

Evidence on the Incidence of Wage Posting, Wage Bargaining, and On-the-Job Search[†]

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Some workers bargain with prospective employers before accepting a job. Others face a posted wage as a take-it-or-leave-it opportunity. Both modes of wage determination have generated large bodies of research. We surveyed a representative sample of US workers to inquire about the wage determination process at the time they were hired into their current or most recent jobs. A third of the respondents reported bargaining over pay before accepting their current jobs. Almost a third of workers had precise information about pay when they first met with their employers, a sign of wage posting. About 40 percent of workers were on-the-job searchers—they could have remained at their earlier jobs at the time they accepted their current jobs, indicating a more favorable bargaining position than is held by unemployed job-seekers. About half of all workers reported that their employers had learned their pay in their earlier jobs before making the offer that led to the current job. (JEL C83, J31, J52, J64)

Labor is one of the most heterogeneous products traded in a modern economy. The competitive market for a commodity, where all units are interchangeable and all trade for the same price, could hardly be a worse description of the labor market. No Walrasian auctioneer determines the wage. We study survey evidence on the ways that an employer and a worker determine the wage at the outset of their relationship.

Our survey has about 1,300 respondents who took jobs sufficiently recently so that we believe their answers about wage formation at the beginning of the job were reasonably reliable. In addition to many questions about their backgrounds, we asked four questions that bear specifically on wage formation. The first asked if the wage offer for the current job was take-it-or-leave-it or if bargaining occurred. The second determined how much a respondent knew about pay before being interviewed for the job. This question bears on the public nature of the wage in a wage-posting

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market. The third asked if the respondent could have kept an existing job at the time he or she took the current job. The option to keep an existing job is valuable in a bargaining setting. The fourth asked if the employer learned the respondent's earlier pay rate during the evaluation process. This knowledge would improve the employer's expected benefit in a setting with bargaining.

We find that about a third of all workers bargained with their current employers—they did not consider their job offers to be take-it-or-leave-it. Bargaining is more common by minority workers and less common by women. The education gradient for bargaining is remarkably steep, rising from 29 percent for those who did not graduate from high school to 57 percent for those with professional degrees. Individual bargaining is rare for union or government jobs.

We find a fairly high level of knowledge among job-seekers prior to their job interviews. We confirm that this information is particularly common among union members and those who took government jobs. We document a sharply negative relation between education and precise information about pay—non-high-school graduates are almost twice as likely as those with professional education to know prospective pay exactly.

Many workers engage in on-the-job search. We find that about 40 percent of workers could have kept their earlier jobs at the time they were considering their current jobs. A substantial fraction of these workers bargained for the wages on their current jobs; virtually all those in a group we call knowledge workers bargained.

Finally, we find that 47 percent of workers reported that their employers had learned their pay in their earlier jobs before making the offer that led to the current job. In a strict wage-posting environment, such information would be irrelevant to wage determination, and employers would not devote effort to learning past wages, so this finding supports the other evidence that wage bargaining is an important mode of wage determination.

Earlier versions of this paper attempted to relate the survey's findings to the large body of theory and analysis of wage formation. Views in this area are so heterogeneous that we concluded that the paper could not do justice to that topic. Here we limit ourselves to a presentation of the survey and some of its results. Our data are permanently available on the websites of this journal and the authors. Readers interested in tabulations or statistical analysis beyond the ones in this paper may download the data to perform their own research.

I. Survey Design

Our survey is part of the Princeton Data Improvement Initiative, a project to develop new questions for labor force surveys. The questionnaire was patterned after the Current Population Survey and included questions on career experience, job tasks, and occupational licensing. We designed a module to assess the prevalence of wage posting and employer-employee bargaining at the time employees were hired. Based on a focus group, we concluded that individuals who were hired within the past ten years could recall how knowledgeable they were about the pay on their job when they first interviewed for it, whether the employer made

a take-it-or-leave-it offer, whether they could have remained on their previous job if they had wanted to, and whether their employer was aware of their pay on their previous job prior to making them an offer. Those who were employed at the time of the survey were asked about their current job (94.1 percent, weighted), and those who were not employed at the time of the survey were asked about their last jobs (5.9 percent, weighted). The national unemployment rate reported by the Bureau of Labor Statistics for the two months of the survey was 5.7 percent.

The survey organization Westat conducted the survey from June 5 to July 20, 2008. Individuals age 18 or older who were in the labor force were eligible for the survey. A total of 2,513 individuals were interviewed, 1,435 of whom were hired in the previous 10 years. Westat used a random-digit-dial sampling design constructed from a national sampling frame of residential exchanges. The selected numbers were then called and screened to identify households with eligible respondents. One respondent was randomly selected from each eligible household for the interview using the nearest birthday procedure. Up to 15 callbacks were made to try to elicit responses. Some 28 percent of sampled eligible households agreed to participate in the screening questions, and 64 percent of the selected individuals in screened households completed the questionnaire. Thus the response rate was 17.9 percent, using the American Association for Public Opinion Research response rate definition 3 (see aapor.org *Standard Definitions* 2011, 35).

Westat developed survey weights to compensate for variation in selection probabilities, differential response rates, and possible undercoverage of the sampling frame. The derivation of the sample weights focused primarily on matching the marginal distributions of the Current Population Survey by sex, age, educational attainment, census region, urbanization, race, Hispanic ethnicity, employment status, and class of employer (private, government, etc.). See <http://www.krueger.princeton.edu/PDIIMAIN2.htm> for a detailed description of the derivation of the sample weights and the questionnaire.

Although the survey response rate is low compared to many government labor force surveys, it is comparable to that in commercial surveys. Groves and Peytcheva (2008) show that survey nonresponse rates by themselves are not associated with significant bias. Low response rates are a concern when the causes of participation in the survey are correlated with the survey variables of interest. The response rate was low in large part because many households declined to participate in the screener questions, which did not mention wages or job search at all. Another reason for placing some confidence in the representativeness of our sample is that a standard Mincerian wage regression using data from the survey closely matched the corresponding regression from the Current Population Survey. Although we would have preferred a higher response rate, we have no reason to believe that nonresponse skews our results in favor or against any particular wage formation model.

Our survey asked four questions about the events surrounding the last time a respondent took a new job. The questions are:

- (1) When you were offered your (current/previous job), did your employer make a “take-it-or leave-it” offer or was there some bargaining that took place over the pay? (abbreviated *Bargain?*)

- (2) At the time that you were first interviewed for your job, did you already know exactly how much it would pay, have a pretty good idea of how much it would pay, or have very little idea of how much it would pay if you got it? We consider the probability of the answer that the respondent knew exactly how much it would pay. We do not show the results for the group who responded that they knew exactly or had a pretty good idea because the responses for all groups were high—uniformly above 80 percent. (Abbreviated *Knew pay exactly?*)
- (3) Think back to the time when you were offered your (current/most recent) job. When you were offered this job, was it possible for you to keep your previous job instead if you wanted to? (Abbreviated *Keep previous job?*)
- (4) Did your (current/most recent) employer learn how much you were making in your previous job before making you your job offer? (Abbreviated *Employer learned pay?*)

General Comments on Interpretation.—The survey determined what happened in connection with the onset of each respondent's most recent job. It did not attempt to determine what would have happened under alternative conditions. More generally, the results leave some important questions about equilibrium in the labor market unanswered.

The *Bargain?* question is the leading example of the first limitation. In models of sequential bargaining with full information, employers will respond to counteroffers from job candidates and similarly candidates will respond to employers. But in the equilibrium of the sequential bargaining game, one party makes an initial offer and the other party accepts it. No exchange of offers and counteroffers actually occurs (see, for example, Muthoo 1999, chapter 3). The off-equilibrium opportunity to make a counteroffer plays a key role, but neither player finds it desirable, in equilibrium, to take advantage of the opportunity. The ideal question would be something like, "Did you believe that you could make a counteroffer when you received your job offer from your employer, even if you decided to accept the first offer?" We did not believe that such a phrasing would elicit usable responses. Instead, we elected to probe for a take-it-or-leave-it character against the alternative of some bargaining. We did not give the respondent the opportunity to say, "It was not take-it-or-leave-it, but I decided not to bargain, even though I think I could have." Future surveys might well explore this issue further.

One leading example of the challenge of relating our survey findings to quantitative questions about labor-market equilibrium is: What fraction of encounters between job-seekers and employers result in a match? Our *Bargain?* question contemplates unsuccessful take-it-or-leave-it offers, but we ask it in connection with encounters between job-seekers and employers that did result in matches. Future surveys might explore this issue, but we recognize that it is challenging, in practice, to define an encounter. Our evidence makes it clear that only a fraction of jobs are filled by a formal process of application by the job-seeker followed by a possible

TABLE 1—SURVEY RESPONDENTS

Category or characteristic	Percent or average
African-American	9
Latino/a	14
Woman	52
Education	
Not HS graduate	8
Some college	27
College graduate	23
Professional training	14
Union member	14
Government job	15
Non-profit job	12
Years of work experience	17
Age	41
Lost job in past 3 years	16
Part-time	20
Years since hire	4
Repetitive activities	52
Physical activity	57
Managing or supervising	25
Solving problems	70
Use of advanced math	24
Reading long documents	16

offer from an employer. The parties may conclude that a match will not be formed without any formal or even informal offer. Similarly, it is a challenge, in the labor market revealed by our survey, to determine whether an employer made an offer to a job-seeker. The bargaining that many respondents report to have occurred may well take the form of the two parties inching toward forming a match, without the employer making a fully formed job offer until the very end, when the parties understand that they have formed a match.

A second leading example is: What fraction of employer encounters are with unemployed workers and what fraction are with employed ones? Our survey quantifies on-the-job search in the sense that it reveals the fraction of workers who moved to their current jobs directly from earlier jobs, which they had the option to retain. But the survey does not reveal the fraction of encounters with on-the-job searchers except possibly through the use of a tightly specified model.

Our focus on a single hiring event for each worker (with no more than ten years on the job) implies that we are sampling workers, not hiring events. Thus, our finding that a third of the respondents engaged in bargaining does *not* imply that a third of all hires involve bargaining. Without bringing in more data or making strong, model-based assumptions, we cannot quantify that fraction. But our results suggest that it is well below a third—we find that bargaining is less common in the high-turnover jobs held by younger and less-educated workers.

II. Findings

Table 1 summarizes the composition of the survey respondents in terms of the personal characteristics measured in the survey apart from the answers to the four questions about wage determination.

TABLE 2—TABULATIONS AND CROSS-TABULATIONS OF SURVEY RESPONSES

Questions included							
Bargain?	Knew pay exactly?	Keep previous job?	Employer learned pay?	Responses	Fraction	Weighted fraction	Total responses
N				925	0.645	0.631	1,435
Y				510	0.355	0.369	
	N			980	0.683	0.685	1,435
	Y			455	0.317	0.315	
		N		860	0.601	0.585	1,432
		Y		572	0.399	0.415	
			N	726	0.542	0.527	1,340
			Y	614	0.458	0.473	
N	N			538	0.371	0.374	1,452
Y	N			354	0.244	0.249	
N	Y			408	0.281	0.264	
Y	Y			152	0.105	0.113	
N		N		453	0.320	0.313	1,414
Y		N		248	0.175	0.182	
N		Y		443	0.313	0.313	
Y		Y		270	0.191	0.192	
N			N	441	0.326	0.316	1,351
Y			N	222	0.164	0.168	
N			Y	417	0.309	0.305	
Y			Y	271	0.201	0.211	
	N	N		507	0.397	0.386	1,278
	Y	N		218	0.171	0.169	
	N	Y		374	0.293	0.302	
	Y	Y		179	0.140	0.143	
	N		N	437	0.363	0.351	1,204
	Y		N	201	0.167	0.168	
	N		Y	389	0.323	0.338	
	Y		Y	177	0.147	0.143	
		N	N	347	0.292	0.263	1,190
		Y	N	277	0.233	0.250	
		N	Y	315	0.265	0.283	
		Y	Y	251	0.211	0.205	

A. Cross-Tabulations

Table 2 tabulates the answers separately by question and cross-tabulates all pairs of answers. It reports fractions of responses and fractions of weighted responses, which tend to be quite similar. It also reports the total number of responses entering each tabulation. These figures differ across tabulations because of a limited number of nonresponses and because the design of the survey omitted some respondents for some questions. Each horizontal line in the table designates a separate tabulation of the entire survey. An N refers to a negative answer and a Y to a positive answer. A blank means the question is not included in the tabulation. A table of all possible three- and four-way tabulations appears in the online Appendix.

B. Descriptive Logit Model

To describe and interpret our survey findings, we use a logit probability model for yes-no variables constructed from the respondents' answers. The model predicts the probability of a yes answer, given a set of variables describing the individual and the job. These variables are:

- Indicator for African-American individual
- Indicator for Latino or Latina individual
- Indicator for a woman
- A set of indicators for education, in five categories
- Indicator for union membership
- A set of indicators for private, government, and non-profit employer
- Work experience in years
- Indicator for part-time job (30 hours or less per week)
- Age in years
- Tenure in years
- Indicator for repetitive job
- Indicator for physical job
- Indicator for job involving managing
- Indicator for job involving problem solving
- Indicator for job involving use of math
- Indicator for job involving reading long documents frequently

We use a weighted estimator because the purpose of estimation is to describe the responses for a representative sample of the population, not to estimate underlying parameters. We use the resulting logit model to make statements about responses in different subsets of the population. We present the results in terms of the estimated probability of a yes answer for a variety of types of workers, along with bootstrap standard errors of the probabilities and of the differences between the probability for a group and the probability for a base case. The online backup materials for this paper include the underlying logit estimates.

Our base case is: individual not African-American, not Latino or Latina, a man, high-school education but no college, not a union member, working full time for a private employer, 40 years old, 20 years of experience, 4 years of tenure, and none of the specific job characteristics listed above. We display the results as probabilities of a yes answer for a variety of groups defined by the right-hand variables. In addition to groups defined by a single indicator, such as for women, we include four groups defined by combinations of right-hand variables (variables not mentioned in this list are the same as in the base case):

- Senior: 40 years of experience, 60 years old, 10 years tenure, job involves managing.
- Knowledge worker: post-college education, 15 years of experience, 40 years old, 4 years tenure, job involves solving problems, using advanced math, and reading long documents.

TABLE 3—RESPONSES TO THE FIRST THREE QUESTIONS

	Bargain?		Knew pay exactly?		Bargained and knew pay exactly?		Keep previous job?	
	Probability, percent	Difference from base case	Probability, percent	Difference from base case	Probability, percent	Difference from base case	Probability, percent	Difference from base case
Base case	33 (6)		23 (6)		15 (5)		43 (7)	
African-American	45 (11)	12 (9)	21 (8)	−2 (6)	12 (6)	−3 (5)	50 (10)	7 (8)
Latino/a	44 (11)	11 (8)	17 (6)	−6 (5)	10 (5)	−5 (4)	47 (9)	4 (7)
Woman	25 (6)	−8 (4)	23 (6)	0 (3)	18 (5)	3 (3)	43 (7)	0 (4)
Not HS graduate	29 (10)	−3 (9)	20 (8)	−3 (7)	12 (6)	−3 (5)	42 (10)	−1 (9)
Some college	43 (8)	11 (6)	20 (5)	−3 (4)	12 (3)	−3 (3)	46 (7)	3 (5)
College graduate	45 (8)	12 (6)	15 (5)	−8 (4)	9 (3)	−6 (3)	45 (7)	2 (6)
Professional training	60 (9)	27 (7)	14 (5)	−9 (5)	5 (2)	−10 (4)	38 (8)	−5 (7)
Union member	14 (5)	−19 (6)	37 (9)	14 (6)	29 (9)	14 (6)	51 (8)	8 (6)
Government job	16 (5)	−16 (5)	37 (9)	15 (6)	33 (10)	18 (7)	39 (9)	−4 (5)
Non-profit job	26 (7)	−7 (5)	28 (8)	5 (5)	23 (8)	8 (5)	42 (9)	−1 (6)
Senior	45 (9)	13 (7)	32 (9)	9 (6)	13 (5)	−2 (4)	47 (9)	4 (6)
Knowledge worker	87 (4)	54 (7)	17 (5)	−6 (7)	4 (1)	−11 (5)	44 (7)	1 (9)
Blue collar	6 (2)	−27 (6)	57 (9)	34 (9)	51 (10)	36 (9)	48 (8)	5 (8)
Recent job loser	31 (8)	−2 (6)	25 (8)	2 (5)	16 (6)	1 (4)	41 (7)	−2 (2)
Part-time	18 (5)	−14 (5)	24 (6)	1 (5)	18 (5)	3 (5)	42 (7)	−1 (7)
Observations	1,284		1,331		1,281		1,326	

Note: Bootstrap standard errors in parentheses.

- Blue collar: union member, 20 years of experience, 40 years old, 10 years tenure, job involves physical and repetitive tasks.
- Recent job loser: 20 years of experience, 40 years old, one year of tenure, job involves none of the specific characteristics.

None of these cases involves extrapolation outside the range of the data.

Table 3 summarizes the responses to the first three questions about wage determination at the outset of the respondent’s most recent job: *Bargain?*, *Knew pay exactly?*, and *Keep previous job?* Note that the estimated probabilities of positive responses reported here for the base case differ from the unconditional weighted sample means in Table 2. The differences arise from the fact that the base group is not representative of the entire sample and that the logit estimates use somewhat

fewer observations because of missing data for the variables included on the right-hand side of the logit equations, summarized in Table 1.

C. Evidence about the Relative Importance of Wage Posting and Bargaining

The left panel of Table 3 describes the probability that a respondent would answer *Bargain?* that some bargaining occurred. A respondent with the base characteristics has a probability of 32 percent of that response.

The frequency of no-bargaining responses varies substantially among job-seekers. It is higher than the base-case level among African-Americans (43 percent) and Hispanics (44 percent). Women, at 24 percent, are rather less likely than the men in the base case to bargain. The incidence of wage bargaining rises dramatically with education. Respondents with professional education had a probability of 57 percent of bargaining during hiring. Finally, and not surprisingly, only a small proportion of union members (14 percent) and government workers (16 percent) reported bargaining over pay. Our other cases show dramatic variation in the incidence of bargaining. Knowledge workers, at 86 percent, almost all reported bargaining, whereas blue-collar workers, at 6 percent, almost never bargain. Senior workers, at 47 percent, are in the middle. Part-time workers are much less likely to bargain.

The next panel of Table 3 describes the answers to the question, *Knew pay exactly?* In the base case, 23 percent of the respondents in the base group reported that they knew exactly how much the job paid before the employer learned about the respondent.

The panel shows that an African-American worker otherwise in the base group has a somewhat lower likelihood, 21 percent, of knowing the pay in advance, while a Latino or Latina has an even lower likelihood, 17 percent. Women have the same likelihood as men. The probability of knowing pay in advance falls substantially with education. Union members and those who took government jobs report knowing the wage exactly with substantially higher frequency.

Do employers determine and post wages prior to screening workers or do they make an offer to a worker after screening that is, in principle, negotiable via a counteroffer? No single question in the survey answers this important question. The results above showed that about a third of workers know wages exactly prior to their interviews and that about two-thirds viewed their pay offer as having a take-it-or-leave-it character. The next panel of Table 3 describes the respondents who said they knew the pay exactly prior to being interviewed and that there was no bargaining over pay (yes answers to *Bargain?* and *Knew pay exactly?*). The likelihood that a base-case respondent gave these two answers is 15 percent.

The panel shows large variations across categories of workers in the estimated incidence of wage posting based on the criterion of knowing the wage in advance and not engaging in bargaining. African-Americans and Hispanics face slightly lower likelihoods, at 12 percent and 10 percent. Women are higher than the base value, at 17 percent. The incidence of wage posting declines dramatically with education, from 12 percent for those who did not complete high school to 5 percent for those with professional training.

At 27 percent, wage posting is far more common for union members. Similarly, government jobs, at 31 percent, are substantially more likely to have posted pay, compared to the base case.

The survey indicates a higher incidence of wage posting in the more standardized jobs available to those who have not graduated from college and the lower incidence among college graduates and those with professional education. The highest probability of posting in the table is 50 percent for blue collar workers and the lowest is 4 percent for knowledge workers.

D. Evidence about Factors That Influence Bargaining

The right-most panel in Table 3 summarizes the responses to the question *Keep previous job?* The results need to be interpreted in the context that respondents chose to take the new job over the old job and that they may have passed up other subsequent opportunities in favor of retaining the current job. Note, also, that the sample includes those who were not employed immediately prior to obtaining their most recent job (coded as unable to keep their previous job).

The panel shows that an individual in the base category had a 48 percent chance of answering yes. Thus, almost half of job-seekers had the option of keeping an existing job. Variations from the base-case probability of retaining a previous job are relatively small, according to the table. Minority members are slightly more likely to retain the option and women slightly less likely. The likelihood of the option is a bit lower for the least educated and a bit higher for college graduates, though just the same as in the base case for those with graduate training. Union members are also slightly more likely to have the option of keeping an existing job. Note that the fractions of job-seekers with the option are necessarily higher than the figure in the table—our data omit instances in which employed job-seekers decided that a new job was not as desirable as their existing job and therefore remained at the job despite finding another employment opportunity. Our survey focused on the beginning of the current or most recent job and did not inquire about job offers received in the course of that job.

Table 4 describes the extent of bargaining over pay among, on the left, workers who retained the option to continue at the earlier job, and, on the right, those who did not have this option.

The incidence of actual bargaining among those who could have kept their previous job varies tremendously. In the base case, 45 percent bargained, rather higher than the 33 percent in the first column of Table 3 for all workers. Among workers in the senior group who could have kept their jobs, 73 percent bargained, also well above their bargaining frequency among all workers. The role of the option to keep the current job when considering a new job opportunity in influencing the wage through bargaining is substantial, especially among more educated, problem-solving workers.

The right-hand panel of Table 4 describes the incidence of bargaining among those who could not have continued in their earlier jobs, because they had lost or left earlier jobs, because their earlier jobs were about to end, or because they had been in school or otherwise out of the labor force prior to their current jobs. In every

TABLE 4—PROBABILITY OF BARGAINING FOR THOSE WHO COULD HAVE KEPT THEIR PREVIOUS JOBS AND THOSE WHO COULD NOT

	Among those who could have kept earlier job, some bargaining occurred		Among those who could not have kept earlier job, some bargaining occurred	
	Probability, percent	Difference from base case	Probability, percent	Difference from base case
Weighted sample frequency	40		35	
Base case	46 (13)		24 (9)	
African-American	68 (13)	21 (11)	29 (12)	5 (9)
Latino/a	71 (13)	24 (9)	27 (10)	3 (7)
Woman	38 (13)	−8 (8)	16 (7)	−8 (5)
Not HS graduate	35 (15)	−11 (14)	22 (13)	−2 (10)
Some college	66 (13)	19 (9)	31 (10)	7 (7)
College graduate	66 (11)	20 (10)	30 (9)	6 (7)
Professional training	85 (8)	39 (10)	43 (12)	19 (9)
Union member	10 (7)	−37 (8)	16 (10)	−8 (8)
Government job	30 (12)	−17 (9)	10 (5)	−14 (6)
Non-profit job	51 (16)	5 (11)	13 (7)	−11 (6)
Senior	73 (14)	27 (10)	27 (11)	3 (7)
Knowledge worker	90 (5)	43 (13)	86 (5)	62 (10)
Blue collar	3 (2)	−43 (12)	8 (4)	−17 (9)
Recent job loser	44 (12)	−2 (3)	25 (9)	1 (2)
Part-time	23 (10)	−23 (11)	10 (4)	−14 (8)
Observations	514		765	

Note: Bootstrap standard errors in parentheses.

category but two, bargaining is much less likely for workers lacking the option to continue at earlier jobs. The exceptions are union and blue collar, where bargaining is rare even for those holding the option.

A table available in the online Appendix describes the answer to the question, *Employer knew pay?* Knowledge of earlier pay is useful to the employer in cases where the possibility of bargaining influences the wage. The likelihood of a yes answer is 48 percent in the base case. Respondents with other characteristics varied only a small amount from this value. As expected, employers learned earlier pay less frequently for union members and for government jobs, but the difference is

small. The finding that many employers made efforts to learn earlier pay rates gives some further support to the hypothesis that wage posting is not the dominant mode of wage formation.

III. Concluding Remarks

Our evidence makes it clear that the two major modes of wage determination—posting and bargaining—coexist in the US labor market. Posting is dominant for public employment and in unionized jobs, where group negotiation results in predetermined wages for individual workers. Negotiation is dominant for more-educated workers.

The survey confirms the importance of job-to-job transitions. Employers hire a substantial fraction of their employees away from other employers, in the sense that about half of their employees had the option to retain existing jobs at the time they were hired.

We believe that our survey demonstrates the usefulness of retrospective surveys of workers in studying wage determination and related issues. Other survey approaches could yield complementary knowledge. To avoid reliance on respondents' memories, the survey universe could be newly hired workers identified from administrative records. To learn about wage determination from the employer's side, as pioneered in Bewley (1999), the respondents would be employers. Again, the survey could focus on a sample of recent hires identified from administrative records.

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