vs. men, private sector workers vs. non-private sector workers, union members vs. nonunion members, and those who are highly educated vs. those who are not. The estimated wage equations include the same controls as column (4) in Table 5 except for column “Skilled,” which does not control for years of education in addition to the “highly skilled” dummy, and the column “Low tenure,” which does not additionally control for years of tenure.