ANNALES D'ÉCONOMIE ET DE STATISTIQUE. – N° 41/42 — 1996

Employer Characteristics and Work Environment

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ABSTRACT. – Workers' reports of employer size are highly correlated with true values; age of business and industry are reported with reasonable reliability. Larger employers offer more fringe benefits and more formalized personnel systems, but are less likely to match outside offers. Established employers are seen as more stable, and their non-union workers are less likely to support unionization. Differences in work environment by industry are moderately important.

Caractéristiques de l'entreprise et conditions d'emploi

RÉSUMÉ. – Lorsqu'on les interroge, les salariés ont une très bonne idée de la dimension de leur entreprise et une assez bonne idée de l'âge et du secteur de leur entreprise. Par rapport aux PME, les grandes entreprises proposent à leurs salariés des avantages sociaux plus grands et des systèmes de gestion de ressources humaines plus formalisés, mais elles sont moins susceptibles d'ajuster les offres externes reçues par les salariés. Les entreprises bien implantées sur leurs marchés sont considérées par leurs salariés comme plus stables, et leurs salariés non-syndiqués sont moins enclin à réclamer la syndicalisation. Les conditions d'emploi varient modérément entre industries.

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An earlier version of some of the material in this paper was presented at the ADRES conference and at seminars at the Bureau of Labor Statistics, Cornell, Columbia, and Michigan. We have benefitted from their comments. We are grateful to Martin Van DENBURGH for research assistance, and to the National Science Foundation for financial support.

1 Introduction

Differences between union and non-union workplaces in wage rates and non-wage outcomes have received a great deal of attention by labor economists. More recently, differences related to other employer characteristics–industry and number of employees–have been recognized to be important, and a number of studies have attempted to account for them.

In this paper, we focus on an employer characteristic that has been much less studied–the age of the employer, or how long the firm has been in business. Older businesses are more likely to remain in business (Brock and Evans, 1986; Dunne, Roberts, and Samuelson, 1989) and this means that older firms are more likely to be able to credibly commit to implicit contracts (since they are more likely to be around to honor them). Workplace custom may be more important for older firms, simply because there has been more time for such custom to take hold (Doeringer and Piore, 1971, p. 27). Fringe benefits, grievance procedures, and other concessions may be very hard to withdraw once provided, and so their incidence would be greater at established firms. Differences by age of firm may not only be of interest in their own right; because new firms are likely to be smaller, non-union, and concentrated in certain industries, failure to allow for differences by age of firm may lead us to everstate the importance of these other factors. Therefore, we have investigated differences in labor market outcomes by age of firm.

While a worker's age is well defined, "age" of firm can refer to several different concepts. Studies that focus on manufacturing often use the age of the plant (e.g., Dunne Roberts, and Samuleson [1989]), which will usually differ accross plants owned by the same firm, even if no change of ownership has over occurred. For the dimensions of work environment that we measure, we believe how long the firm has been in business is more appropriate; an alternative is how long the firm has been under current ownership. These last two measures are different but well-defined for a firm which is sold to a new owner, as might happen when the founder of a business retires. Both deal awkwardly and arbitrarily with the firm that is bought by and perhaps merged with another ongoing business.

Because no existing data set included information on age of firm (using any of these definitions), other employer characteristics, and the standard set of worker characteristics (such as schooling and experience), we collected new data to make such an analysis possible. We began with a sample of workers, from a household survey. In addition to the standard set of individual characteristics, we also asked workers a series of questions about their current jobs and their employers, including how long the firm had been in business. Because we were concerned about the reliability of answers to this question, we also asked for the name and address of their employer, and obtained data from the Dun and Bradstreet (D&B) file for these employers–including how long the firm had been in business according to D&B's records.

In a companion paper, we find that established firms pay higher wages–the differential is the same order of magnitude as that related to employer size–but they pay if anything *lower* wages once one accounts for the greater experience and tenure of their workers. In this paper, we focus on other aspects of the work environment–the firm's perceived stability and financial condition; workers' preferences for union representation; fringe benefits (pensions and health insurance); formalization of personnel procedures; and the relative importance of seniority, merit and outside offers in allocating rewards. We pay special attention to the reliability of worker reports of employer characteristics (size and industry, in addition to age), and to the representativeness of the sample of workers for whom we were able to obtain matching employer data from D&B.

In Section 2, we describe the data in greater detail, and compare the sample of workers for whom we could obtain matching D&B data to the overall sample of workers. In Section 3, we compare worker reports and D&B information on employer size, years in business, and industry. We then turn in Section 4 to differences between newer and established businesses (and differences by employer size and industry) in a number of dimensions of work environment. We conclude with a summary of what we have learned about this strategy for obtaining data and about the importance of age of employer.

2 Data

Each month, the Survey Research Center at the University of Michigan interviews a random sample of 500 adults for its Survey of Consumers. Basic demographic data (age, education, race, sex) are routinely collected for each respondent. On the seven monthly surveys between September 1991 and March 1992, we asked all respondents whether they were working, and if so whether they were working for a private-sector employer, a government agency, or for themselves. The rest of the supplement was asked only of private-sector workers; it included questions about (1) the worker (experience, tenure, occupation, wage rate); (2) the worker's employer (collective-bargaining status, number of employees, industry, and how long the firm had been in business); (3) fringe benefits, personnel policies, and related features of the workplace. We also asked the name of the firm for which the respondent worked, and the address and phone number of respondent's workplace. The supplement is reproduced in the Appendix.

Our basic sample consists of 1410 private wage and salary workers [1]. Of these 1410, 1168 (83%) were willing to give us the name and address (at least the city, often the street address, zip and phone number) of their

1. This sample size is in line with expected incidence of non-employment, self-employment, and working for a government agency.

employer. We asked Dun and Bradstreet's to "look up" the employers whose names and addresses our respondents had given us, and obtained the establishment employment, company employment, age of business, and industry of the workplaces that were found. D&B was able to match 863 (about 80 percent of cooperating respondents, about 60 percent of the basic sample). We hand-checked these 863 matches, and found that, for 701 "clean matches" we were quite confident D&B's entry matched our respondents' employer; for the other 162 there was more chance of error (often cases where respondents did not give us an exct street address or phone number). Dividing the D&B matches into these two groups was done by a visual comparison of the names, addresses, and (often) telephone numbers provided by respondents with those from D&B's files, *not* the data on employment, years in business, or industry.

In Table 1, we report the means for worker characteristics and worker reports of employer characteristics in our basic sample, in the sample of clean matches, and in subsamples of workers who declined to give us the name of their employer, those whose employer could not be located in D&B, and whose employers may have been incorrectly matched.

For the worker characteristics, there are few dramatic differences in means among the samples, and these tend to cancel; for example, more

TABLE 1

Means of Worker-Reported Variables by Availability of Matched Data

Variable	All Worker Reports N=1410	No. Name of Employer N=242	No. D&B Match N=305	Possible Mismatches N=162	Clean Matches N=701
Worker Characteristics					
Years of Education	14.1	13.8	13.3	14.0	13.7
Years Worked Full Time	15.4	16.7	13.6	16.0	15.6
Years of Tenure	6.74	7.04	5.86	7.02	6.98
Female	.504	.500	.538	.506	.494
Black	.070	.063	.076	.113	.070
Hispanic	.035	.029	.046	.025	.033
Currently Married	.595	.651	.534	.568	.601
Manager or Professional	.299	.342	.242	.277	.307
Wage per Hour	12.32	14.37	6.91	12.96	12.37
ln (Wage per Hour)	2.51	2.67	1.93	2.56	2.52
Employer Characteristics					
Covered by Union Contract	.106	.064	.105	.143	.118
Estab. Employment	523.	268.	310.	1199.	667.
ln (Estab. Employment)	4.07	3.60	3.44	4.79	4.42
Company Employment	9887.	5332.	10085.	20270.	10997.
ln (Company Employment)	5.76	5.00	5.40	7.48	6.08
Years in Business	40.1	37.1	36.0	45.1	42.3
ln (Years in Business)	3.29	3.17	3.13	3.49	3.38
Manufacturing	.255	.230	.183	.289	.287
Retail Trade	.168	.187	.239	.119	.138

experienced and better paid workers are less likely to give us the name of their employer, but if they do the probability of that employer being found in D&B is somewhat higher.

Successfully matched employers tended to be larger and in business longer than employers in our basic sample. In part, this reflects higher probabilities of finding such employers in D&B's files. As it happened, those who worked for smaller employers and for newer firms were also less likely to give us the name of their employer. These two considerations mean that compared to the full sample, the "clean match" subsample includes workers whose establishments are on average larger (for ln (establishment size), by .35) and have been in business about 2 years longer.

An alternative way of looking at the process by which observations from the full sample are (or are not) matched successfully is a multivariate regression. A simple linear probability model, with a dummy variable for observations in the good match subsample as the dependent variable and all of the variables in Table 1 as explanatory variables, generally echoed the message of the sub-group means that establishment rather than worker characteristics are important. The only worker characteristic significantly related to being in the clean-match subsample was being black (coefficient = –.123, standard error = .066). Establishment characteristics were more important, with older firms, larger establishments, and those in manufacturing more likely to produce clean matches. The one surprise here was that, controlling for establishment size, firm size is *negatively* related to being in the clean match sub-sample. One plausible explanation is that in multi-establishment firms (those with company employment larger, given establishment employment), only some establishments find their way into the D&B file.

3 Comparing Worker Reports and Dun and Bradstreet Data

Our reason for adding the D&B data was concern about the accuracy of workers' answers to questions about number employed where they work, number employed by the larger firm, and especially the age of the business. In Table 2, we present the means and standard deviations of the worker reports, the D&B values, and the difference between them; we also present the correlation between the worker reports and the D&B data.

In general, the table shows that worker reports of employer size are reasonably accurate. The correlation between the workers' reports and the D&B values are .82 for establishment size and .86 for firm size, though the (lower) squared correlations are more relevant for thinking about biases due to measurement error. Given that the D&B employment counts have been challenged (see, e.g., Organization for Economic Cooperation

TABLE 2

Comparing Worker Reports and D&B Values for Employer Size and Age of Business

Variable	Mean (Std. Dev.) Worker Report	Mean (Std. Dev.) D&B Value	Mean (Std. Dev.) Worker Report Minus D&B Value	Correlation betweeen Worker Report and D&B Value
ln (Establishment Employment) N=656	4.33 (2.13)	4.39 (2.08)	–.06 (1.26)	.82
ln (Company Employment) N=621	5.81 (2.97)	5.73 (3.07)	.08 (1.59)	.86
Years Firm in Business N=632	42.3 (32.9)	34.7 (36.7)	7.6 (32.9)	.56
ln (Years Firm in Business) N=632	3.38 (.94)	2.93 (1.21)	.45 (1.10)	.50

and Development, 1994, p. 108), these probably understate the correlation between worker reports and perfectly accurate measures of employer size [2].

Correlations between worker reports and D&B values are significantly smaller for how long the firm has been in business, measured either by years or the logarithm of years. This is consistent with our initial concerns about worker's knowledge of this variable. The smaller correlation also reflects greater ambiguity about the proper definition of this variable. Workers were asked "How long has this (company/organization) been in (business/operation)?" D&B has detailed rules for updating the start date of the business when ownership changes; the net effect is that the "start date" can be the year when control passed to the current ownership rather than the year the business began operations.

A comparison of workers' and D&B values for years in business suggests that D&B's updating conventions may be an important part of the discrepancy between them. Not only are worker reports higher on average (see Table 2), but scatter plots reveal that the two years in business variables broadly agree for firms that D&B classified as having been in business for 40 years or longer, while respondents reports are higher for firms that D&B shows have been in business for 20 years or less. Moreover, when we excluded observations for which the worker's report of how long s/he had been with the firm was greater than the D&B report on how long the firm had been in business, worker and D&B agreement on age of business

2. While much of the discussion of the accuracy of the D&B employment data has focused on issues related to births and deaths of firms, for our purposes three other issues are most relevant: (1) for manufacturing, employment totals are high compared to other estimates; (2) for companies with multiple establishments, the sum of establishment employment sometimes differs from reported company employment, with discrepancies in both directions; (3) coverage of small service firms is incomplete. Presumably, both (1) and (2) lead to errors in the D&B data that are uncorrelated with errors in the worker reports, and so reduce the correlation between these reports and D&B's. Problem (3) is in effect a restriction in range, which also reduces this correlation. In addition, while the D&B data were obtained shortly after interviewing was completed, the D&B data do not refer to exactly the same time point in time as the worker reports.

improved–the mean difference between the two fell from 7.6 to 2.9 years (or from .45 to .22 for the logarithmic variables), and the correlation rose to .64.

In one respect, the results in Table 2 are starkly inconsistent with simple assumptions about measurement error, though consistent with a growing body of validation study evidence that challenges these assumptions. Most textbook discussions of measurement error assume that it is uncorrelated with the true value of the variable, which implies that the variance of the measured variable will be larger than the variance of the true variable, and that the square of the correlation between the two measures equals the variance ratio (true/measured). In Table 2, however, the variance of the worker reports tend to be if anything smaller than the variance of the D&B values (and of course the D&B/worker variance ratio greater than the squared correlation). This suggests that reporting errors are negatively related to true values, which is what BOUND and KRUEGER [1991] find for earnings and BOUND, BROWN, DUNCAN, and RODGERS [1994] find for earnings and labor supply. A negative correlation between the difference in the two reports and the D&B value is also consistent with error in the D&B value; but for the variance of the workers' and D&B variables to be equal, the D&B variable would have to be as inaccurate as the worker report (or simply mis-matched a significant fraction of the time). We think this unlikely, particularly after excluding matches that seemed doubtful, though we know of no may to disprove it directly. As earlier validation studies have noted, measurement error that is negatively related to the true value will tend to cause less bias than white noise error when the variable in question is an explanatory variable in a regresion–indeed, if the negative correlation were strong enough, the variable's coefficient could be biased *away from* zero.

We have also compared the workers' reports and the D&B data on the industry of the worker's establishment. Given that analysts typically construct dummy variables based on industry codes, the most natural measure of "correlation" is the fraction of observations where the (census) industry code based on the worker's report and the (SIC) industry code from D&B "agree". Using 14 industry groups, the two reports agreed 79 percent (549/696) of the time. There was relatively little pattern to the disagreements, but wholesale trade and business and repair services contributed more than their fair shares of the headaches. This is a lower level of agreement than MELLOW and SIDER [1983] found in their validation of Current Population Survey reports; they report 92 percent agreement on one-digit industry, and 84 percent agreement at the three-digit level. One possible reason for this difference has already been mentioned–the establishments we cannot match are smaller than those in our matched sample, and it may be easier to agree on the main industry of such workplaces.

4 Work Environment

In this section, we relate employer size and years in business to a range of non-wage working conditions and more general features of the work

environment using ordinary least squares regressions [3]. We report results with a rather sparse set of control variables (union coverage, region, and industry) that would be available in establishment surveys, and with a more extensive set of controls for personal characteristics (education, experience and tenure, race and sex, marital status, and occupation). We consider our full sample (everyone who responded to the relevant questions), and the smaller sample for which we have clean matches to D&B data; in this smaller sample we compare the results of using D&B data on size, years in business, and industry to those using worker reports.

• Probability of Layoff, and Firm's Financial Position

In the introduction, we noted that established firms are more likely to survive, and this expands the range of contracts available to them–a firm that is likely to remain in business has a reputation to protect. Do workers in established businesses see their jobs as more stable? We investigate this issue in the top panel of Table 3, where the dependent variable is the probability of job loss due to layoff or plant closing in the next few years [4].

Holding constant union status, region, and industry, there is no relationship between employer size (employment at the establishment or firm) and layoff expectations. This is surprising given evidence that larger employers do indeed offer somewhat more stable employment (BROWN, HAMILTON, and MEDOFF [1990]), though it may be that this relationship is no longer as strong as it used to be. Those who work for more established employers report a significantly lower probability of layoff (line 1). When we restrict the sample to those for whom we have clean D&B matches (but continue to use the worker reports of size, years in business, and industry), the negative relationship between probability of layoff and years in business remains (line 2), as it does when we replace the worker reports with the D&B data (line 3). Controlling for personal characteristics leaves the effect of age of business unchanged (last three lines).

Table 3 also reports the weighted standard deviation of industry effects, based on a 14-industry classsification. Both worker reports and D&B-based industry variable show the probability of layoff is higher in mining, construction, durable manufacturing, and business services; the D&B-based industry classification shows somewhat larger effects, consistent with D&B industry reports being more accurate.

We also examined the relationship between employer characteristics and the financial position of the firm. One question asked workers to compare the financial position of their employer to that of its competitors. Apart

3. The dependent variables are typically dummy variables, often with an intermediate category. Thus, for example, questions comparing the importance of seniority and performance are coded as 0 if performance is more important, 1 if seniority is more important, and 0.5 if they are equally important. Limited experimentation with ordered probit estimation was quite consistent with the ordinary least squares results presented here.

4. The response categories "extremely unlikely", "unlikely", "50-50 chance", "probable" and "almost certain" were coded as 0, .25, .50, .75, 1.0.

from a few industry differences, we did not find anything of interest. One problem with this way of measuring financial position is that workers saw their employer as in better financial condition than its competitors, and so there was too little variation in this measure [5].

A somewhat more successful measure of the firm's condition asked whether the firm could afford a general 10 percent wage increase without going out of business. There was more variance in workers' responses (with about half thinking their firm could), and some tendency for white-collar workers to be less optimistic than others. The bottom panel of Table 3,

TABLE 3

Effects of Employer Size and Age of Business on Perceived Layoff Probability and Financial Condition of Firm

Sample	Employer Data from	Worker Controls?	ln (Estab. Employment)	ln (Company Employment)	ln (Years in Business)	Indus. Effects (Weighted SD)
			Probability of Layoff			
Full	Worker	No	.001	.002	–.022	.045
			(.005)	(.004)	(.009)	
Matched	Worker	No	.002	.007	–.025	.055
			(.008)	(.006)	(.013)	
Matched	D&B	No	–.004	.009	–.023	.071
			(.018)	(.005)	(.010)	
Full	Worker	Yes	–.002	.005	–.022	.050
			(.005)	(.004)	(.009)	
Matched	Worker	Yes	–.004	.010	–.026	.057
			(.009)	(.006)	(.014)	
Matched	D&B	Yes	–.011	.013	–.024	.072
			(.008)	(.006)	(.010)	
			Could Afford 10% Wage Increase			
Full	Worker	No	–.008	.009	–.016	.054
			(.007)	(.005)	(.012)	
Matched	Worker	No	.002	.005	–.034	.086
			(.011)	(.008)	(.019)	
Matched	D&B	No	.006	–.001	–.017	.079
			(.012)	(.008)	(.014)	
Full	Worker	Yes	–.005	.009	.002	.042
			(.007)	(.005)	(.013)	
Matched	Worker	Yes	.004	.007	–.014	.079
			(.012)	(.009)	(.020)	
Matched	D&B	Yes	.011	.003	–.012	.079
			(.012)	(.008)	(.014)	

Mean of Dependent Variable: Layoff Probability, .252, Afford 10% Wage Increase, .509.

5. We coded the response categories "no competitors, "better", "same", and "worse", as 1, 1, .5, and zero. The mean value was .8, suggesting that workers on average saw their firms as in better conditions than their competitors.

however, shows little consistent relationship to employer size of to years in business across the various combinations of control variables, samples, and decisions to use worker reports or D&B data [6]. On balance, workers at established firms see their jobs as somewhat more stable, but their employers as no more able to pay for additional wage increases (or, presumably, other benefits).

• Nonunion Workers' Support for Unionization

Firms come into the world non-union, and they are represented by a union only if it organizes a successful representation electron. Given that such elections are costly, one might expect unions to avoid organizing newly created firms, waiting for evidence that they will survive. Thus, we expect that support for unionization in units that have not been organized will be more common in newer firms (that unions have not seriously considered organizing, yet). Unions may also be more interested in organizing larger units (given economies of scale in organizing drives), but economies of scale in employers' union resistance activities are equally plausible so the net effect of employer size on the proportion of non-union workers who would support a union is less clear.

In Table 4, we present evidence on this score. The sample is restricted to non-union workers, and our dependent variable is a dummy variable that equals one if the worker would vote for union representation if an election were held. Across our six specifications, establishment and firm size tend to have positive coefficients, and these are occasionally significant;

TABLE 4

Effects of Employer Size and Age of Business on Non-union Workers' Support for Union Representation

Sample	Employer Data from	Worker Controls?	ln (Estab. Employment)	ln (Company Employment)	ln (Years in Business)	Indus. Effects (Weighted SD)
Full	Worker	No	.005	.009	–.039	.056
			(.008)	(.006)	(.014)	
Matched	Worker	No	.024	–.008	–.043	.079
			(.014)	(.010)	(.022)	
Matched	D&B	No	.030	–.013	–.033	.110
			(.014)	(.010)	(.016)	
Full	Worker	Yes	.002	.011	–.025	.057
			(.008)	(.006)	(.014)	
Matched	Worker	Yes	.022	–.001	–.031	.080
			(.014)	(.010)	(.023)	
Matched	D&B	Yes	.025	–.004	–.035	.117
			(.014)	(.010)	(.017)	

Mean of Dependent Variable: .204

6. Those working in nondurable manufacturing, wholesale and retail trade, and personal services were somewhat more likely to report their employer could afford the 10 percent wage increase.

overall, though, one would say the relationship between size and support for union representation is weak. Such support is negatively related to years in business, and the coefficients are often statistically significant. A two standard deviation difference in ln-years in business reduces such support by about .06 (on a base of .20), so the estimated effects are practically significant as well. Overall, there is not much difference across the specifications–controlling for worker characteristics, restricting the sample to those for which good D&B matches were available, and substituting D&B data for worker reports on size and years in business had only modest impact on the estimates for either employer size or years in business.

Industry differences are non-trivial, particularly when based on the D&B data. However, they followed no particular pattern with respect to traditional patterns of unionization. For example, non-union workers in durable manufacturing and finance, insurance, and real-estate were less likely to support union representation, but those in transportation and public utilities were more likely to do so [7].

• Fringe Benefits

Our survey included two measures of fringe benefits–the availability of a pension plan and of health insurance coverage. Previous research led us to expect larger employers would be more likely to offer such fringes, in part because of economies of scale (ANDREWS [1989]; ICF [1987]). We also expected such fringes would be more likely to be offered by established businesses, size constant. Setting up either type of fringe involves fixed costs that may deter newly established businessses with high probabilities of failing. Once set up, eliminating such benefits may have serious morale costs; if so, some established firms may be "stuck" with fringes they set up previously.

Our findings are presented in Table 5. Across six specifications, there is clear evidence that both fringe benefits are more often offered by large employers, and firm size seems to matter more than establishment size. Estimated effects of age of firm are more complex. In the full sample, established concerns are more likely to offer pensions and somewhat more likely to offer health insurance. However, these relationships are a good deal weaker in the subsamble of workers for whom good D&B matches were available, particularly for health insurance–even when we continue to use worker reports of how long the firm has been in business (line 1 vs. line 2, or line 4 vs. line 5, for both dependent variables). For pensions, there is a further tendency for years in business to matter still less when we use D&B rather than worker reports of size, age, and industry.

Given the standard errors of the firm age effects, the variation in Table 5 should not be over-emphasized, particularly in the specifications where worker characteristics are held constant. Nevertheless, the differences using full and matched samples–even when worker reports are used in both–are

7. Durable manufacturing and transportation and public utilities are relatively unionized industries, while finance, insurance and real estate are overwhelmingly non-union.

TABLE 5

Effects of Employer Size and Age of Business on Fringe Benefits

Sample	Employer Data from	Worker Controls?	ln (Estab. Employment)	ln (Company Employment)	ln (Years in Business)	Indus. Effects (Weighted SD)
			Pension Plan			
Full	Worker	No	.024	.051	.068	.105
			(.007)	(.005)	(.013)	
Matched	Worker	No	.021	.056	.045	.114
			(.012)	(.009)	(.019)	
Matched	D&B	No	.034	.055	.000	.113
			(.012)	(.008)	(.014)	
Full	Worker	Yes	.024	.050	.047	.096
			(.008)	(.005)	(.013)	
Matched	Worker	Yes	.019	.055	.024	.109
			(.012)	(.009)	(.020)	
Matched	D&B	Yes	.028	.054	–.007	.099
			(.012)	(.008)	(.014)	
			Health Insurance			
Full	Worker	No	.021	.028	.031	.108
			(.007)	(.005)	(.011)	
Matched	Worker	No	.016	.024	.001	.118
			(.010)	(.007)	(.016)	
Matched	D&B	No	.018	.027	–.002	.104
			(.010)	(.007)	(.012)	
Full	Worker	Yes	.020	.027	.017	.091
			(.007)	(.005)	(.012)	
Matched	Worker	Yes	.014	.022	–.005	.104
			(.010)	(.007)	(.017)	
Matched	D&B	Yes	.016	.027	–.009	.089
			(.010)	(.007)	(.012)	

Mean of Dependent Variable: Pension, .569; Health Insurance, .783.

cause for some concern. Do they reflect a tendency for the match subsample to be unrepresentative? One alternative possibility is that the relationship between fringe benefits and employer age is the same in the two samples, but more complicated than our specification allows. If, for example, there are important interactions between establishment size and firm age, the fact that these are implicitly evaluated at larger establishment size in the matched sample may create the illusion of a more fundamental difference. (While other interactions are possible, the differences in establishment size in the full and matched samples (Table 1) led us to focus on this possibility). We interacted firm age and establishment size, using the worker reports, in both samples, and then standardized establishment size across the samples. For pensions, difference in firm-age effects between full and matched samples fell from .023 in Table 4 to .011 and for health insurance from .022 to .005.

Industry effects are substantial for both pensions and health insurance, but they are quite similar across specifications.

• Formalization of Personnel Policies

We measured the degree of formalization of the work relationship by whether there are written rules governing pay and promotion and a formal grievance procedure at the workplace. Such formalization is more common among larger employers, and we thought it likely that it would be more common among firms of a given size that had been in business longer. In part, such procedures take time and might well be deferred in the early years of setting up a business; once in place, tearing up written rules or abolishing grievance procedure are unlikely. The organizational behavior literature suggests that as firms age "standard operating procedures emerge and are institutionalized" (Aldrich and Auster, 1986, p. 165).

In Table 6, both formalization measures clearly increase with employer size, with firm rather than establishment size more important. Controlling

TABLE 6

Effects of Employer Size and Age of Business on Use of Written Rules and Grievance Procedures

Sample	Employer Data from	Worker Controls?	ln (Estab. Employment)	ln (Company Employment)	ln (Years in Business)	Indus. Effects (Weighted SD)
			Written Rulles – Pay & Promotion			
Full	Worker	No	.020	.057	.014	.080
			(.009)	(.006)	(.015)	
Matched	Worker	No	.019	.054	.000	.092
			(.014)	(.011)	(.023)	
Matched	D&B	No	.019	.056	–.033	.104
			(.015)	(.010)	(.017)	
Full	Worker	Yes	.019	.054	.007	.072
			(.009)	(.006)	(.016)	
Matched	Worker	Yes	.014	.055	.001	.078
			(.015)	(.011)	(.025)	
Matched	D&B	Yes	.019	.050	–.027	.087
			(.015)	(.010)	(.018)	
			Grievance Procedures			
Full	Worker	No	.027	.047	.025	.081
			(.009)	(.006)	(.015)	
Matched	Worker	No	.026	.055	.006	.092
			(.014)	(.010)	(.022)	
Matched	D&B	No	.036	.049	–.016	.092
			(.014)	(.009)	(.017)	
Full	Worker	Yes	.026	.045	.029	.075
			(.009)	(.006)	(.016)	
Matched	Worker	Yes	.022	.055	.021	.084
			(.014)	(.010)	(.024)	
Matched	D&B	Yes	.037	.047	–.013	.083
			(.014)	(.010)	(.017)	

Mean of Dependent Variable: Use of Written Rules, .548; Grievance Procedure, .544.

for worker characteristics, moving from the full sample to the clean-match subsample, and replacing worker reports with D&B data make very little difference.

Effects of age of employer are again more complicated. In the full sample, older firms are about as likely as newer ones to have written rules for pay and promotion, and a little more likely to have grievance procedures. These relationships become negative (and, for written rules, marginally significant) when one uses the age of firm measure from the D&B file. Overall, there is little evidence of consistent age effects.

Industry differentials are one again moderately important, and their magnitude is not very sensitive to control variables or whether worker reports or D&B data are used. Both written rules for pay and promotion and grievance procedures were more common in professional services than other industries, and written rules were somewhat more common in finance, insurance, and real estate.

• Seniority, Performance, and Outside Offers

One potentially important manifestation of the role of custom in the workplace is the weight placed on seniority (rather than performance) in decisions about layoffs, promotions, and pay. One might expect seniority to be more important in such decisions for larger firms, in part because smaller firms are less likely to have any sort of formalized wage-determination system. However, MEDOFF and ABRAHAM [1981] find little evidence that seniority is more important for larger firms' layoff and promotion decisions after controlling for union status and broad occupational group. We also expected seniority to be more important for firms that had been in business longer, in part because it would be very hard to establish an informal policy of rewarding seniority in a young firm where, by definition, all workers have limited tenure.

In Table 7, we find little evidence that seniority is more (or less) important in layoff or promotion decisions for larger employers, for any of our specifications. We find seniority is a bit more important for promotions at older firms, but only when we control for personal characteristics and use the D&B age measure. Otherwise, we do not find much evidence that age of business matters. (We *do* find that unionised workplaces make greater use of seniority for both layoff and promotion decisions, so we're reluctant to attribute the weak size and age effects to weaknesses of the seniority questions.)

These is some suggestion that age of business effects move from positive to negative when we move to the smaller sample of observations with matched D&B data, particularly for the top panel (layoffs). Here, however, interacting age of business with size of establishment did not help to account for the difference.

Industry differentials are smaller for these dependent variables than for any others, and there is no particular pattern in their importance across specifications.

Finally, we asked respondents whether their employer would be likely to match an outside offer (at a 10 percent higher wage) for a good worker.

TABLE 7

Effects of Employer Size and Age of Business on Relative Importance of Seniority vs. Performance

Sample	Employer Data from	Worker Controls?	ln (Estab. Employment)	ln (Company Employment)	ln (Years in Business)	Indus. Effects (Weighted SD)
			Seniority More Important For Layoffs			
Full	Worker	No	.003	–.002	.021	.035
			(.008)	(.006)	(.013)	
Matched	Worker	No	–.000	.006	–.008	.044
			(.012)	(.009)	(.020)	
Matched	D&B	No	.009	.004	–.015	.060
			(.012)	(.008)	(.015)	
Full	Worker	Yes	.003	–.001	.023	.043
			(.008)	(.006)	(.014)	
Matched	Worker	Yes	–.003	.011	–.006	.052
			(.013)	(.009)	(.021)	
Matched	D&B	Yes	.007	.007	–.008	.064
			(.012)	(.008)	(.015)	
			Sensiority More Important for Promotions			
Full	Worker	No	.005	–.007	.016	.034
			(.007)	(.005)	(.012)	
Matched	Worker	No	.019	–.011	–.009	.042
			(.012)	(.008)	(.019)	
Matched	D&B	No	.017	–.013	.018	.037
			(.012)	(.008)	(.014)	
Full	Worker	Yes	.007	–.007	–.006	.047
			(.007)	(.005)	(.012)	
Matched	Worker	Yes	.027	–.014	–.003	.048
			(.012)	(.009)	(.020)	
Matched	D&B	Yes	.024	–.014	.025	.039
			(.012)	(.008)	(.014)	

Mean of Dependent Variable: Seniority for Layoffs, .230; Seniority for Promotions, .166.

We expected larger firms to be less likely to do so (because of greater use of formalized systems for determining pay). Our expectations about firm age were more diffuse. Matching "sets a bad precedent" by encouraging other workers to seek offers; established firms, with greater likelihood of surviving to see the harm done by such precedents would be less willing to match. Customary fairness norms should also be more important at established firms, suggesting less matching; on the other hand, matching might be one way of moving to a more market-relevant pay structure in the face of such custom.

Only about a third of our respondents thought their employers would match (table 8). Offer matching was less common in larger firms. There are hints that more established firms are more likely to match, but confirmation of these hints will require a significantly larger sample.

TABLE 8

Effects of Employer Size and Age of Business on Employer's Matching Outside Offers

Sample	Employer Data from	Worker Controls?	ln (Estab. Employment)	ln (Company Employment)	ln (Years in Business)	Indus. Effects (Weighted SD)
Full	Worker	No	–.005	–.031	.021	.049
			(.009)	(.007)	(.015)	
Matched	Worker	No	–.005	–.039	.016	.054
			(.014)	(.010)	(.023)	
Matched	D&B	No	–.012	–.037	.011	.080
			(.014)	(.009)	(.017)	
Full	Worker	Yes	–.005	–.031	.022	.058
			(.009)	(.007)	(.016)	
Matched	Worker	Yes	.002	–.040	.007	.068
			(.015)	(.011)	(.024)	
Matched	D&B	Yes	–.001	–.040	.004	.081
			(.014)	(.009)	(.017)	

Mean of Dependent Variable: .315

5 Conclusions

For employer size, our findings depend very little on whether we use worker reports or Dun and Bradstreet data to measure size. We find little relationship between employer size and workers' perceptions about employment stability or the firm's ability to pay; we believe this "negative" finding is interesting, given attempts to link the higher wages paid by larger employers to a hypothesized greater ability to pay. (Alternative explanations–that workers at larger firms have *already* collected all the rents, or that our measures are imperfect–are possible.) We find larger employers are more likely to have fringe benefits and formalized personnel systems, consistent with the existing literature. And they are less likely to match outside wage offers. We do not find much relationship between size and non-union worker's demand for union representation or the importance of seniority in personnel decisions.

We also found that how long the firm had been in business affected some important elements of the work environment–those employed by more established firms were less likely to support union representation for their workplace, and though themselves less likely to be laid off. There is some evidence that they are more likely to have pension plans. But, overall, the

evidence that age of employer affects the work environment is less pervasive than the evidence that employer size matters [8].

Judged by the weighted standard deviation of the estimated industry effects, industry differences in work environment appear to be moderately important even after holding other employer characteristics constant. In a few cases (non-union workers' support for union representation, offer-matching), the presumably more accurate Dun & Bradstreet industry data produced larger industry differences; overall, though, these differences are not large [9].

From a methodological viewpoint, a number of interesting findings emerge. First, we were not able to obtain reliable matched data for about half of the sample; losses tended to be concentrated among smaller and younger firms. Second, worker reports of establishment and firm size were reasonably accurate, and the measurement error we found was *negatively* correlated with D&B values of the size variables. Indeed, the variance of the worker reports was no higher than that of the D&B variables. This helps to explain why we did not find results getting "stronger" when we used D&B data instead of worker reports in the "good-match" subsample. It may also help explain why employer size effects are no larger in establishment data than in household data (e.g., BROWN and MEDOFF, 1989, p. 1033).

As we expected, worker reports of how long their employer had been in business proved less reliable than their reports of employer size. Here too we found that the difference between the worker report and the D&B variable was negatively correlated to the D&B value. Given ambiguities about how age *should* be measured after changes of ownership it's likely that D&B's updating of the business's starting date after some ownership changes contributes to the difference between worker reports and D&B's years in business variable.

The fact that our "clean match" subsamble (for which we were confident we had correctly matched D&B data) was half of our original sample raises questions of selection bias. Fortunately, we can compare the effects of age of employer age (and other variables) in the full sample and the clean-match subsample based on worker reports of employer characteristics, and then compare worker reports and D&B data in the clean-match subsample. The effect of employer age on fringe benefits and on the importance of seniority for layoffs is smaller in the matched subsample; for fringes there is reason to believe that interactions between employer age and size rather than sample selection per se are at work. But overall–considering the full set of dependent variables, and considering employer size and industry as

8. The relatively weak effects of age of business on some dimensions of work environment is *not* due to age of business being very closely related to employer size (or other control variables). Indeed, when we regress age of business on our size measures, industry dummies, and the other control variables in Tables 3-7, the R-squared is less than .4 in both the full sample and the subsample for which we have Dun and Bradstreet data.

9. Mellow and Sider (1983) find that when imputing industry characteristics (e.g., injury risk) based on industry, employer reports produced larger estimated compensating differentials. But in wage equations with (one-digit) industry dummy variables, there is little difference between worker and employer reports.

well as years in business–the similarity of the estimates in the full sample and the matched subsample is reassuring.

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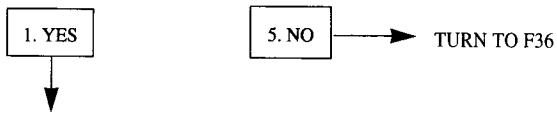
APPENDIX

Survey of Consumers Supplement

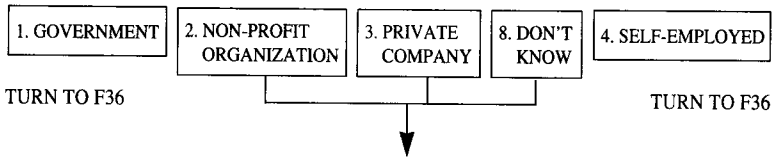
SECTION F : CURRENT JOB

F0. EXACT TIME NOW : _____

F1. We are interested in your current job status. Are you doing *any* work for pay at the present time ?



F2. Do you work for a branch of the federal, state or local government, a non-profit organization, a private compagny, or are you self-employed?



F3. What is your occupation on your main job? What sort of work do you do? [IWER: PROBE IF NECESSARY FOR FURTHER DETAILS. (What are your most important activities or duties ?)]

_____

_____

_____

_____

F4. What kind of business or industry is that in? What do they make or do where you work? [IWER: PROBE FOR DETAILED INFORMATION ABOUT THE *PRODUCT* MADE OR THE *KIND OF SERVICE* PROVIDED.]

_____

_____

_____

_____

F5. INTERVIEWER CHECKPOINT:

☐ 1. OCCUPATION AND INDUSTRY RESPONSES (F3 AND F4) INDICATE R WORKS FOR "GOVERNMENT"--->GO BACK TO F2, CHECK BOX # 1

☐ 2. OCCUPATION AND INDUSTRY RESPONSES (F3 AND F4) INDICATE R IS "SELF EMPLOYED" ---------->GO BACK TO F2, CHECK BOX # 4

☐ 3. *ALL* OTHERS

F6. About how many years have you worked full time (35 or more hours per week) since you were 18 years old? (IWER PROBE: What is your best estimate?)

_____ # YEARS

96. ZERO

F7. Including yourself, about how many persons *in total* are working for your employer at the *location* where you work? (IWER PROBE: What is your best estimate?)

_____ # OF EMPLOYEES

F8. About how many persons *in total* are working for your employer at *all* of its locations? (IWER PROBE: What is your best estimate?)

_____ # OF EMPLOYEES

F9. About how many hours per week do you *usually* work (at your main job) counting paid lunches and *any* overtime you work?

_____ # HOURS PER WEEK

F10. How much do you usually earn?

$_____ PER _____

F11. Are your wages determined by a union contract?

1. YES

5. NO → GO TO F13

F12. If an election were held with secret ballots. would you vote to continue having a union represent you?

1. YES

5. NO

GO TO F14

F13. If an election were held with secret ballots, would you vote in favor of having a union represent you?

1. YES	5. NO

F14. Does your employer *offer* a company sponsored health insurance plan in which you are *eligible* to participate?

1. YES; COMPANY DOES OFFER HEALTH PLAN--R IS *ELIGIBLE*	2. YES; COMPANY DOES OFFER HEALTH PLAN--R *NOT ELIGIBLE*	5. NO; COMPANY DOES *NOT* OFFER HEALTH PLAN

F15. Not including Social Security, does your employer *offer* a pension or retirement plan in which you are *eligible* to participate?

1. YES; COMPANY DOES OFFER PENSION/ RETIREMENT PLAN--R IS *ELIGIBLE*	3. YES; COMPANY DOES OFFER PENSION/ RETIREMENT PLAN--R *NOT ELIGIBLE*	5. NO; COMPANY DOES *NOT* OFFER PENSION/ RETIREMENT PLAN

F16. How long has this (company/organization) been in (business/operation)?

_____ # YEARS *OR* SINCE _____ (YEAR)

IWER: CHECK THIS BOX IF R MENTIONED MERGER/BUYOUT OF COMPANY

F17. In what month and year did you begin working for this (company/organization)?

_____ / _____
MONTH YEAR

F18. In what month and year did you begin working at your *current* work location?

_____ / _____
MONTH YEAR

F19. When you began working for this (company/organization), how much did you earn?

$_____ PER _____

F20. How likely is it that you will make a genuine effort to find a *new* job with another employer in the next year -- would you say you definitely will, probably will, probably won't, or definitely won't (look for a new job)?

1. DEFINITELY WILL	2. PROBABLY WILL	3. 50-50 CHANCE	4. PROBABLY WON'T	5. DEFINITELY WON'T

F21. How difficult would it be for you to find a job with another employer that is as good as your current job -- would you say very easy, easy, difficult, or very difficult?

1. VERY EASY	2. EASY	4. DIFFICULT	5. VERY DIFFICULT

F22. In the next few years, if you remain with your current employer, how likely is it that you would lose your job due to a layoff or your workplace closing down altogether -- would you say this is almost certain, probable, unlikely, or extremely unlikely?

1. ALMOST CERTAIN	2. PROBABLE	3. 50-50 CHANCE	4. UNLIKELY	5. EXTREMELY UNLIKELY

F23. Is working with computers an important part of your *current* job?

1. YES	5. NO

F24. Without going out of business, do you think your employer could afford to increase the pay of all its workers by 10 percent -- would you say they could definitely, probably, probably not, or definitely could not, afford to do so?

1. DEFINITELY	2. PROBABLY	3. 50-50 CHANCE	4. PROBABLY NOT	5. DEFINITELY NOT

F25. Compared to its competitors, do you think your employer is in better *financial* condition or worse *financial* condition?

1. BETTER	3. SAME	5. WORSE	6. HAS NO COMPETITORS	8. DON'T KNOW

F26. Are there written rules governing pay and promotions where you work?

1. YES	5. NO

F27. Is there a *formal* grievance procedure for resolving problems about employees' pay or about how their supervisors treat them?

1. YES	5. NO

F28. Did your employer give you any kind of *formal* test of ability or skill before you were hired?

1. YES	5. NO

F29. If your employer had to reduce its workforce permanently, which do you think would be more important in deciding who is let go -- lenght of service with the company or job performance?

1. YEARS OF SERVICE	3. BOTH MATTER; ABOUT EQUAL	5. JOB PERFORMANCE	6. NEITHER MATTERS; OTHER FACTORS NORE IMPORTANT

F30. In determining *wages* or salaries where you work, which is more important -- length of service with the company or job performance?

1. YEARS OF SERVICE	3. BOTH MATTER; ABOUT EQUAL	5. JOB PERFORMANCE	6. NEITHER MATTERS; OTHER FACTORS MORE IMPORTANT

F31. In determining who gets *promoted* at the place where you work, which is more important -- length of service with the company or job performance?

1. YEARS OF SERVICE	3. BOTH MATTER; ABOUT EQUAL	5. JOB PERFORMANCE	6. NEITHER MATTERS; OTHER FACTORS MORE IMPORTANT

F32. If someone who was a *good* worker was offered 10 percent more pay by another employer, do you think your employer would be likely to match the higher pay or would they lose the worker to the higher-paying employer?

1. MATCH OFFER	3. IT DEPENDS	5. LOSE THE WORKER

GO TO COVERSHEET INSERT SHEET, F33

	Coversheet ID #					

For Office Use Only

COVERSHEET INSERT

[IWER: IF NECESSARY READ THE FOLLOWING TO THE RESPONDENT -- As part of our study, we want to *look up* some additional information about the companies for which our respondents work. The company name, address, and phone number help us to be sure we have identified the right company – *we will NOT use this information to contact you or the company.*]

F33. For whom do you work? (What is the (company's/organization's) name?)
[IWER/ IF R GIVES INITIALS IN COMPANY/ORGANIZATIONS NAME, PROBE WITH: "What do those initials stand for?"]

_____

F34. What is the address of the place where *you* work? (I will need the street address, city, state and zip code.)

_____ (STREET ADDRESS)

_____

_____ (CITY, STATE)

_____ (ZIP CODE)

F35. What is the area code and telephone number of (NAME OF EMPLOYER)?

_____ AREA CODE/TELEPHONE NUMBER