THE HIRING DECISIONS AND COMPENSATION STRUCTURES OF LARGE FIRMS

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This paper investigates differences between large and small firms in new hires' ages and in compensation structures. An analysis of data from the Benefits Supplement to the Current Population Survey (CPS) shows that large firms hired younger workers than small firms and awarded starting wages that discriminated less between young and older workers. Most strikingly, the well-known wage premium associated with employment in large firms did not obtain for white-collar workers who were hired at age 35 or older, due to large firms' preference for younger new hires. Another finding is that wage growth in large firms equaled or exceeded that in small firms. The author argues that these findings accord with firm-specific human capital theory. Finally, limited evidence from the 1995 BLS Survey of Employer-Provided Training and the CPS suggests that industries that train more also hire younger workers.

Differences in labor market behavior between large and small firms have long been of interest to labor economists. Most studies have focused on the size-wage puzzle—why large firms pay more than small firms do—but no consensus seems to have been reached (see, among others, Lester 1967; Mellow 1982; Pearce 1990; Brown and Medoff 1989; and Oi and Idson 1999). Traditional firm-specific human capital investment theory, introduced in Becker's seminal 1962 study, could explain the size-wage puzzle. If large firms invest more in firm-specific human capital than small firms do,[1] then the wage premium in large firms may be part of the resulting productivity surplus that is shared by workers. Unfortunately, directly testing this appealing theory is very hard, because data on investment and productivity are typically unavailable. Indirect tests, however, are suggested by

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[1]This may be because large firms have different capital structures or production organizations. Alternatively, large firms may have more of an incentive to invest in human capital because their higher survival rates enhance the returns to the investments.

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other behavioral differences between large and small firms that are implied by the theory, such as differences in hiring practices and wage structures. Since firms often make joint decisions about training, hiring, and compensation structures when forming an employment relationship, differences along all these dimensions may well shed light on the size-wage puzzle.

This paper takes a step in that direction. I investigate the relationship between firm size, on the one hand, and training, hiring age patterns, and wage structures, on the other. Evidence from the existing training literature suggests that large firms are more likely than small firms to provide training (the extensive margin). Using data from the BLS Survey of Employer Provided Training 1995 (SEPT 95), I provide evidence that large firms also spend more in those investments (the intensive margin).

Under the assumption that large firms invest more, I advance a simple firm-specific human capital theory framework that has implications regarding variations between large and small firms in hiring age patterns and the accompanying wage-age structures. First, the theory implies that large firms prefer to hire younger workers. The reason is simple: large firms invest more in firm-specific human capital, and these investments are fixed costs regardless of the employment duration. Young workers have longer working horizons and are thus particularly attractive to large firms.

The theory also has implications for wage structures. To establish a durable work force, large firms may design compensation packages to attract young workers by paying them higher starting wages (relative to older workers) than small firms and, after hiring, continuing to pay high wages to retain those trained workers. Empirically, this generates two testable predictions regarding wage structures. First, since young workers are more valuable to large firms than to small firms, we would expect that the starting wage–hiring age profiles in a cross-sectional regression will be flatter for large firms. Second, if large firms invest more firm-specific human capital in their workers, presumably mostly in the first few years after hiring them, then losing those trained employees later would incur a larger loss. Thus large firms could design compensation plans to tilt the wage-tenure profile to reduce turnover. This implies both longer job durations and steeper tenure profiles in large firms.

Finally, if the relationship between firm size and workers' hiring ages is a general relationship between human capital investments and workers' age, we would expect to observe similar patterns across industries.

The literature on new hires and employer size is very limited. Weiss and Landau (1984) proposed a theoretical model relating hiring and wage levels to firm size, but that model does not have any testable implications about hiring age patterns or wage structures. Holzer, Katz, and Krueger (1991) used job application data to empirically examine the relationship between job queues and wage differentials across industries and firm size. There are some related studies on new hires' age, but none of them is related to employer size, and moreover, they typically focus on aspects of an employment relationship other than wages. For example, Holzer (1987) studied the relationship between hiring procedures and productivity and turnover. Hutchens (1986) and Garen, Berger, and Scott (1995) studied the relationships between the delayed payment schedule, or health insurance and pension costs, on the one hand, and a firm's propensity to hire older workers (aged 55 and above), on the other. My paper departs from these previous studies in that I study the variations in the hiring age pattern across employer size and over the entire age distribution. This allows me to investigate the relationship between age-at-hire and a wider range of aspects of an employment relationship, such as training and wage-age structures.

The papers most related to the present study are Barron, Bishop, and Dunkelberg (1985) and Barron, Black, and Loewenstein (1987). Using data from the Employment Opportunity Pilot Project (EOPP), those

two studies found that large employers, compared to smaller employers, screened applicants more extensively prior to hiring, were more likely to provide various types of training, and provided a higher starting wage. They also found that employers conducted more intensive searches to fill white-collar jobs than blue-collar jobs. They ascribed these patterns to greater monitoring costs at large firms.[2] The papers did not investigate how the hiring and training decisions varied by employees' characteristics. Moreover, the data used in these papers were from an employer survey that covered predominantly low-wage firms.

The present paper starts from a different perspective and tests empirical predictions of the firm-specific human capital theory that have not been studied before. My paper expands the research on employer size and new hires in two ways: first, I try to identify the types of workers—especially by age—that large firms prefer to hire;[3] and second, I examine how compensation is structured to attract those desired types of workers. In particular, I study in cross-section the association between wage structures and the ages of new hires. My empirical findings on both matters are new to the literature, and provide new insight for understanding the different labor market behaviors of large and small firms. Moreover, because the data I use are from a nationally representative worker survey, the results are relevant to the general working population, at least for white-collar occupations.

[2]Under the same assumption that monitoring costs rise with employer size, Garen (1985) studied the relationship between worker heterogeneity, job screening, and firm size and tested the implications for the wage structures along schooling and ability dimensions. His analysis was not focused on new hires and did not have implications for the wage-age structures.

[3]There have been some studies concerned with differences between large and small employers in the hiring of disadvantaged workers (mainly minority and female workers) in the context of discrimination (see, for example, Holzer 1996, 1998).

Investments, Hiring Age, and Wage Structures: A Theoretical Framework

Assuming large firms invest more per worker than small firms do,[4] standard firm-specific human capital investment theory would imply that they would prefer to hire younger workers. This is because the investments are fixed costs regardless of the employment duration and younger workers have longer horizons over which the firms can recoup their investments. Given that young workers are valuable, it is important to understand how large firms design their compensation structures to attract and retain them.[5]

Consider the optimal decision of a cost-minimizing firm in selecting new hires in the following framework. Assume workers

[4]Empirical evidence on this assumption will be presented in the next section. For simplicity, the investment decision is taken as given and its determination is not modeled in this paper. As remarked earlier, there are many reasons to observe a relationship between investment size and firm size. For example, production is often organized differently in large and small firms—large firms may have more capital, and their jobs are more specialized and often organized around teams. Thus workers in large firms may need more screening or training to be productive. Large firms may also have a greater incentive to invest in workers because they are more likely than smaller firms to stay in business and their higher survival rates would enhance the returns to the investments.

[5]The assumption that younger workers can stay longer will not necessarily hold, however, if younger workers are also more mobile. Empirical evidence suggests that unconditional turnover rates are indeed higher for younger workers. However, the main reason for young workers' high mobility is that the jobs they have in the beginning of their careers are often low-quality (low-wage). In fact, the mobility pattern is reversed when it is conditioned on wage. For example, Topel and Ward (1992) found that holding wage constant, a worker with 12 years of experience is three times as likely to leave his current job as is an otherwise identical labor market entrant. Furthermore, they found that starting wages are critical determinants of subsequent mobility (independent of the evolution of wage within a job). To the extent that firms take workers' mobility pattern into account and design the wage structures accordingly, it is important to consider the joint decisions of hiring and wages.

live for 2 periods and the firm's life is infinite. For simplicity, assume all workers are equally productive and are perfect substitutes for each other.[6] But each new hire entails a fixed investment c (for hiring, training, or both). In each period, the firm offers wages $\{w_y, w_o, w_r\}$ to young, newly hired old ("new" old), and retained old workers, respectively. Also in each period, workers get one draw, denoted by w_a, from an outside wage distribution. Workers decide in each period whether to accept the firm's wage offer by comparing it to their current draws from the spot market.[7] The firm can attract and hire the "new" old workers and the young workers if and only if it offers $w_o \geq w_a$ and $w_y \geq w_a$, respectively. Similarly, the firm can retain the workers from the previous period if and only if it offers $w_r \geq w_a$. So the number of workers of each type that the firm can attract is an increasing function of the wage offered to that type (that is, the CDF of the outside wage distribution). To maintain a given level of production, the cost-minimizing firm can achieve a given composition of workers of the three types by choosing the corresponding wage offers.

In this setup, standard comparative statics analyses imply the following: (1) a firm with larger c has an incentive to hire more young workers (and fewer old workers), and it can achieve this by offering higher w_y (and lower w_o) than does a firm with smaller c (that is, $w_o - w_y$ decreases with c); (2) the firm with larger c will try harder to retain workers in the second period to save the costs incurred by a new hire, and will therefore also offer a higher wage, w_r, than a firm with smaller c. The relative magnitude of the increase in w_y and w_r and its variation with the costs c will in general depend on specific distributions. It is easy to show that for some simple distributions, such as uniform distributions, $w_r - w_y$ increases with c. The intuition is that as the investment c grows, retaining the trained employees in the second period increasingly overshadows hiring more young workers in the first period as a way to minimize costs.

In sum, under the assumption that per capita investments in workers are greater in large firms than in small firms, the firm-specific human capital theory generates the following testable predictions. (1) Large firms will hire younger workers than small firms do. (2) Cross-section data on new hires will show a flatter starting wage–hiring age profile in large firms than in smaller firms. In other words, age or experience will be rewarded less in large firms than in small firms. (3) The wage-tenure profile will be steeper in large firms. In the next two sections, I empirically evaluate the assumption that investments rise with firm size, then test the three predictions regarding the hiring age patterns and wage structures by firm size. Finally, I test the relationship between investment and hiring age across industries.

Training Investments and Firm Size

Evidence from existing training literature generally supports the idea that large firms are more likely than smaller firms to provide training.[8] In this section, I provide some additional evidence of the variation

[6]This assumption can be relaxed to allow for the possibility that older workers have more general human capital and thus are more productive than younger workers. However, this will not affect the main results reported in this section, since I consider the differences in the *relative* labor demands and wage offers between young and old workers across firms with different c.

[7]This assumption holds if workers are myopic, or if they are risk-averse and want to smooth consumption, or if they are simply liquidity-constrained and cannot borrow against their future income.

[8]For example, Bishop (1985), Barron, Black, and Lowenstein (1987), Haber (1988), and Lynch and Black (1995) found that the probability of formal and informal training rises with employer size. However, there is usually no information on the actual dollar amount spent by employer size. When hours or weeks of training are used as a proxy for costs (see, among others, Black, Noel, and Wang [1999] and Brown [1990], as well as references therein), the results on the size variation are often mixed.

in training investments by employer size. The data source used in this section is the Bureau of Labor Statistics (BLS) 1995 Survey of Employer-Provided Training (SEPT95).[9] The Appendix shows the percentage of employees receiving training from their current employer by establishment size. There appears to be modest variation: the incidence of formal training ranges from 79% for establishments with 50–99 employees to nearly 88% for establishments with 500 or more employees.

The intensity of training is another important dimension of training costs. Unfortunately, measuring such costs is very difficult, especially when the training is informal. The SEPT95 has some information on the per-employee costs of certain training expenditures. I calculate two types of costs: direct and indirect. The direct costs are *selected* expenditures per employee for the year 1994, and the indirect costs are employee wages and salaries. The Appendix shows that there is sizable systematic variation by employer size in both types of costs: establishments with 500 or more employees spent almost three times as much as establishments with 50–99 employees ($466 versus $159 in direct costs, $308 versus $110 in indirect costs).[10]

Finally, jobs differ by tasks and skills. Jobs involving only simple repetitive tasks may not require any substantial training investment regardless of firm size, and thus we may observe little firm size variation in investments for those occupations. In contrast, high-skilled jobs may require a substantial training investment (especially, formal training). If large firms invest more than smaller firms in workers taking high-skilled jobs, then we would expect to see greater size variations in investments in those jobs.[11] The SEPT95 also provides the percentage of employees who have received formal training by occupation while with their current employer. These numbers indicate that white-collar workers were more likely to receive formal training than were blue-collar workers.[12] If training of white-collar workers is mostly formal training and that of blue-collar workers is mostly informal training, we would expect to see the training costs and age-at-hire pattern to be more pronounced for the white-collar workers, since there is greater cost variation in formal training by firm size than in informal training. As a result, in the following empirical analysis, I focus on the white-collar workers.

In sum, the limited evidence suggests that large firms do spend more in training per worker than small firms do, especially

[9]The SEPT95, sponsored by the Employment and Training Administration of the U.S. Department of Labor, measures different aspects of training. This survey was conducted during personal visits to more than 1,000 private establishments with 50 or more employees from May through October 1995. It has two parts: a survey of establishments, and a survey of randomly selected employees in the surveyed establishments. A representative of the establishment provided information on the hours and costs of *formal* training, and randomly selected individual employees provided information on their hours of both formal and informal training received and the wage and salary cost of the time they spent in both formal and informal training.

[10]It should be emphasized that these cost figures are only selected training expenditures, and they cannot be taken as the true overall costs. In addition, the costs reported here are per employee expenditures, which may understate the true training expenditures for each new hire. This is because training often takes place at the beginning of an employment relationship, and new hires often comprise a low fraction of the work force. Furthermore, this discrepancy may disguise a bigger difference in costs of training new workers by firm size, since new hires comprise a lower fraction of the work force in large firms than in small firms. (For example, in the CPS data, new hires with tenure less than or equal to one year comprise about 17% of the overall work force in firms with 1,000 or more employees, compared to about 35% in firms with under 25 employees.)

[11]Haber et al. (1988) found that the gap in training investments between large and small employers was larger at the higher skill levels.

[12]The incidence of training is 87.1% for managerial and administrative, 95.3% for professional and technical, and 89.3% for sales, clerical, and administrative support, compared to 70.7% for service and 80% for production, construction, operating, maintenance, and material handling.

for the white-collar occupations. Next, I investigate how these higher investments affect large firms' hiring decisions and compensation structures.[13]

Data and Empirical Results

Data

The main data used in this paper are from the Benefits Supplements to the Current Population Survey (CPS) from May 1979, May 1983, May 1988, and April 1993. In addition to the usual information on individual demographics and labor market experience, these data have information on tenure and employer size on the job held at the survey date. With tenure and age information, I can compute a worker's age when he or she was hired by the current employer. Since I study firms' hiring behavior, self-employed individuals are excluded and the sample is limited to private sector wage and salary workers aged 20–65.[14] Agriculture, forestry, fishing, and private household services are also excluded. Hourly earnings are computed as weekly earnings divided by the hours worked in the previous week. Outlier observations with hourly earnings under $1 or above $250 are dropped from the sample. All earnings are deflated by the CPI to 1982–84 constant dollars.

There are two measures of employer size: the number of employees at the establishment, and, if the firm has multiple establishments, the number of employees at all establishments. Both firm size and establishment size are categorical variables. Without imposing assumptions on the distribution of size within each category and linearity across categories, I report all the results by each category rather than convert the discrete variables into a continuous one. Note that the three more recent years have finer categories than the 1979 data. For consistency and comparability, I adopt the cruder category measures available in 1979 for number of employees: < 25, 25–99, 100–499, 500–999, and 1,000+. Since there are only a small number of observations in the 500–999 category, I combine it with the 100–499 category and end up with four final size categories.

Table 1 provides summary statistics for some key variables used in the subsequent empirical analysis. Each row panel represents one of the four sample years, and within each, the results for white-collar workers and blue-collar workers are reported in the left and right panels, respectively. Note that overall, the distributions of worker characteristics across firm size seem to be stable over the period of study.[15]

[13]The theoretical discussion assumes that the employer-provided training is firm-specific and firms pay for it. Although some components of the company-provided training might be general (see, for example Veum 1995, 1999), many empirical studies suggest that there is also a large proportion of such training that is firm-specific. For example, in the 1993 wave of the SEPT, the most common reason employers gave for providing formal training (cited by over 75% of respondents) was that training was necessary to provide skills specific to their organizations. Lynch (1992) found company-provided training from the previous employer did not have an impact on wages in subsequent employment with new employers. Parent (1999) found that skills obtained through employer-provided training reduced mobility even after the analysis controlled for heterogeneity. Finally, even if some skills are "technologically" general, they may become *de facto* specific as long as employers provide (and pay for) it and reap the returns. See, for example, Acemoglu and Pischke (1998), Barron, Berger, and Black (1999), and Lowenstein and Spletzer (1999).

[14]Workers under 20 years old are excluded from the sample because some of them might still be in school and the jobs they hold might be temporary. However, I repeated the analysis for the larger sample (including 15–19 year-olds), and the results were similar.

[15]This is important because one might be concerned about pooling the four data sets over the 15-year time span if the labor market has changed in ways that are not captured by year fixed effects. Some recent studies also confirm that there is no evidence of change in the differentials in employee characteristics and wage structures (by occupation and education) between large and small employers for the period of study (see, for example, Belman and Levine 2001; Levine et al. 2002).

Age-at-Hire and Firm Size

The firm-specific human capital investment theory implies both younger age-at-hire and longer tenure in firms with larger investments. In Table 1, for white-collar workers, the mean age-at-hire declines monotonically as firm size increases. The differences in average age-at-hire between the smallest and the biggest size groups are 4.64 years in 1979, 3.6 years in 1983, 3.0 years in 1988, and 3.85 years in 1993, all of which are statistically significantly different from zero. The consistent pattern across years suggests that large firms do hire younger workers in white-collar occupations.

For blue-collar workers, this pattern does not hold uniformly. As alluded to earlier, the lack of a uniform pattern for the blue-collar jobs may result from job characteristics such as tasks and skills. First, in general, blue-collar jobs may mainly involve tasks that require little training (especially, little formal training), regardless of firm size. For example, we would not expect to see large firms necessarily invest more than small firms in training janitors, and consequently there is no reason to expect large firms to hire younger workers in this occupation. Second, jobs differ by the skills required to perform them. One indicator for the skill requirement of jobs is education. As can be seen from Table 1, white-collar workers are, on average, better educated than blue-collar workers. Since training investment is generally found to be positively related to workers' education level (see, for example, Altonji and Spletzer 1991; Lynch 1992), investments may be more of a concern for workers in white-collar occupations.[16] Finally, there might be some other non-economic but important factors associated with blue-collar workers that are age-related but have little to do with firm-specific training; for example, young workers usually have more physical strength than older workers. For these reasons, the subsequent analysis will be focused on white-collar workers.

Table 1 also indicates that a worker's tenure increases with firm size. The longer tenure in large firms accords with the idea that large firms have more firm-specific investments, and that when there is "rent-sharing" between workers and firms, the separation rate is lower.

There are some potential problems with using a sample that includes workers with all tenure levels. The first concern stems from the fact that hire age is computed as the difference between a worker's age and tenure. At any given time, long-tenured jobs are over-sampled, and we know tenures are systematically longer in large firms than in smaller firms.[17] So even if small firms hire as high a percentage of young workers at a given point in time as large firms do, these jobs are more likely to have terminated and therefore are less likely to be included in the sample. This problem can be overcome by restricting the large firm–small firm comparison to workers with the same tenure.

The second concern is that firm size may be changing over time. A firm that was small 5 or 10 years ago may have become a medium or even large firm since then, but I only have information on the current firm size. If a firm that hired younger workers was small at the time of hiring, but grew to large size by the time of the survey, we would mistakenly attribute the younger age-at-hire to the large firm. However, we can avoid the problem by examining only the *newly hired* workers who have tenure less than one year with the current employer, since it is unlikely that a firm will have

[16]Neal (1998) developed a training model predicting that able workers should sort to specialized jobs. This is consistent with the view that white-collar jobs are more specialized. Interestingly, as mentioned earlier, Barron, Bishop, and Dunkelberg (1985) found that employers more intensively screened applicants for white-collar occupations than for blue-collar occupations.

[17]Longer tenure in large firms may also be due to the fact that large firms are less likely to fail and have been in business longer than small firms, on average.

Table 1. Summary Statistics—All Workers, by Date of CPS Data.
(Standard Errors in Parentheses)

	White-Collar				*Blue-Collar*			
Firm Size	*<25*	*25–99*	*100–999*	*1000+*	*<25*	*25–99*	*100–999*	*1000+*
				1979 May CPS				
Fraction	0.251	0.142	0.195	0.412	0.252	0.162	0.184	0.402
Age-at-Hire	34.31	33.06	31.59	29.67	32.57	33.83	31.76	29.76
	(0.26)	(0.34)	(0.29)	(0.20)	(0.28)	(0.35)	(0.33)	(0.22)
Tenure	4.40	5.39	6.08	8.53	4.03	5.30	6.38	9.54
	(0.20)	(0.27)	(0.23)	(0.16)	(0.22)	(0.28)	(0.26)	(0.17)
Education	13.31	13.59	13.86	13.99	11.16	10.84	11.02	11.60
	(0.060)	(0.079)	(0.068)	(0.047)	(0.070)	(0.087)	(0.082)	(0.055)
LnWAGE*	2.022	2.147	2.277	2.411	1.959	2.041	2.091	2.304
	(0.013)	(0.018)	(0.015)	(0.010)	(0.013)	(0.016)	(0.015)	(0.010)
Obs.		5,798				5,091		
				1983 May CPS				
Fraction	0.242	0.131	0.214	0.414	0.288	0.156	0.201	0.356
Age-at-Hire	33.64	32.27	31.41	30.04	32.10	32.57	31.67	29.46
	(0.23)	(0.31)	(0.24)	(0.17)	(0.26)	(0.35)	(0.31)	(0.23)
Tenure	4.46	5.17	5.96	8.14	4.10	5.39	6.61	9.81
	(0.18)	(0.24)	(0.19)	(0.13)	(0.19)	(0.26)	(0.23)	(0.17)
Education	13.66	13.84	14.10	14.29	11.33	11.30	11.59	11.89
	(0.055)	(0.075)	(0.058)	(0.042)	(0.062)	(0.084)	(0.074)	(0.056)
LnWAGE*	1.887	2.072	2.140	2.284	1.750	1.822	1.884	2.158
	(0.013)	(0.017)	(0.013)	(0.010)	(0.013)	(0.017)	(0.015)	(0.011)
Obs.		6,983				5,285		
				1988 May CPS				
Fraction	0.215	0.147	0.218	0.421	0.242	0.156	0.214	0.387
Age-at-Hire	33.44	32.38	31.24	30.44	31.44	32.27	31.94	29.52
	(0.24)	(0.29)	(0.24)	(0.17)	(0.28)	(0.34)	(0.29)	(0.22)
Tenure	4.38	4.89	5.70	7.33	3.81	4.86	6.91	9.92
	(0.18)	(0.21)	(0.17)	(0.12)	(0.23)	(0.28)	(0.24)	(0.18)
Education	13.55	13.94	14.31	14.28	11.65	11.38	11.52	11.96
	(0.058)	(0.071)	(0.058)	(0.042)	(0.065)	(0.081)	(0.069)	(0.051)
LnWAGE*	1.906	2.085	2.205	2.275	1.764	1.850	1.929	2.122
	(0.014)	(0.016)	(0.013)	(0.009)	(0.015)	(0.018)	(0.015)	(0.011)
Obs.		6,974				4,905		
				1993 April CPS				
Fraction	0.222	0.139	0.192	0.446	0.261	0.159	0.195	0.386
Age-at-Hire	34.34	32.41	32.26	30.49	32.54	33.22	32.04	30.11
	(0.24)	(0.29)	(0.24)	(0.16)	(0.31)	(0.37)	(0.32)	(0.22)
Tenure	6.25	6.39	7.36	9.15	5.49	6.83	7.72	10.20
	(0.19)	(0.23)	(0.19)	(0.12)	(0.24)	(0.29)	(0.25)	(0.18)
Education	13.62	13.85	14.04	14.11	11.68	11.42	11.67	12.12
	(0.048)	(0.060)	(0.051)	(0.034)	(0.055)	(0.071)	(0.064)	(0.046)
LnWAGE*	1.931	2.122	2.186	2.216	1.707	1.746	1.813	1.974
	(0.014)	(0.016)	(0.014)	(0.009)	(0.013)	(0.016)	(0.015)	(0.010)
Obs.		6,907				4,206		

Notes: Supplemental weights are used in all years. Only private sector wage-salary workers age 20–65 are included. Agriculture, Forestry, Fishing, and Private Household Services workers are excluded. White-Collar includes professional, managerial, sales, and clerical; Blue-Collar includes craft, operative, non-farm laborers, transport equipment movers, and other services. LnWAGE* = ln(hourly earnings). Observations with hourly earnings < $1 or > $250 are excluded.

Table 2. Summary Statistics: Newly Hired White-Collar Workers.
(Standard Errors in Parentheses)

Variable	*All*	*Firms <25*	*Firms 25–99*	*Firms 100–999*	*Firms 1,000+*	*Obs.*
Age-at-Hire	31.91	33.01	32.32	31.43	30.81	3,535
	(0.162)	(0.304)	(0.429)	(0.380)	(0.299)	
Distribution of Age-at-Hire						
Age [20,30]	0.556	0.521	0.565	0.550	0.586	
	(0.008)	(0.015)	(0.021)	(0.019)	(0.015)	
Age (30,40]	0.248	0.248	0.224	0.278	0.258	
	(0.007)	(0.013)	(0.018)	(0.016)	(0.013)	
Age (40,50]	0.117	0.132	0.115	0.115	0.106	
	(0.005)	(0.010)	(0.014)	(0.012)	(0.009)	
Age (50–65]	0.079	0.098	0.096	0.057	0.051	
	(0.004)	(0.008)	(0.011)	(0.010)	(0.008)	
Education	13.75	13.51	13.82	14.19	13.98	3,534
	(0.034)	(0.065)	(0.091)	(0.081)	(0.064)	
Female	0.630	0.665	0.640	0.619	0.595	3,535
	(0.008)	(0.014)	(0.020)	(0.018)	(0.014)	
Union	0.060	0.014	0.037	0.072	0.091	3,375
	(0.004)	(0.007)	(0.010)	(0.009)	(0.007)	
Full-Time	0.773	0.726	0.790	0.800	0.801	3,535
	(0.007)	(0.012)	(0.018)	(0.016)	(0.012)	
LNWAGE*	1.932	1.834	1.904	2.037	2.005	3,284
	(0.008)	(0.016)	(0.022)	(0.019)	(0.015)	

Source: May 1979, May 1983, May 1988, and April 1993 CPS.
Notes: See Table 1. "New hire" means tenure less than one year.

grown substantially within one year. Using the new hires sample can also help us avoid the first problem.

Table 2 provides summary statistics for the white-collar new hires (with tenure less than one year) using all 4 years of data. A new hire is, on average, 2.2 years younger in the largest firms than in the smallest firms. This is a smaller difference than we find when we use workers with all levels of tenure, as in Table 1, but it is still statistically significantly different from zero at conventional levels.

The difference in mean age-at-hire may not be completely informative about the difference in the entire age distribution. For example, one would like to know whether the difference mainly reflects the fractions of youth, prime aged workers, or older workers. Proportions of workers hired in their 20s, 30s, 40s, or 50s+ are also reported for each firm size. The largest firms have 6.5 percentage points more workers hired in their 20s than do the smallest firms, and 2.6 and 4.7 percentage points fewer workers hired in their 40s and 50s or older, respectively (the mean value is 55.6%, 11.7%, and 7.9% for workers hired in their 20s, 40s, and 50s+, respectively). All differences are statistically significantly different from zero.

Table 2 also suggests that new hires differ in some other characteristics across firm size. For example, they are better educated, less likely to be female, more likely to be unionized, and more likely to work full-time in large firms than in small firms. Since workers hired at different ages may systematically differ in those characteristics, it is important to see whether this age-

Table 3. Demographics-Adjusted Difference in Age-at-Hire across Firms: Newly Hired White-Collar Workers. (Dependent Variable: Age-at-Hire; Standard Errors in Parentheses)

Description	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Firm 25–99	–0.81	–0.77	–0.78	–0.65	–0.66	–0.69	–0.67
	(0.52)	(0.53)	(0.52)	(0.54)	(0.54)	(0.54)	(0.54)
Firm 100–999	–1.67	–1.60	–1.61	–1.40	–1.41	–1.69	–1.60
	(0.49)	(0.49)	(0.49)	(0.50)	(0.50)	(0.50)	(0.50)
Firm 1000+	–2.32	–2.25	–2.29	–2.08	–2.09	–2.05	–1.89
	(0.43)	(0.43)	(0.43)	(0.44)	(0.44)	(0.45)	(0.45)
Education		–0.14	–0.18	–0.19	–0.19	–0.34	–0.35
		(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)
Female			–0.72	–0.58	–0.54	–0.70	–0.49
			(0.36)	(0.37)	(0.37)	(0.39)	(0.40)
Union				–1.38	–1.38	–1.06	–0.96
				(0.78)	(0.78)	(0.79)	(0.79)
Full Time					0.22	–0.15	–0.35
					(0.42)	(0.44)	(0.44)
Industries (11)						Yes	Yes
Occupations (3)							Yes
R-squared	0.015	0.016	0.017	0.018	0.018	0.034	0.042
Obs.	3,535	3,534	3,534	3,374	3,374	3,312	3,312

Source: May 1979, May 1983, May 1988, and April 1993 CPS.

Notes: See Table 1. "Newly Hired" workers have tenure less than one year. Each column is a separate regression. Year fixed effects are included in all regressions. The omitted firm category is firms with fewer than 25 employees. CPS supplement weights are used in the estimation.

at-hire difference holds even for otherwise similar workers.

Using the new hires sample, Table 3 reports the results of regressions of age-at-hire on firm size indicators controlling for workers' demographic characteristics and job characteristics (mainly industry and occupation). Differences in mean age-at-hire across firm size are in column (1). On average, workers hired by the largest firms (those with 1,000 or more employees) are 2.3 years younger than those hired by the smallest firms (those with under 25 employees). Young workers are better educated than older workers, and large firms on average have a better-educated work force; however, controlling for the years of schooling in column (2) barely changes the age differences. Similarly, newly hired female workers or workers in union-covered jobs are relatively younger, but within each group, the age difference still remains (columns 3 and 4). Workers in full-time jobs are similar in age to those in part-time jobs (column 5). Finally, the hire age difference is reduced to about 1.9 years after major industry and occupation are included in columns (6) and (7).

The results above suggest that the pattern of large firms hiring younger workers is a robust empirical regularity. I now turn to the wage structures.

Starting Wage–Age Profiles among New Hires

There are several ways to test the theoretical implication that large firms reward the age or experience of a new hire less than small firms do. Note that the test should be based on the relative *slopes,* not levels, of the starting wage–hiring age pro-

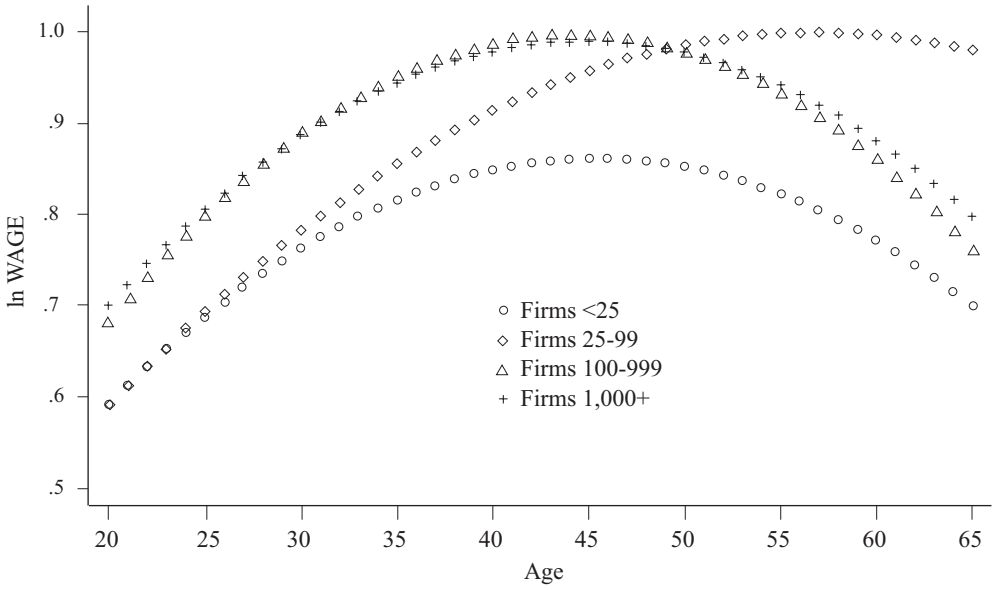

Figure 1. Estimated Starting Wage - Age Profile: White-Collar Workers.

files across firms, because productivity differences across firms were abstracted from the model. First, I use a cross-sectional sample of *newly hired* workers and run the regression

$$\ln\text{WAGE} = \sum_k \gamma_k \cdot \text{SIZE}_k + \sum_k \delta_k \cdot (\text{SIZE}_k \cdot \text{AGE}) + \sum_k \lambda_k \cdot (\text{SIZE}_k \cdot \text{AGE}^2) + X\beta + \varepsilon, \quad (1)$$

where k indexes the firm size groups and X includes the main effect of age, age-squared, other demographic variables (education, gender, race, marital status, tenure,[18] union, full-time status, region, SMSA, major industry, and occupation), and year fixed effects.

Suppose the omitted firm size category is the smallest firms. Then we would expect the slope difference ($\delta_k + 2\lambda_k \text{AGE}$) to be negative. The estimated relative starting wage–hiring age profiles for the four size groups are plotted in Figure 1. (Numerical estimates—not reported here—are available on request.) The two largest-size groups (firms with at least 100 employees) exhibit *flatter* slopes than the medium-size group (firms with 25–99 employees). For instance, the starting wage of a newly hired 35-year-old worker is 16% higher than that of a 25-year-old in the medium-size firm, while the difference is only 12% in the largest firms. Similarly, the difference in starting wage between a newly hired 45-year-old and 35-year-old worker is 10% in the medium-size firm versus only 2% in the largest firms. Finally, the difference between a new hire aged 50 and one aged 45 is 2.75% in the medium-size firm, while it becomes negative (–2.75%) in the largest firms. However, the smallest firms (with under 25 employees) also have a flat profile. Note that the smallest firm groups often have only a few employees and many of them might be family businesses. As a

[18]Despite the narrowly defined new hires (tenure = zero or one year), a tenure variable is included in the regression. As expected, it is not statistically significantly different from zero.

result, their behavior, especially in hiring and compensation decisions, may differ from what is considered in the framework. In addition, the data lack good information on the training incidence and costs for the smallest firms.[19] In the remaining empirical analysis of wage structures, I therefore focus on firms with at least 25 employees.

Since the estimates of the slopes for the two largest firm size groups are similar, for ease of exposition I group them together (labeled "LARGE") and estimate the regression

$$(2)\quad \ln\text{WAGE} = \gamma \cdot \text{LARGE} + \delta \cdot (\text{LARGE} \cdot \text{AGE}) + \lambda \cdot (\text{LARGE} \cdot \text{AGE}^2) + X\beta + \varepsilon,$$

where the omitted category is firms with 25–99 employees. In this case, the coefficients on the interactions of large firm and age and age-squared are jointly significantly different from zero (p-value = 0.0028). The estimated difference in the slope of the profile is indeed negative and becomes significantly bigger after around age 35. (Results are available on request.) For instance, the difference in starting wage between a newly hired 35-year-old and a newly hired 25-year-old is 17% in the smaller firm versus 13% in the larger firm. Similarly, the difference in starting wage between a 45-year-old new hire and a 35-year-old new hire is 11% in the smaller firm versus 4% in the larger firm. Finally, the difference in starting wage between a 50-year-old new hire and a 45-year-old new hire is 3.25% in the smaller firm whereas it becomes negative (–1.75%) in the larger firm.

It is striking to note, from the graph, that newly hired workers aged 50 years or older seem to be paid less in large firms than in small firms, which suggests that large firms dislike hiring new old workers.[20] Of course, the estimation of the profiles has imposed a quadratic functional form and may therefore yield misleading results. To investigate this possibility, I experiment with more flexible specifications. For example, I compute the starting wage–size difference (adjusted for the other demographic variables) by a set of 5-year age intervals. If the starting wage–age profile is flatter in large firms than in small firms, we would expect to see the starting wage differences between large and small firms decrease as workers' ages increase. Specifically, for starting wage, I estimate the regression

$$(3)\quad \ln\text{WAGE} = \sum_t \phi_t \cdot (\text{AGE}_t \cdot \text{LARGE}) + X\beta + \varepsilon,$$

where AGE_t's are seven indicator variables for 5-year age intervals from age 20 to 55 and an eighth indicator for age 55 or above, and X includes AGE_t's (except one) as well as other explanatory variables. We would expect to see $\phi_1 > \phi_2 > \ldots > \phi_8$. Estimates of ϕ_t are reported in Table 4. Among the newly hired workers, those hired between age 20 and age 35 have higher starting wages than their counterparts in small firms (the premium is approximately 10%). The most striking numbers in this table are those showing that this size-wage effect *disappears* for workers over age 35, and even becomes negative for those age 50 or older.[21] This suggests that large firms act strategically in their hiring practices and differentiate between young and old workers in their compensation structures.

Wage-Tenure Profiles

To examine the relative wage-tenure profiles by firm size, I estimate a similar wage regression using the cross-sectional data of workers of all tenure levels,

[19]For example, the BLS SEPT95 data only cover private establishments with 50 or more employees. The data from the Educational Quality of the Work Force—National Employer Survey (EQW-NES) used in Lynch and Black (1995) only cover private establishments with 20 or more employees.

[20]Note that large firms might offer better benefits, which are not captured by the simple wage measure.

[21]The analysis is also carried out by gender. The *shapes* of the starting wage–hiring age profiles across firm size are qualitatively similar for men and women, although the "overtaking" age point is somewhat different.

$$(4)\quad \ln\text{WAGE} = \sum_k \gamma_k \cdot \text{SIZE}_k + \sum_k \delta_k \cdot (\text{SIZE}_k \cdot \text{TENURE}) + \sum_k \lambda_k \cdot (\text{SIZE}_k \cdot \text{TENURE}^2) + X\beta + \varepsilon,$$

where X includes tenure and other demographic variables. We would expect to see steeper tenure profiles in large firms than in small firms, that is, profiles in which the slope difference ($\delta_k + 2\lambda_k \text{TENURE}$) is positive, where $k = 1,2,3$ and the omitted category is the smallest firms (those with under 25 employees).

The estimated relative wage-tenure profiles by firm size are plotted in Figure 2. (Numerical estimates are available on request.) The coefficients δ_k and λ_k are jointly significantly different from zero (p-value = 0.000). Figure 2 shows that the estimated wage-tenure profiles are steepest for the largest firms and flattest for the smallest firms.[22] If we only focus on firms with at least 25 employees, for reasons given above, the slopes of the top three profiles do not appear to be very different, but statistically the joint hypothesis of equality of coefficients on the interaction terms across the three firm sizes is rejected at conventional levels (p-value = 0.001). For instance, a worker with 10 years of tenure is paid 21% more than a new hire in the largest firm, whereas this wage premium is 20% in the medium-size firm (25–99 employees). A worker with 20 years of tenure has a wage 13% higher than that of those with 10 years of tenure in the largest firm, compared to a 6% premium in the medium-sized firm. Overall, the evidence suggests that the wage-tenure profiles in large firms are as steep as, if not steeper than, those in small firms.[23]

Table 4. Relationship between Starting Wage and Age-at-Hire by Firm Size: Newly Hired White-Collar Workers. (Dependent Variable: Log Hourly Earnings; Standard Errors in Parentheses)

Description	*Difference in Slope of the Wage-Age Profile*
7 Age Dummies	Yes
Large Firm*Age[20,25]	0.122 (0.028)
Large Firm*Age(25,30]	0.081 (0.032)
Large Firm*Age(30,35]	0.114 (0.040)
Large Firm*Age(35,40]	0.041 (0.044)
Large Firm*Age(40,45]	0.085 (0.055)
Large Firm*Age(45,50]	0.007 (0.064)
Large Firm*Age(50,55]	–0.014 (0.068)
Large Firm*Age>55	–0.159 (0.083)
R-Squared	0.436
Obs.	3,730

Source: May 1979, May 1983, May 1988, and April 1993 CPS.

Notes: "Newly Hired" workers have tenure less than or equal to one year. The regression includes controls for year fixed effects, tenure, education, dummies for region (3), SMSA (2), married, female, nonwhite, full-time, union, industries (11), and occupation (3). "Large Firm" is an indicator variable for firms with 100 or more employees. The omitted category is firms with 25–99 employees. CPS supplement weights are used in the estimation.

Training Investments and Industries

I have empirically established the relationship between training investments and

[22] I have also estimated a less restrictive specification with quartic terms in tenure, and the qualitative results are similar: there is some weak evidence that the wage-tenure profiles are steeper in large firms than in smaller firms. The different models were also separately estimated by gender and the main results remain, although the slope differences across firm size are somewhat larger for women than for men (results available on request).

[23] One should be cautious in interpreting the tenure coefficient in the wage regression. The issue of whether it represents the "returns" to tenure has

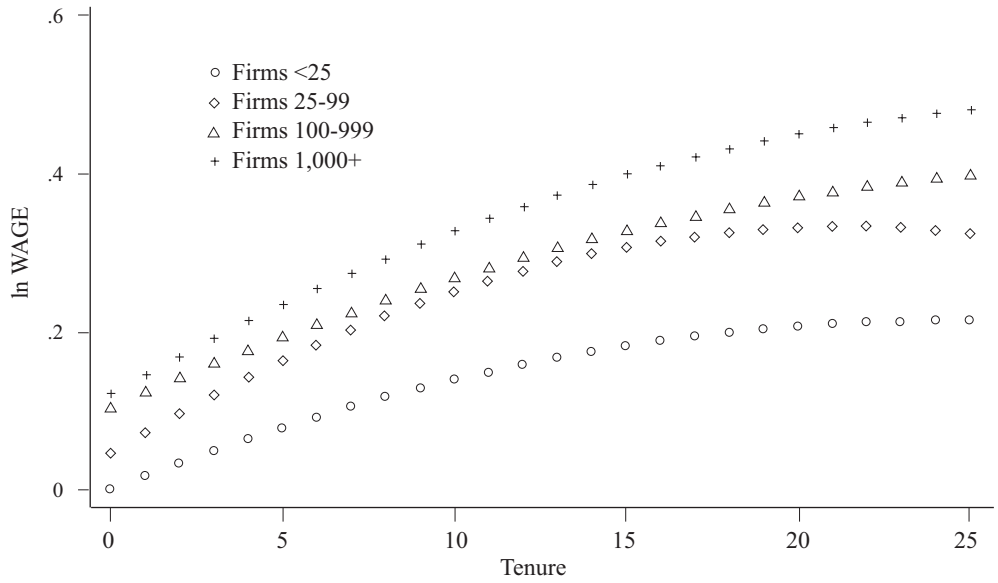

Figure 2. Estimated Wage - Tenure Profile: White-Collar Workers.

new hires' age by firm size. Specifically, large firms invest more in human capital, and hire younger workers, than smaller firms do. One natural question follows: if training investments vary by industry, will we observe high-training industries also hiring younger workers?

Using the CPS data, I calculate the (tenure-adjusted) industry deviations of mean age-at-hire from the employment-weighted overall average and find sizable variations in age-at-hire by industry (detailed results available on request).[24] For example, at hiring, white-collar workers in the transportation, utility, and communication industry (TUC) were about 1.5 years younger than average, while workers in the trade and construction sector were about 0.5 to 0.8 years older than average.[25] More interestingly, in the SEPT95 data, the selected training expenditures (direct and indirect costs) per employee are highest in the TUC sector and lowest in the trade and construction sector.

been subject to intense debate in the literature (see, among others, Topel 1986, 1991; Altonji and Shakotko 1987; Abraham and Farber 1987). Cross-sectional data often, but not always, reveal steeper tenure profiles for larger employers in the United States. For example, Brown and Medoff (1989), using CPS May 1979 data, found that the estimated coefficients of the interaction terms were sometimes nontrivial, although as often as not they were statistically insignificant, while Black, Noel, and Wang (1999), using 1993 CPS data, found steeper tenure profiles in larger employers. Pearce (1990) found that wage-tenure profiles were steeper in larger establishments for the non-unionized plants, but flatter for unionized ones. Panel data results are more mixed.

[24]The industry analysis is at the one digit level, and I use all workers instead of new hires to increase sample size.

[25]I also calculate the industry deviation of the fractions of white-collar workers hired at different age ranges from their industry means. Again, the TUC sector possesses a higher fraction of white-collar workers who were hired in their 20s than the industry average, and a lower fraction of those hired at an older age than the industry average. In contrast, the retail sector possesses a lower fraction of workers who were hired in their 20s or 30s and a higher fraction of those hired over 50 than the overall industry average.

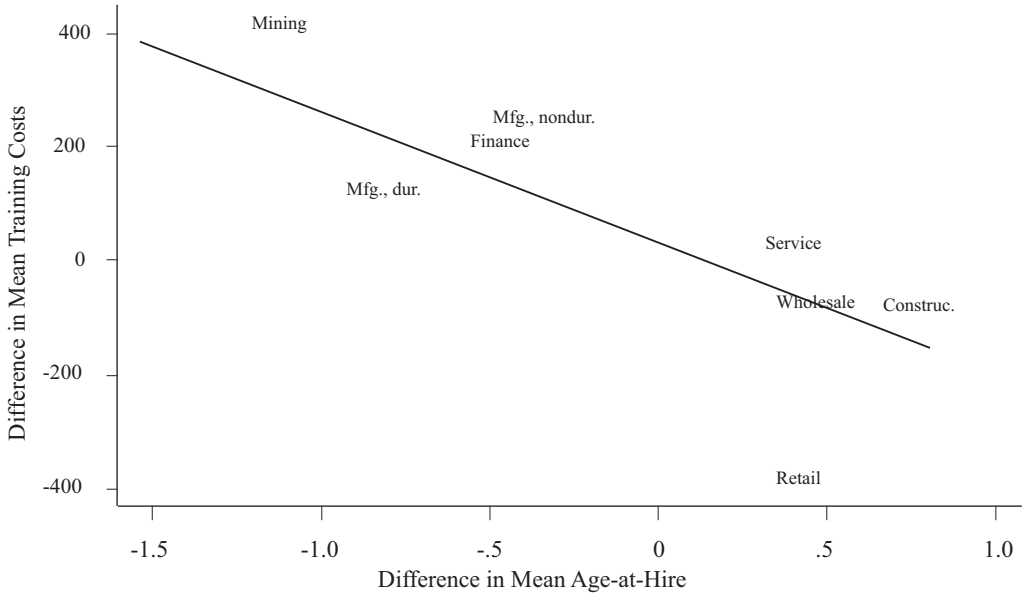

Figure 3. Training Costs and Mean Age-at-Hire by Major Industry.

To provide a closer look at the relationship between the training investments and age-at-hire, Figure 3 plots the industry deviation of selected training investment costs per employee from the overall average against the industry deviation of mean age-at-hire from the overall average (along with the OLS regression line). There appears to be a negative relationship between the training costs and age-at-hire, that is, the high training investment industries are also those hiring younger workers.

Discussion of Other Theories

One of the most interesting new findings in this paper is that large firms hire younger workers, and I propose the firm-specific human capital investment theory as an explanation. In this section, I discuss some alternative theories. As will become clear, although each of them can account for large firms' propensity to hire younger workers, not all of them can also explain the accompanying compensation structures established empirically in the previous section.

Delayed payment theory. In fact, any explanation based on some kind of fixed employment costs can generate the prediction that firms prefer to hire young workers. Hutchens (1986) argued that the fixed costs associated with implementation of a delayed payment contract (Lazear 1979, 1981) can also imply a firm's need for a long-term employment relationship and its propensity to hire younger workers. One immediate extension of that theory could be that if large firms are more likely than smaller firms to use delayed payment schedules (say, because of greater monitoring difficulties), then they will also prefer to hire younger workers.[26] However, the delayed

[26]Note that without a reliable measure of labor productivity, it is impossible to distinguish between the delayed payment model and the firm-specific human capital investment model, since with some modification, these two models can generate similar predictions, as Hutchens (1986) also recognized. The findings from the Hong Kong employer survey reported in Heywood, Ho, and Wei (1999) are also consistent with both theories.

payment schedule theory alone cannot explain why large firms pay more even at the beginning of an employment relationship. If anything, we would expect to see lower starting wages in large firms, since they need to back-load compensation.

General training. If large firms are better able than small firms to provide general training, and younger workers need more training than older workers, then sorting can occur in equilibrium such that younger workers are hired into large firms and older ones are hired into small firms. This model is consistent with the hiring age pattern, but it cannot explain why large firms actually pay more to the young workers if the training is purely general. In addition, there is evidence that a larger fraction of the human capital investments made by large firms than by smaller firms is firm-specific. For example, Haber et al. (1988) found that the ratio of on-site to off-site training is higher in larger firms. Hill (1988) also found that larger establishments are more likely than smaller ones to provide training that is useful at that firm (Brown, Hamilton, and Medoff 1990:55).

Firm-specific social capital. Although the length of the working horizon is a natural difference between young and old workers, there are other factors associated with youth that firms might value. For example, firm-specific "social capital" might provide another account of the pattern presented in this paper.[27] If large firms face greater monitoring costs than small firms, then they will have a greater need to seek employees they trust to act in the firm's interest. One way to obtain trustworthy workers is to hire workers when they are young, socialize them into the firm's culture, and use large initial wages and seniority-based promotions and pensions to hold them. If we assume that young workers are easier to "cultivate" than older workers, this interpretation can explain large firms' propensity to hire younger workers.

It might be possible to test the firm-specific human capital theory versus the social capital theory. While human capital differs across occupations (for example, higher skills and more training are required in white-collar than in blue-collar jobs), there seems to be no obvious reason to expect social capital to differ in this dimension—establishing trust among workers is probably just as important in blue-collar as in white-collar jobs. However, as discussed earlier, the average age-at-hire decreases monotonically with firm size for white-collar but not for blue-collar jobs. Moreover, the pattern of flatter starting wage–age profiles for new hires in large firms than in smaller firms is found for white-collar workers but not for blue-collar workers (see Hu 2000). To the extent that the social capital might not differ much between white- and blue-collar jobs, but we observe different firm size variations in the hiring patterns and wage structures between the two occupation groups, the firm-specific human capital theory seems to be more plausible.

Technology and learning. Recently, there have been reports in the popular press that many workers (especially white-collar workers) lose jobs to younger ones as they reach age 40 (for example, Munk 1999). One reason, as argued, is that young workers are more willing or more able than older workers to learn up-to-date technology. If labor productivity in large firms is more sensitive to workers' ability to learn new skills (because of greater technology use, say), then those firms will prefer to hire young workers. Note that this possibility does not in any way contradict the firm-specific investment theory; in fact, the two are complementary. If large firms are more technology-sensitive than smaller firms, then they might need to invest more in workers,[28] and therefore hire younger workers.[29]

[27]I thank an anonymous referee for suggesting this.

[28]For example, Lynch and Black (1995) found that establishments that had an R&D (Research & Development) center were more likely to provide training.

[29]It is often hard to directly test the relationship between firms' technology sensitivity and their hiring age patterns, since such information is seldom avail-

Conclusion

I have examined the differences between large and small firms in hiring behaviors and compensation structures, and have proposed the firm-specific human capital investment theory as an explanation. If large firms invest more in firm-specific human capital than small firms do, then they will prefer to hire younger workers. This is because the investments are fixed costs and younger workers' longer working horizons give the firms more time to recoup their investments. Using data from the Benefits Supplement to the CPS, I have found that large firms indeed appear to hire younger workers than smaller firms do, especially for white-collar occupations, for which training investments are large and more likely to vary by firm size.

I then investigated the differences in the accompanying wage structures between large and small firms. If young workers are more valuable to large firms than to small firms, large firms will offer them higher starting wages (relative to starting wages they offer older workers) than small firms to attract them, and after hiring, they will continue to pay high wages to retain the trained workers. Therefore, overall, workers in large firms will be hired younger, will be paid more *throughout* the employment relationship, and will stay longer. Using the same data, I find that the starting wage–age profiles of the *new hires* are flatter in large firms (with 100 or more employees) than in small firms (with 25–99 employees), which seems to suggest that large firms act strategically in their hiring practices and compensation structures to attract young workers. More interestingly, the firm size–wage premium between those two size groups disappears for the newly hired white-collar workers age 35 or older. The empirical evidence also suggests that large firms offer wage-tenure profiles as steep as those offered by small firms. These findings are broadly consistent with the firm-specific human capital theory. Finally, I also present some limited evidence that industries that invest more in training hire younger workers.

As a final remark, although I have not offered a direct test of the competing explanations for the much-studied size-wage gap, the new empirical findings presented in this paper regarding the differences between large and small firms in their hiring practices and wage structures should help shed new light on this puzzle. To the extent that firms often make joint decisions about training, hiring, and wage structures, it seems important for future research to devote more attention to new hires and learn about the differences along the several dimensions of the employment relationship. Toward this end, exploring the rich information in the employer-employee matched data[30] seems a promising research avenue.

able at the firm level. In an earlier study (Hu 2000), I tested the relationship at the industry level by combining COMPUSTAT information on R&D expenditures, which are often used as a proxy for technology sensitivity, with CPS information on hiring age. I found that R&D expenditures varied greatly across industries and there was a negative relationship between R&D and age-at-hire: industries that spent more on R&D were also those hiring younger workers. Although these findings are based on a far from perfect test, they suggest that firms or industries that emphasize more technology development hire younger workers. Again, this does not contradict the firm-specific human capital investment theory, since technology intensities and the need to train workers are complementary.

[30]For studies using this type of data, see the survey paper by Abowd and Kramarz (1999), and references therein.

Appendix
Training Investment by Firm Size
BLS 1995 Survey of Employer-Provided Training (SEPT1995)

	Firm Size		
Description	*50–99*	*100–499*	*500+*
Percent of Employees Who Have Received Training from Current Employer[a]			
Formal Training	78.9	84.7	87.7
Informal Training	97.1	95.0	96.1
Cost of Formal Training per Employee (in Dollars)			
Direct Costs[b]	159	248	466
Wage and Salary Costs[c]	110	215	308

[a]Employee result. The universe is employees who work at a private establishment with 50 or more employees.

[b]Employer result. These figures, which are for the year 1994, are selected expenditures per employee, including wages and salaries of in-house trainers, payment to outside trainers, tuition reimbursement, contribution to outside training funds, and subsidies for training received from outside sources.

[c]Employee result. These figures, which are for May–October 1995, are indirect costs, measured in the compensation employees received during training periods.

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