CAHIER 9508

INDUSTRY-SPECIFIC CAPITAL AND THE WAGE PROFILE : EVIDENCE FROM THE NLSY AND THE PSID

Daniel PARENT[1]

[1] Département de sciences économiques and Centre de recherche et développement en économique (C.R.D.E.), Université de Montréal.

February 1995

C.P. 6128, succursale Centre-ville
Montréal (Québec) H3C 3J7

Télécopieur (FAX): (514) 343-5831
Courrier électronique (E-Mail): econo@tornade.ERE.Umontreal.CA

RÉSUMÉ

Avec les données du NLSY ainsi que celles du «Panel Study of Income Dynamics» (PSID), on cherche à déterminer s'il y a un rendement positif net lié à l'ancienneté dans la firme. Topel (1991) a montré avec un échantillon du PSID l'existence d'un rendement substantiel (25% en 10 ans). Toutefois, du moment que l'on inclut l'expérience dans l'industrie courante dans l'équation de salaire (en plus de l'ancienneté dans la firme ainsi que l'expérience totale de travail), l'effet d'ancienneté disparaît presque complètement, que l'on estime par simples moindres carrés généralisés ou par la méthode des variables instrumentales (IV-GLS), et ce, avec les deux échantillons différents. On note également que ce résultat est robuste au degré d'agrégation des classes d'industries.

Mots clés: effet d'ancienneté, capital humain spécifique à l'industrie.

ABSTRACT

Using data from the NLSY (1979-1991) and from the Panel Study of Income Dynamics (PSID, 1981-1987), we seek to determine whether there is any net positive return to tenure with the current employer once we control for industry-specific capital. Using data from the PSID, Topel (1991) concluded that 10 years of seniority with an employer translated into a net return of about 25%. However, once we include total experience in the industry as an additional explanatory variable, the return to seniority vanishes almost completely when we use either OLS, GLS or IV-GLS estimation methods, although this conclusion varies somewhat according to the occupation, some occupation classes showing a negative net return to tenure and others showing a positive net return. Note also that this result holds whether the analysis is carried out at the 1-digit, 2-digit or 3-digit level. Therefore, it seems that what matters most for the wage profile in terms of human capital is not so much firm-specificity but industry-specificity.

Key words: tenure effect, industry-specific capital.

I. Introduction

The extent to which wages rise with years of seniority with the same employer has been the subject of some controversy over the last few years (e.g Topel (1991); Altonji and Shakotko (1987); Abraham and Farber (1987), Abowd, Kramarz and Margolis (1994)). Much of the debate surrounding this issue has focused on the appropriate econometric methods to be used to handle the issue of the endogeneity of the tenure variable. However, virtually no attention has been paid to the question of whether it is appropriate to decompose a worker's total labor market experience into only two components, tenure with the current employer and total prior experience (or total experience including tenure if one wants to obtain the latter's net effect). With data from the National Longitudinal Survey of Youth (NLSY) and from the Panel Study of Income Dynamics (PSID), it is shown that simply by adding total experience in the current industry as an additional explanatory variable, the net tenure effect vanishes almost completely. This suggests that past studies (most notably Topel (1991)) have overlooked an important factor in analyzing the effect of tenure on wages. It is worth noting that this result holds when the analysis is carried out either at the one-digit, two-digit, or three-digit level. Therefore, it seems that what matters most for the wage profile in terms of human capital is not so much firm-specificity but industry-specificity.[1]

These results lead to the following basic conclusion: for these two samples of workers, the wage formation process seems to be very competitive with no solid evidence of rent sharing over the return on firm-specific capital. Or, put in the language of bargaining theory, there is little evidence that the workers represented in these two samples are paid much in excess of their outside option. [2]

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[1] See also Neal (1993) for a different approach to assessing the degree of industry-specificity.

[2] For a theoretical model that describes the wage (price) formation process in the presence of renegotiation and relation-specific investments, see MacLeod and Malcomson (1993a,b). Under certain conditions and when proper allowance is made for the possibility of contract renegotiation, they show that employers need not offer their workers above market-clearing wages.

II. The Data

The National Longitudinal Survey of Youth data set surveyed 12,686 young males and females who were between the age of 14 and 21 in 1979[3]. It contains detailed employment histories of the respondents thereby permitting the construction of relatively error-free variables for tenure as well as for the total experience accumulated since the beginning of one's full time transition to the labor market. At the time this project was started, data were available from 1979 to 1991.

The people who were considered as having entered the labor market on a full-time basis were (i) those whose primary activity was either working full-time, on a temporary lay-off or looking actively for a job, (ii) those who did not return to school on a full-time basis within six years[4] and (iii) those who had worked at least half the year since the last interview and who were working at least 20 hours per week. Individuals excluded from the sample are those younger than 18, those that had been in the military at any time, the self-employed, the ones whose jobs were part of a government program and the ones working without pay, those who were in the farming business and also all public sector employees. We are then left with 29,020 observations. Some summary statistics of the sample are provided in table 1.

Turning now to the Panel Study of Income Dynamics (PSID), the sample consists of heads of households aged 18 to 64 with positive earnings for the period spanning the

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[3] The response rate was at 71% in 1991.

[4] The choice of six years as a cutoff point is arbitrary, and hence debatable. The idea is to exclude those that make "quasi-permanent" transitions and who might be considering returning to school a few years down the road. It seems reasonable to assume that few people would enter the labor market while planning to leave it in six years or more to go back to school. The same could not be said if we were considering a one to three year (say) horizon. In any event, the results were left unchanged if all school returners were excluded.

years 1981-1987.[5] The question of whether people have entered the labor market on a full-time basis is obviously less of a concern for this sample of older workers. Summary statistics are provided in table 2.

III. Results

III.1 Basic Model.

Consider the following log wage equation:

$$\ln w_{ijkt} = \beta_1 T_{ijt} + \beta_2 Exp_{it} + \beta_3 Expind_{ikt} + \alpha_i + \theta_{ij} + \gamma_{ik} + \epsilon_{ijt} \qquad (1)$$

where w_{ijkt} represents the real hourly wage of person i in job j in industry k at time t, T is tenure, Exp is total labor market experience and Expind is total experience in the current industry. Specifically, the variable experience in the industry gives the consecutive number of years one has been in the same industry excluding tenure with the current employer. For example, if a worker leaves her first employer to take another job in the same industry, she adds experience in that industry, whereas if she takes another job in a different industry, her seniority in the industry is accordingly reset to zero. An implicit assumption is that the worker stays in the same industry throughout her employment relationship with a particular employer (the data show that this is not always the case: there are workers who change industry while not changing employers). Still, despite its shortcomings, this variable should give a fairly good idea of the industry effects embedded in the tenure variable. All other covariates, including squared terms for tenure, total experience and industry experience, are ignored for ease of presentation. As in previous studies, unobserved heterogeneity can be decomposed into an individual effect (α_i) and a job-match effect (θ_{ij}). The person-specific effect can be seen as representing unmeasured aspects of each individual's earning ability while the job-match component

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[5] This PSID extract was kindly supplied by Robert Valetta who used it in his paper with David Brownstone (Brownstone and Valetta (1993)) on the modeling of measurement error bias in wage equations.

represents the unknown (to the econometrician) quality of the employment relationship stemming from search activity, for example. Both of these effects are assumed to be time-invariant. Another unobserved heterogeneity component, γ_{ik}, which serves the same purpose as the job-match component, is added to represent the unobserved quality of the match between the individual and the industry in which he works.

As emphasized in the literature, the problem in estimating equation (1) with ordinary least-squares is that the unobserved components are likely to be correlated with tenure, total labor market experience and also, in our case, total experience in the industry. Those with high α's may have enjoyed careers that were interrupted less frequently by unemployment spells, while better matches (high θ's and high γ's) are likely to be formed if you have more experience due to human capital and search effects. Also, tenure and total experience in the current industry are likely to be correlated with their corresponding match quality components. Dropping for the moment the assumption of time-invariant job-match and industry-match components, let's suppose that we can write them as

$$\theta_{ijt} = \psi_1 T_{ijt} + \psi_2 Exp_{it} + \omega_{ijt} \qquad (2)$$
$$\gamma_{ikt} = \varphi_2 Exp_{it} + \varphi_3 Expind_{ikt} + \eta_{ikt}$$

where ω_{ijt} and η_{ikt} are assumed to be orthogonal to the regressors.[6] The discussion above suggests that ψ_2 and φ_2 are positive. In the context of maximizing behavior on the part of a worker who faces a wage distribution, Topel(1991) argues that ψ_1 is negative once we control for experience, assuming there is a tenure effect. If there is no tenure effect, then ψ_1 equals zero. Presumably, the same sort of considerations apply to φ_3. That is, provided that we control for total labor market experience, the quality of the match in the industry should be negatively correlated with the number of years one has been in the same industry. Substituting equation (2) into equation (1) we get

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[6] For simplicity, I also assume that total experience in the industry is not correlated with the job-match component while tenure is not correlated with the unobserved quality of the match in the industry. One could argue that more experience in the industry may help you find a better job-match because of superior information in comparison to a worker who has never worked in the industry.

$$\ln w_{ijkt} = (\beta_1+\psi_1)\,Ten_{ijt} + (\beta_2+\psi_2+\varphi_2)\,Exp_{it}$$
$$+ (\beta_3+\varphi_3)\,Expind_{ikt} + \alpha_i + \omega_{ijt} + \eta_{ikt} + \epsilon_{ijt} \qquad (3)$$

We see from equation (3) that although we are interested in the β's, using ordinary least-squares will produce estimates of composite effects and the regressors would still be correlated with α. To provide some correction for these problems, I use the instrumental variable (IV) methodology proposed by Altonji and Shakotko (1987)[7]. Tenure is instrumented with its deviations from job-match means whereas experience is instrumented with its deviations from individual means. In the same spirit, total experience in the industry is instrumented with its deviations from industry-match means. The instruments for tenure and experience in the industry are, by construction, uncorrelated with their respective match quality components, while the instrument for experience is, also by construction, uncorrelated with the individual component. First differences (as in Topel ('91)) were not used to obtain a consistent estimate of the sum of the tenure and experience coefficients, because this would enhance any measurement errors present in the data as compared with using deviations from means. This is further justified by Topel's observation that much of the discrepancy between his results and those of Altonji and Shakotko stemmed from measurement errors pertaining to the tenure variable.

Finally, since the same individuals are followed over time, residuals will be serially correlated due to the presence of a fixed individual effect. To provide correction for this problem, all regressions are done using generalized least-squares under the assumption that the error term contains an individual-specific component.

III.2 Earnings Equation Estimates.

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[7] See also Finnie (1993) for an extension of the method of Altonji and Shakotko to the experience variable.

l now turn to the question of disentangling industry effects from purely firm-specific effects.[8] Note that the analysis is carried out at the 1-digit, 2-digit, and 3-digit levels. If the tenure effect is entirely firm-specific, then it should not matter whether you change industry or not: the tenure coefficient should not budge at all. On the other hand, if a portion of the tenure effect reflects the specificity of the human capital acquired on the current job relative to the industry in which the firm operates, then adding such a control should decrease the coefficient on tenure. Using the NLSY data, the results shown in tables 3 and 4 seem to validate the latter explanation: in the GLS specification of the 1-digit case (column (4) in table 3), over 50% of the effect of tenure is accounted for by industry effects. The tenure effect further decreases in the 2-digit case and disappears completely in the 3-digit case (columns (3) and (2), respectively). Once the instrumental variable specification is adopted (see table 4), there is no evidence of a substantial and statistically significant positive tenure effect, even at the 1-digit level. The entire effect is picked up by the variable representing experience in the industry. Note that total experience is only slightly affected by the inclusion of the new variable.

Table 5 provides a breakdown by occupational category. It could be that for managers or professionals, firm-specific investments are more important and that firms would prefer to pay these highly skilled individuals above their outside option rather than to face the prospect of losing them, especially if these workers are in short supply. The results indicate that there is a return to tenure for the category consisting of professionals, technical workers, managers and administrators. In the GLS specification, even after adding experience in the industry, the tenure effect is substantial and significant. In fact, in the IV-GLS specification, the effect is larger after adding the control for industry effects. For the next three categories of workers, the results are similar to those obtained for the total sample: the industry effect is large and significant while the firm effect is not. Again, it is interesting to note that total experience is not markedly affected by the added variable. Total experience and experience in the industry really do seem to provide

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[8] All results are obtained using the weighted samples.

complementary explanatory power to the wage formation process.

III.3 Comparison with Data from the PSID

Given that the NLSY is composed of young persons making their transition to the labor market (the oldest individuals in 1991 were 33 years old), it could very well be that the results above are peculiar to that data set. To be more precise, assuming that skills which are truly firm-specific are associated more with older workers than their younger counterparts, then the results above may not hold with a sample of workers who have more mature careers.[9] Therefore, to check whether results are robust across data sets, we have estimated the same type of equation with data from the Panel Study of Income Dynamics (PSID). The sample consists of heads of households aged 18 to 64 with positive earnings for the years spanning the period 1981 to 1987. Results are shown in tables 6 and 7. As shown in table 6, the impact of including the additional explanatory variable is qualitatively the same as in the case of the NLSY. With GLS and IV-GLS, adding the control for industry-specific capital has the effect of reducing the tenure coefficient to close to zero. Results by occupational categories are shown in table 8. Contrary to the results obtained with the NLSY, there is no evidence of a return to tenure for professionnals, managers and administrators. For clerical and unskilled workers, there is even evidence of a negative net return to firm seniority. However, for service workers, the estimated return to tenure is sizeable and significant, which is not the case for the NLSY sample. Interestingly, a common denominator of the results with the PSID is that the total experience coefficients are much smaller in comparison with those estimated with the NLSY. Thus, it appears that as workers' careers evolve, the skills they acquire are more narrowly defined. Of course, as workers gain experience in the labor market, the

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[9] If we admit that investment in firm-specific skills is complementary to the quality of the match, then it follows that older workers who have had more time to sample the job offer distribution would be better candidates for such investments. On the question of complementarity between match quality and firm-specific capital, see Jovanovic (1979).

search process leads them to more satisfactory matches. Presumably then, the opportunities for investment in more specific skills are enhanced in these "better" jobs.

IV. Conclusion

With data from the NLSY, it has been shown that by controlling for workers who change industry when they change jobs, the tenure effect is reduced by over 50% at the 1-digit level if generalized least-squares are used, while it disappears completely at the 3-digit level, whether it be with GLS or with the instrumental variable methodology borrowed from Altonji and Shakotko (1987). These results generally hold when I subdivide the sample by occupational categories, although there is some evidence of a tenure effect for professionals, technical workers and managers. Also, by using data from the PSID, I have shown that these results are robust across data sets and are not peculiar to the young NLSY workers making their full-time transition to the labor market. The basic conclusion to be drawn from these results is that the wage formation process seems to be very competitive for most of the workers in these two data sets.

Having established that the average tenure slope is close to zero, an interesting avenue for future research would be determine whether there is substantial variance in the slopes. Results by occupational categories suggest that there is some variability in the estimated tenure slopes. However, all research up to now has used the assumption of fixed parameters. A more refined analysis would call upon the use of a random coefficient model to study the covariance structure of a log-earnings equation with proper allowance made for the randomness in the tenure and experience profiles.[10] Then we could determine with more confidence whether there is evidence of workers receiving wages above their outside option.

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[10] See Hause (1980) for a study linking the covariance of earnings to the theory of human capital.

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Table 1

MEAN SAMPLE CHARACTERISTICS (Weighted)-NLSY

Real Hourly Wage ($1979)			
Hours Worked			5.75
Tenure			41.7
Experience			2.44
Years in School			5.82
Percentage Nonwhite			12.44
Percentage Married			12.6
Percentage Female			44.7
Age			45.4
Number of Observations			25.1
Number of Individuals			29,020
Number of Jobs			5,649
Number of Job Changes Involving:			13,590

	1-Digit	2-Digit	3-Digit
a) A Change of Industry	5,085	5,613	6,552
b) No Change of Industry	2,818	2,290	1,351

TABLE 2

MEAN SAMPLE CHARACTERISTICS-PSID

Real Hourly Wage ($1979)			
Hours Worked			8.39
Tenure			40.0
Experience			9.4
Years in School			21.8
Percentage Nonwhite			12.8
Percentage Married			10.3
Percentage Female			66.9
Age			18.6
Number of Observations			34.6
Number of Individuals			15,480
Number of Jobs			2,750
Number of Job Changes Involving:			4,885

	1-Digit	2-Digit	3-Digit
a) A Change of Industry	1,033	1,143	1.337
b) No Change of Industry	1,071	961	767

TABLE 3

EARNINGS FUNCTIONS ESTIMATES-NLSY: INDUSTRY VS TENURE EFFECT
(Dependent Variable: Log of Real Hourly Labor Income ($1979))

Independent Variable	(1) (GLS)	(2) (GLS)	(3) (GLS)	(4) (GLS)
Tenure	0.0436 (0.0029)	0.0013 (0.0064)	0.0121 (0.0049)	0.0173 (0.0044)
Tenure Squared	-0.0030 (0.0003)	0.0001 (0.0007)	-0.0007 (0.0005)	-0.0011 (0.0005)
Experience in Current Industry(3-digit)	-	0.0480 (0.0064)	-	-
Experience in Industry Squared(3-digit)	-	-0.0034 (0.0006)	-	-
Experience in Current Industry(2-digit)	-	-	0.0403 (0.0049)	-
Experience in Industry Squared(2-digit)	-	-	-0.0027 (0.0005)	-
Experience in Current Industry(1-digit)	-	-	-	0.0364 (0.0045)
Experience in Industry Squared(1-digit)	-	-	-	-0.0025 (0.0004)
Total Experience	0.0779 (0.0044)	0.0720 (0.0045)	0.0695 (0.0045)	0.0683 (0.0045)
Total Experience Squared	-0.0020 (0.0003)	-0.0018 (0.0003)	-0.0017 (0.0003)	-0.0016 (0.0003)
Indust. Dummies	YES	YES	YES	YES
Occup. Dummies	YES	YES	YES	⁺YES
R-Squared	0.8001	0.8018	0.8015	0.8014

Notes-Other covariates include education dummies, race, sex,
regional, union coverage, marital status, occupation,
industry and year dummies. Standard errors are shown in
parentheses (rounded to 0.0001 when smaller). Sample size is
29,020.

TABLE 4

EARNINGS FUNCTIONS ESTIMATES-NLSY: INDUSTRY VS TENURE EFFECT
(Dependent Variable: Log of Real Hourly Labor Income ($1979))

Independent Variable	(1) (IV-GLS)	(2) (IV-GLS)	(3) (IV-GLS)	(4) (IV-GLS)
Tenure	0.220 (0.0041)	-0.0093 (0.0091)	-0.0012 (0.0069)	0.0028 (0.0062)
Tenure Squared	-0.0020 (0.0003)	0.0004 (0.0008)	-0.0002 (0.0006)	-0.0004 (0.0006)
Experience in Current Industry(3-digit)	-	0.0354 (0.0090)	-	-
Experience in Industry Squared(3-digit)	-	-0.0026 (0.0008)	-	-
Experience in Current Industry(2-digit)	-	-	0.0295 (0.0068)	-
Experience in Industry Squared(2-digit)	-	-	-0.0021 (0.0006)	-
Experience in Current Industry(1-digit)	-	-	-	0.0266 (0.0062)
Experience in Industry Squared(1-digit)	-	-	-	-0.0020 (0.0005)
Total Experience	0.0955 (0.0049)	0.0914 (0.0050)	0.0894 (0.0051)	0.0883 (0.0052)
Total Experience Squared	-0.0025 (0.0003)	-0.0023 (0.0003)	-0.0022 (0.0003)	-0.0021 (0.0003)
Indust. Dummies	YES	YES	YES	YES
Occup. Dummies	YES	YES	YES	YES
R-Squared	0.7945	0.7936	0.7949	0.7949

Notes-Unshown covariates are the same as those in table 3.
Standard errors in parentheses. Sample size is 29,020.

TABLE 5

INDUSTRY EFFECT (1-digit) VS TENURE EFFECT BY OCCUPATIONS-NLSY
(Dependent Variable: log of Real Hourly Wages ($1979))

PROFESSIONALS, TECHNICAL WORKERS, MANAGERS AND ADMINISTRATORS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0264 (0.0065)	0.0219 (0.0082)	0.0159 (0.0089)	0.0291 (0.0114)
Tenure Squared	-0.0028 (0.0006)	-0.0030 (0.0007)	-0.0019 (0.0009)	-0.0032 (0.0010)
Total Experience	0.0980 (0.0113)	0.1141 (0.0132)	0.0689 (0.0090)	0.1193 (0.0141)
Total Exp. Squared	-0.0024 (0.0006)	-0.0027 (0.0007)	-0.0015 (0.0006)	-0.0028 (0.0007)
Experience in Industry	-	-	0.0155 (0.0094)	-0.0121 (0.0120)
Exp. in Industry Squared	-	-	-0.0013 (0.0009)	0.0005 (0.0010)
R-Squared	0.6794	0.6692	0.6783	0.6698
Number of Observations	6,788			

CLERICAL AND UNSKILLED WORKERS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0312 (0.0066)	0.0159 (0.0090)	0.0067 (0.0103)	-0.0067 (0.0136)
Tenure Squared	-0.0016 (0.0007)	-0.0008 (0.0008)	0.0006 (0.0011)	0.0013 (0.0012)
Total Experience	0.0926 (0.0107)	0.1009 (0.0134)	0.0839 (0.0111)	0.0928 (0.0141)
Total Exp. Squared	-0.0027 (0.0007)	-0.0029 (0.0007)	-0.0021 (0.0007)	-0.0025 (0.0012)
Experience in Industry	-	-	0.0328 (0.0105)	0.0302 (0.0138)
Exp. in Industry Squared	-	-	-0.0028 (0.0010)	-0.0026 (0.0012)
R-Squared	0.6808	0.6619	0.6821	0.6630
Number of Observations	6,470			

TABLE 5-continued

CRAFTSMEN AND KINDRED WORKERS, OPERATIVES AND LABORERS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0430	0.0157	0.0170	-0.0071
	(0.0043)	(0.0059)	(0.0067)	(0.0094)
Tenure Squared	-0.0029	-0.0014	-0.0008	0.0006
	(0.0004)	(0.0005)	(0.0007)	(0.0008)
Total Experience	0.0825	0.1068	0.0741	0.0990
	(0.006)	(0.0080)	(0.0068)	(0.0083)
Total Exp. Squared	-0.0023	-0.0030	-0.0019	-0.0026
	(0.0004)	(0.0004)	(0.0004)	(0.0005)
Experience in Industry	-	-	0.0349	0.0306
			(0.0068)	(0.0092)
Exp. in Industry Squared	-	-	-0.0025	-0.0026
			(0.0007)	(0.0008)
R-Squared	0.7960	0.7840	0.7971	0.7848
Number of Observations	11,779			

SERVICE WORKERS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0420	0.0311	-0.0032	0.0047
	(0.0080)	(0.0115)	(0.0121)	(0.0183)
Tenure Squared	-0.0041	-0.0041	-0.0007	-0.0020
	(0.0008)	(0.0009)	(0.0013)	(0.0017)
Total Experience	0.0502	0.0682	0.0340	0.0606
	(0.0114)	(0.0149)	(0.0116)	(0.0154)
Total Exp. Squared	-0.0001	-0.0001	0.0004	0.0001
	(0.0007)	(0.0008)	(0.0008)	(0.0008)
Experience in Industry	-	-	0.0654	0.0353
			(0.0121)	(0.0177)
Exp. in Industry Squared	-	-	-0.0040	-0.0023
			(0.0012)	(0.0015)
R-Squared	0.6878	0.6767	0.6921	0.6788
Number of Observations	3,969			

Notes-Unshown covariates are the same as those in table 3.
Standard errors in parentheses.

TABLE 6

EARNINGS FUNCTIONS ESTIMATES-PSID: INDUSTRY VS TENURE EFFECT
(Dependent Variable: Log of Real Hourly Labor Income ($1979))

Independent Variable	(1) (GLS)	(2) (GLS)	(3) (GLS)	(4) (GLS)
Tenure	0.0142 (0.0012)	0.0002 (0.0023)	0.0017 (0.0020)	0.0020 (0.0019)
Tenure Squared	-0.0002 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
Experience in Current Industry(3-digit)	-	0.0214 (0.0024)	-	-
Experience in Industry Squared(3-digit)	-	-0.0004 (0.0001)	-	-
Experience in Current Industry(2-digit)	-	-	0.0229 (0.0022)	-
Experience in Industry Squared(2-digit)	-	-	-0.0003 (0.0001)	-
Experience in Current Industry(1-digit)	-	-	-	0.0247 (0.0021)
Experience in Industry Squared(1-digit)	-	-	-	-0.0004 (0.0001),
Potential Experience	0.0210 (0.0017)	0.0182 (0.0017)	0.0173 (0.0017)	0.0170 (0.0017)
Potential Experience Squared	-0.0004 (0.0001)	-0.0004 (0.0001)	-0.0004 (0.0001)	-0.0004 (0.0001)
Indust. Dummies	YES	YES	YES	YES
Occup. Dummies	YES	YES	YES	YES
R-Squared	0.6679	0.6790	0.6808	0.6751

Notes-Other covariates include education in years, race, sex,
regional, union coverage, marital status, occupation,
industry and year dummies. Standard errors are shown in
parentheses (rounded to 0.0001 when smaller). Sample size is
15,480.

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TABLE 7

EARNINGS FUNCTIONS ESTIMATES-PSID: INDUSTRY VS TENURE EFFECT
(Dependent Variable: Log of Real Hourly Labor Income ($1979))

Independent Variable	(1) (IV-GLS)	(2) (IV-GLS)	(3) (IV-GLS)	(4) (IV-GLS)
Tenure	0.0191 (0.0018)	0.0051 (0.0031)	0.0037 (0.0028)	0.0041 (0.0027)
Tenure Squared	-0.0003 (0.0001)	-0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)
Experience in Current Industry(3-digit)	-	0.0202 (0.0032)	-	-
Experience in Industry Squared(3-digit)	-	-0.0003 (0.0001)	-	-
Experience in Current Industry(2-digit)	-	-	0.0247 (0.0029)	-
Experience in Industry Squared(2-digit)	-	-	-0.0004 (0.0001)	-
Experience in Current Industry(1-digit)	-	-	-	0.0258 (0.0029)
Experience in Industry Squared(1-digit)	-	-	-	-0.0004 (0.0001)
Potential Experience	0.0189 (0.0018)	0.0164 (0.0018)	0.0154 (0.0018)	0.0155 (0.0018)
Potential Experience Squared	-0.0004 (0.0001)	-0.0004 (0.0001)	-0.0004 (0.0001)	-0.0004 (0.0001)
Indust. Dummies	YES	YES	YES	YES
Occup. Dummies	YES	YES	YES	YES
R-Squared	0.6405	0.6382	0.6396	0.6451

Notes-Unshown covariates are the same as those in table 6.
Standard errors in parentheses. Sample size is 15,480.

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TABLE 8

INDUSTRY EFFECT (1-digit) VS TENURE EFFECT BY OCCUPATIONS-PSID
(Dependent Variable: log of Real Hourly Labor Income ($1979))

PROFESSIONALS, TECHNICAL WORKERS, MANAGERS AND ADMINISTRATORS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0097 (0.0021)	0.0126 (0.0028)	0.0055 (0.0029)	0.0061 (0.0039)
Tenure Squared	-0.0002 (0.0001)	-0.0003 (0.0001)	-0.0002 (0.0001)	-0.0002 (0.0002)
Potential Experience	0.0340 (0.0033)	0.0321 (0.0035)	0.0315 (0.0034)	0.0288 (0.0037)
Potent. Exp. Squared	-0.0006 (0.0001)	-0.0006 (0.0001)	-0.0006 (0.0001)	-0.0005 (0.0001)
Experience in Industry	-	-	0.0118 (0.0035)	0.0148 (0.0044)
Exp. in Industry Squared	-	-	0.0001 (0.0001)	-0.0001 (0.0002)
R-Squared	0.6960	0.6640	0.7002	0.6666
Number of Observations	5,228			

CLERICAL AND UNSKILLED WORKERS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0172 (0.0048)	0.0152 (0.0061)	-0.0074 (0.0074)	-0.0265 (0.0094)
Tenure Squared	-0.0004 (0.0002)	-0.0006 (0.0002)	0.0003 (0.0002)	0.0008 (0.0003)
Potential Experience	0.0081 (0.0045)	0.0036 (0.0048)	0.0056 (0.0046)	-0.0007 (0.0049)
Potent. Exp. Squared	-0.0001 (0.0001)	0.0001 (0.0001)	-0.0001 (0.0001)	0.0001 (0.0001)
Experience in Industry	-	-	0.0391 (0.0085)	0.0568 (0.0108)
Exp. in Industry Squared	-	-	-0.0009 (0.0003)	-0.0016 (0.0003)
R-Squared	0.6632	0.6225	0.6785	0.6287
Number of Observations	1,382			

TABLE 8-continued

CRAFTSMEN AND KINDRED WORKERS, OPERATIVES AND LABORERS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0160	0.0179	-0.0026	-0.0019
	(0.0017)	(0.0025)	(0.0029)	(0.0041)
Tenure Squared	-0.0002	-0.0001	0.0004	0.0005
	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Potential Experience	0.0124	0.0117	0.0090	0.0091
	(0.0024)	(0.0026)	(0.0024)	(0.0026)
Potent. Exp. Squared	-0.0002	-0.0002	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Experience in Industry			0.0297	0.0298
			(0.0031)	(0.0042)
Exp. in Industry Squared			-0.0007	-0.0007
			(0.0001)	(0.0002)
R-Squared	0.6541	0.6300	0.6658	0.6341
Number of Observations	7,200			

SERVICE WORKERS

Independent Variable	(1) GLS	(2) IV-GLS	(3) GLS	(4) IV-GLS
Tenure	0.0370	0.670	0.0267	0.0605
	(0.0072)	(0.0091)	(0.0114)	(0.0184)
Tenure Squared	-0.0009	-0.0015	-0.0007	-0.0017
	(0.0003)	(0.0004)	(0.0005)	(0.0006)
Potential Experience	-0.0004	-0.0092	-0.0079	-0.0140
	(0.0061)	(0.0068)	(0.0062)	(0.0069)
Potent. Exp. Squared	-0.0001	0.0001	-0.0001	0.0001
	(0.0001)	(0.0002)	(0.0001)	(0.0002)
Experience in Industry			0.0249	0.0194
			(0.0117)	(0.0206)
Exp. in Industry Squared			-0.0001	0.0002
			(0.0003)	(0.0005)
R-Squared	0.4629	0.4529	0.4839	0.4584
Number of Observations	1,610			

Notes-All regressions include industry and occupation dummies. Other unshown covariates are the same as those in table 6. Standard errors in parentheses.

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