Table 1: Descriptive Statistics using JHPS/KHPS, 2004–2014.

	Mean	St.d	Min	Max
Age	45.3588	10.2728	20	64
Educational Background				
Junior High School	.0358	.1858	0	1
High School	.4418	.4966	0	1
Junior College or Vocational	.1130	.3166	0	1
College or More	.4094	.4917	0	1
Married	.8386	.3679	0	1
Union Member	.2875	.4526	0	1
Firm Size				
Size $<$ 100	.3869	.4871	0	1
100 $\leq$ Size $<$ 500	.2265	.4186	0	1
Size $\geq$ 500	.3866	.4870	0	1
Regular Employee	.8962	.3051	0	1
Log of Real Hourly Wage	7.5520	.5633	5.5266	10.6590
Total Experience	25.3940	10.7233	0	50
Employer Tenure	14.2106	11.1372	0	47

Notes: The data come from the JHPS/KHPS for the 2004-2014 period. The sample includes employed male household heads, and aged 20–64. We eliminate observations that at that time of the interview worked as government worker or received real hourly wage of less than 250 yen in constant 2010 Japanese yen. Those who worked less than 500 hours, had total earnings of zero in a given year or reported being self-employed are also excluded from the sample. Since representativity of data has been lost by including samples of the spouse, we do not use them for estimation. 8,601 of observations on 2,155 individuals are used for estimation.

- OLS: 2 次近似ではテニュアも労働経験もきれいな凸型の関数。係数も有意 OJ ダミーは以前より小さくなったけど 1 番係数大きくて有意。3 次 4 次と増やすと OJ ダミー以外星が消えていく
- IV: ほぼすべての係数が有意ではない。2 次の労働経験のみに星がつく。係数だけで見ても符号が安定しない。
- グラフでリターンを見ても IV はほぼ横ばいで有意に正にもならない
- 職業のテニュアは入れても入れなくてもほぼ結果は変わらない

Table 2: Earnings Function Estimates, using the AS's IV Method, Occupation Tenure are Not Included.

	OLS			AS's IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Employer tenure	0.0142***	0.0120***	0.0157*	0.0029	0.0038	0.0108
	(0.0019)	(0.0044)	(0.0084)	(0.0057)	(0.0091)	(0.0142)
Emp.ten.$^2 \times 100$	-0.0135***	0.0031	-0.0398	-0.0069	-0.0120	-0.1016
	(0.0049)	(0.0260)	(0.0832)	(0.0150)	(0.0583)	(0.1489)
Emp.ten.$^3 \times 100$		-0.0003	0.0014		0.0000	0.0038
		(0.0004)	(0.0030)		(0.0010)	(0.0057)
Emp.ten.$^4 \times 1000$			-0.0000			-0.0000
			(0.0000)			(0.0000)
Old job	0.0760***	0.0880***	0.0786**	0.0531	0.0561	0.0451
	(0.0267)	(0.0293)	(0.0329)	(0.0437)	(0.0451)	(0.0482)
Total experience	0.0209***	0.0011	0.0287**	0.0428***	0.0143	0.0501*
	(0.0025)	(0.0070)	(0.0145)	(0.0079)	(0.0160)	(0.0280)
Experience^2	-0.0004***	0.0005*	-0.0016	-0.0007***	0.0006	-0.0022
	(0.0000)	(0.0003)	(0.0010)	(0.0001)	(0.0007)	(0.0020)
Exp.$^3 \times 100$		-0.0012***	0.0050*		-0.0017*	0.0064
		(0.0004)	(0.0030)		(0.0009)	(0.0059)
Exp.$^4 \times 10000$			-0.0000**			-0.0000
			(0.0000)			(0.0000)
Observations	8601	8601	8601	8601	8601	8601

Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
The dependent variable is log real hourly wages. Other covariates include an intercept, education dummies, occupation and industry dummies, a union member dummy, a marital status dummy, dummies of firm size, and regular employee dummy. Columns from (1) to (3) denote the coefficients of earnings function (**??**) which is estimated by the OLS, and columns from (4) and (6) denote those by AS's IV method.

Table 3: Earnings Function Estimates, using the AS's IV Method, Occupation Tenure are Included.

	OLS			AS's IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Employer tenure	0.0130***	0.0090*	0.0080	0.0037	0.0071	0.0097
	(0.0021)	(0.0048)	(0.0090)	(0.0060)	(0.0099)	(0.0154)
Emp.ten.^{2} × 100	-0.0115**	0.0177	0.0267	-0.0109	-0.0303	-0.0592
	(0.0057)	(0.0293)	(0.0881)	(0.0164)	(0.0629)	(0.1660)
Emp.ten.^{3} × 100		-0.0005	-0.0004		0.0002	0.0013
		(0.0005)	(0.0031)		(0.0010)	(0.0066)
Emp.ten.^{4} × 1000			-0.0000			-0.0000
			(0.0000)			(0.0000)
Old job	0.0858***	0.0986***	0.0929***	0.0556	0.0522	0.0471
	(0.0277)	(0.0306)	(0.0342)	(0.0445)	(0.0461)	(0.0492)
Occupation tenure	0.0020	0.0059*	0.0138***	-0.0053	0.0007	0.0023
	(0.0016)	(0.0032)	(0.0050)	(0.0043)	(0.0070)	(0.0113)
Occ.ten.^{2} × 100	-0.0039	-0.0314	-0.1202***	0.0159	-0.0382	-0.0706
	(0.0049)	(0.0206)	(0.0463)	(0.0137)	(0.0528)	(0.1594)
Occ.ten.^{3} × 100		0.0004	0.0033**		0.0010	0.0027
		(0.0003)	(0.0013)		(0.0010)	(0.0067)
Occ.ten.^{4} × 10000			-0.0026**			-0.0023
			(0.0011)			(0.0085)
Total experience	0.0221***	0.0027	0.0364**	0.0446***	0.0163	0.0549*
	(0.0026)	(0.0075)	(0.0160)	(0.0082)	(0.0167)	(0.0295)
Experience^2	-0.0004***	0.0005	-0.0020*	-0.0008***	0.0006	-0.0025
	(0.0001)	(0.0003)	(0.0011)	(0.0001)	(0.0007)	(0.0021)
Exp.^{3} × 100		-0.0011***	0.0062*		-0.0017*	0.0072
		(0.0004)	(0.0032)		(0.0009)	(0.0061)
Exp.^{4} × 10000			-0.0000**			-0.0000
			(0.0000)			(0.0000)
Observations	8463	8463	8463	8463	8463	8463

Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
The dependent variable is log real hourly wages. Other covariates include an intercept, education dummies, occupation and industry dummies, a union member dummy, a marital status dummy, dummies of firm size, and regular employee dummy. Columns from (1) to (3) denote the coefficients of earnings function (**??**) which is estimated by the OLS, and columns from (4) and (6) denote those by AS's IV method.

Table 4: Earnings Function Estimates, using the AS's IV Method.

	OLS		IV	
	(1)	(2)	(3)	(4)
Employer tenure	0.0142***	0.0130***	0.0029	0.0037
	(0.0019)	(0.0021)	(0.0057)	(0.0060)
Emp.ten.$^2 \times 100$	-0.0135***	-0.0115**	-0.0069	-0.0109
	(0.0049)	(0.0057)	(0.0150)	(0.0164)
Old job	0.0760***	0.0858***	0.0531	0.0556
	(0.0267)	(0.0277)	(0.0437)	(0.0445)
Total experience	0.0209***	0.0221***	0.0428***	0.0446***
	(0.0025)	(0.0026)	(0.0079)	(0.0082)
Experience^2	-0.0004***	-0.0004***	-0.0007***	-0.0008***
	(0.0000)	(0.0001)	(0.0001)	(0.0001)
Occupation Tenure	No	Yes	No	Yes
Observations	8601	8463	8601	8463

Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
The dependent variable is log real hourly wages. Other covariates include an intercept, education dummies, occupation and industry dummies, a union member dummy, a marital status dummy, dummies of firm size, and regular employee dummy. In addition to those variables, Columns (2) and (4) also include occupation tenure. Columns (1) and (2) denote the coefficients of earnings function (**??**) which is estimated by the OLS, and columns (3) and (4) denote those by AS's IV method.

Table 5: Estimated Returns to Employer Tenure.

	AS's IV				2SFD
	OLS		IV		
	(1)	(2)	(3)	(4)	(5)
2 Years	0.1039***	0.1113***	0.0586	0.0626	.0482
	(0.0256)	(0.0265)	(0.0405)	(0.0411)	(.0413)
5 Years	0.1437***	0.1477***	0.0659	0.0715*	.1200
	(0.0248)	(0.0258)	(0.0404)	(0.0414)	(.1030)
10 Years	0.2046***	0.2040***	0.0754	0.0820*	.2385
	(0.0251)	(0.0264)	(0.0479)	(0.0496)	(.2052)
15 Years	0.2588***	0.2545***	0.0814	0.0869	.3554
	(0.0260)	(0.0276)	(0.0582)	(0.0600)	(.3077)
20 Years	0.3062***	0.2992***	0.0840	0.0865	.4707
	(0.0267)	(0.0285)	(0.0686)	(0.0699)	(.4118)
25 Years	0.3469***	0.3383***	0.0831	0.0806	.5846
	(0.0271)	(0.0289)	(0.0801)	(0.0808)	(.5183)
Occupation Tenure	No	Yes	No	Yes	No
Observations	8463	8463	8463	8463	8794

Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
This table rebports the calculated wage returns to 2, 5, 10, 15, 20 and 25 years of employer tenure based on th coefficient of the corresponding colmns of Table 4. Columns (1) and (2) denote the culculated returns which is estimated by the OLS, and columns (3) and (4) denote those by AS's IV method. The correponding returns based on the 2SFD method are represented in column (5).

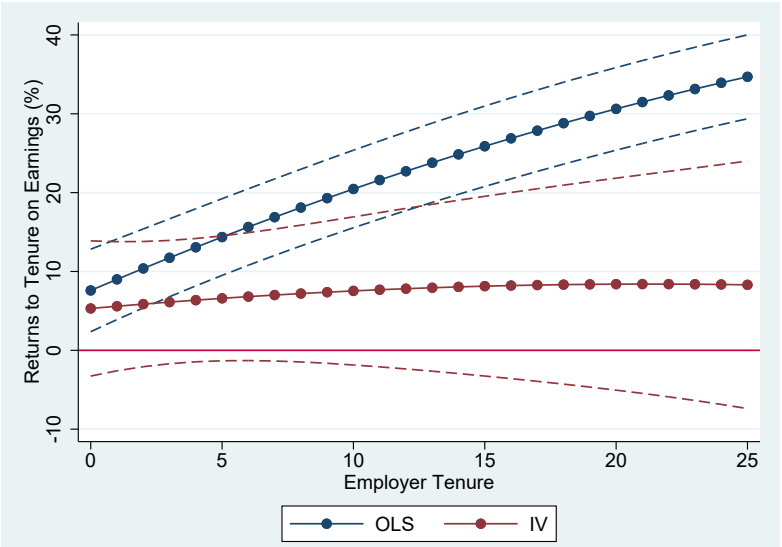
Table 6: Estimated Returns to Employer Tenure, Employer Tenure is Treated as Dummy Variables

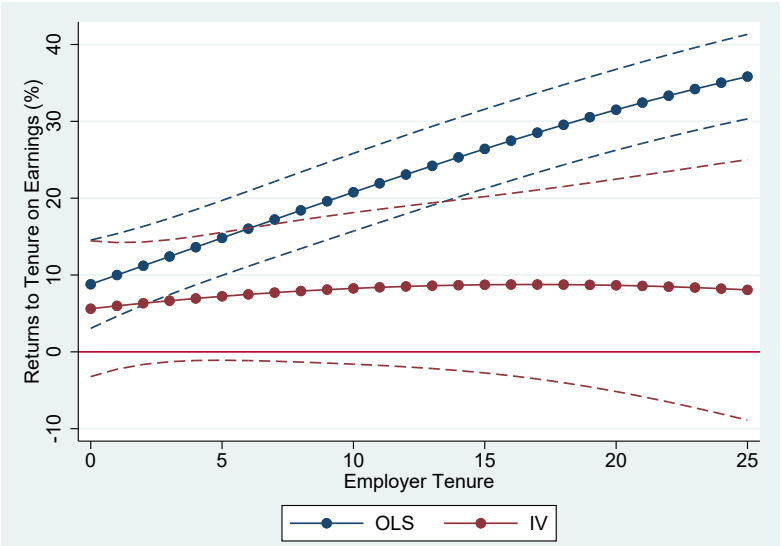
	OLS	AS's IV
	(1)	(2)
$T_{ij} \geq 1$	-0.0076	0.0207
	(0.0335)	(0.0422)
$T_{ij} \geq 2$	0.0567**	0.0060
	(0.0269)	(0.0305)
$T_{ij} \geq 5$	0.0401**	0.0395
	(0.0183)	(0.0255)
$T_{ij} \geq 10$	0.0891***	0.0080
	(0.0183)	(0.0266)
$T_{ij} \geq 15$	0.0216	-0.0013
	(0.0192)	(0.0299)
$T_{ij} \geq 20$	0.0104	0.0008
	(0.0196)	(0.0295)
$T_{ij} \geq 25$	0.0919***	0.0458
	(0.0235)	(0.0344)
$T_{ij} \geq 30$	-0.0289	0.0371
	(0.0217)	(0.0371)
Total experience	0.0202***	0.0434***
	(0.0024)	(0.0072)
Experience^2	-0.0003***	-0.0008***
	(0.0000)	(0.0001)
Observations	9437	9437

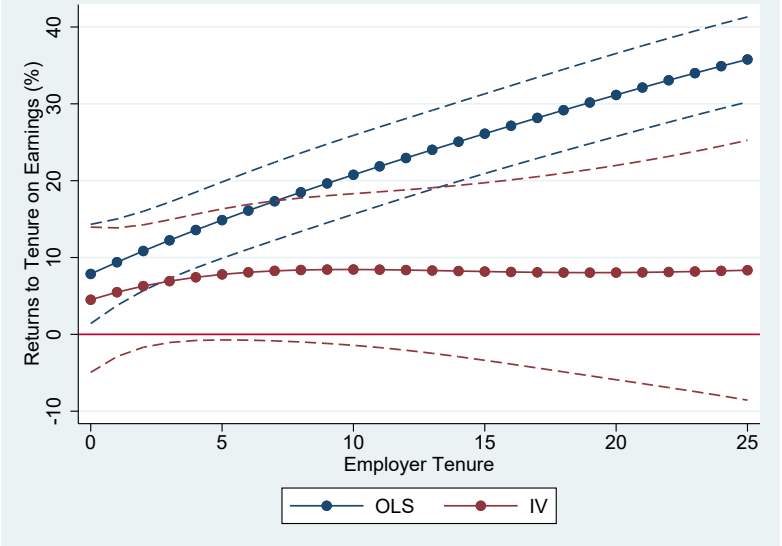
Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
The dependent variable is log real hourly wages. Other covariates include an intercept, education dummies, occupation and industry dummies, a union member dummy, a marital status dummy, firm size dummies, and regular employee dummy. Columns (1) and (2) denote the coefficients of earnings function (**??**) which is estimated by the OLS, and columns (3) and (4) denote those by AS's IV method.

- その他のテニュアの年数区間をコントロールしたうえでのその年数区間の上昇率？
- OLS: 0-¿1 の上昇率は非有意で係数の値も小さい。2$\tilde{5}$ 年で上昇率が上がってその後はテニュアとともに下降するけど有意

- IV: テニュアとともに係数は下降気味だけど 25̃30 年で上昇している。25 年以降以外非有意。


Returns to Tenure on Earnings (%)
-10
0
10
20
30
40
0
5
10
15
20
25
Employer Tenure
OLS
IV


Returns to Tenure on Earnings (%)
-10
0
10
20
30
40
0
5
10
15
20
25
Employer Tenure
OLS
IV


Returns to Tenure on Earnings (%)
-10
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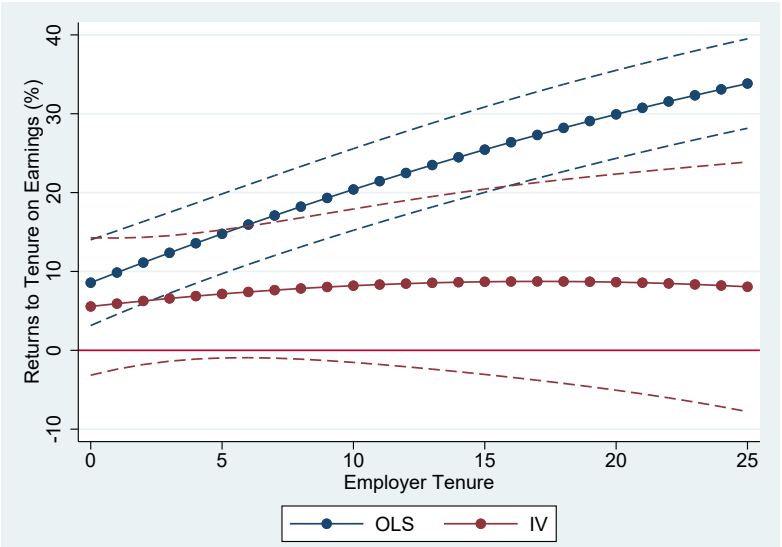
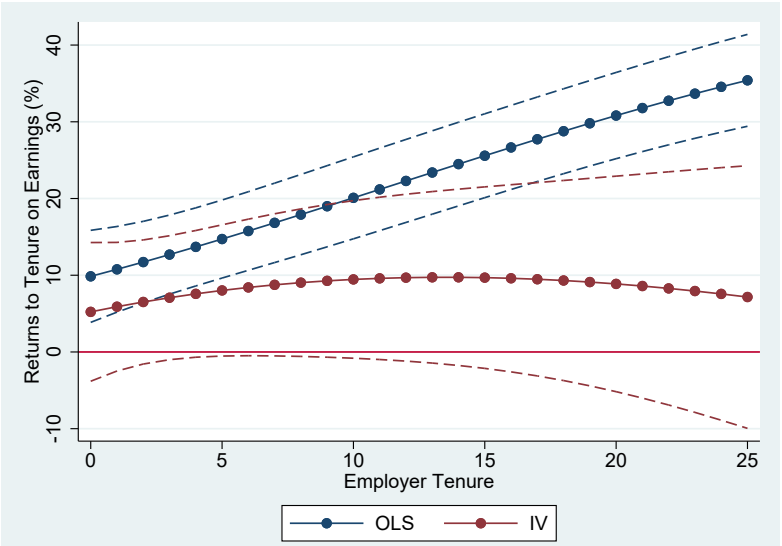
10
20
30
40
0
5
10
15
20
25
Employer Tenure
OLS
IV


Returns to Tenure on Earnings (%)
-10
0
10
20
30
40
0
5
10
15
20
25
Employer Tenure
OLS
IV


Returns to Tenure on Earnings (%)
-10
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30
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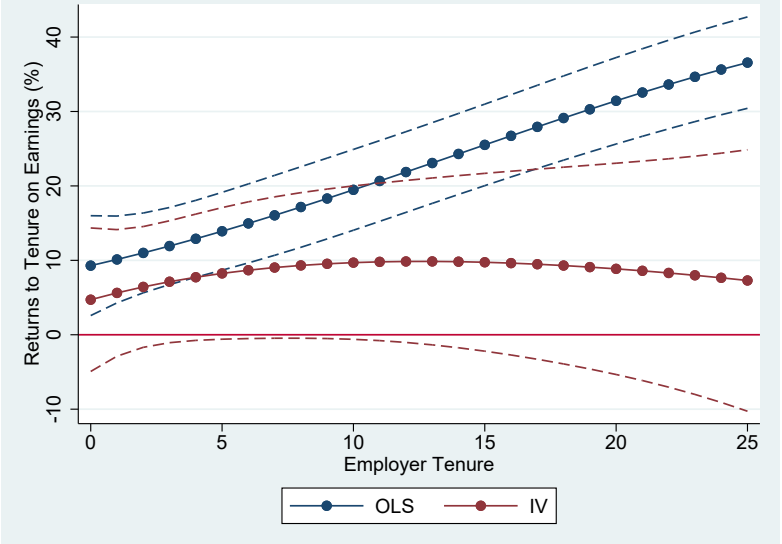
0
5
10
15
20
25
Employer Tenure
OLS
IV


Returns to Tenure on Earnings (%)
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0
10
20
30
40
0
5
10
15
20
25
Employer Tenure
OLS
IV

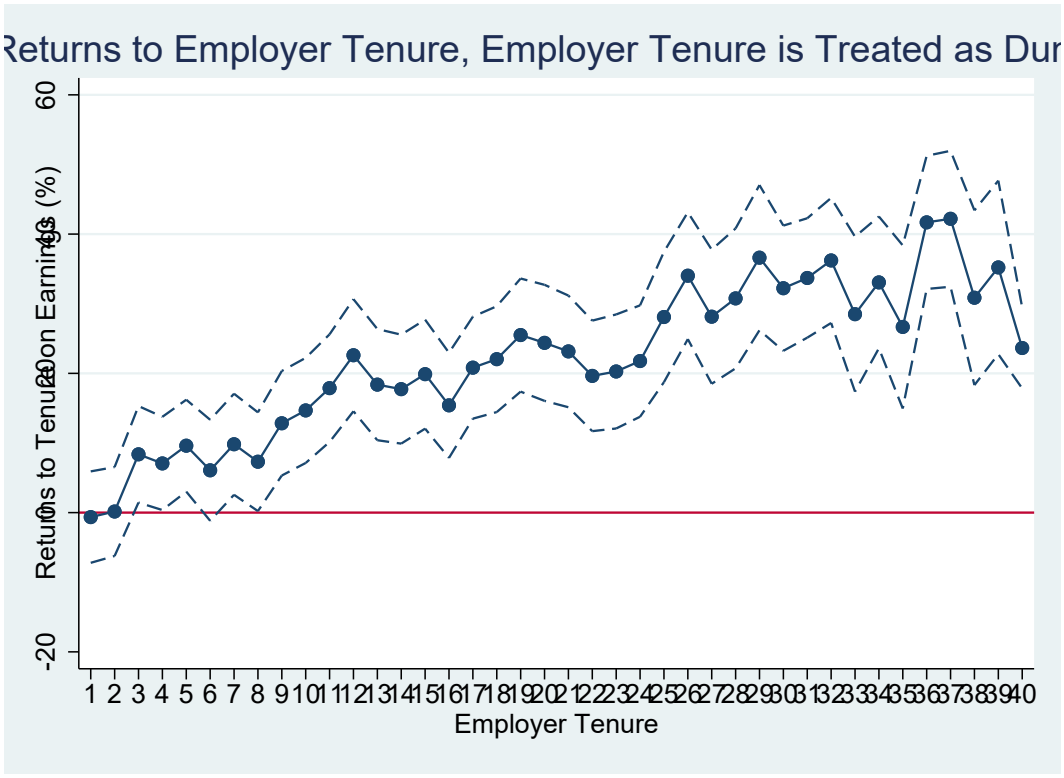
Returns to Employer Tenure, Employer Tenure is Treated as Dur
Returns to Tenure on Earnings (%)
-20
0
20
40
60
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
Employer Tenure

Table 7: Earnings Function Estimates, using Various Subsamples.

	Under 59-year-old		Large Firms (≥ 500)		Small Firms (< 500)		Non-Professional		Regular Employee	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Employer tenure	0.0132***	0.0016	0.0195***	0.0068	0.0127***	0.0029	0.0171***	0.0012	0.0138***	0.0025
	(0.0021)	(0.0064)	(0.0036)	(0.0100)	(0.0024)	(0.0074)	(0.0020)	(0.0064)	(0.0021)	(0.0062)
Emp.ten.$^2 \times 100$	-0.0080	0.0037	-0.0228***	-0.0136	-0.0130**	-0.0024	-0.0200***	-0.0056	-0.0111**	-0.0072
	(0.0058)	(0.0179)	(0.0086)	(0.0258)	(0.0064)	(0.0205)	(0.0052)	(0.0162)	(0.0056)	(0.0166)
Old job	0.0899***	0.0482	0.0363	0.0447	0.0978***	0.0497	0.0546*	0.0399	0.0883***	0.0549
	(0.0300)	(0.0501)	(0.0549)	(0.0834)	(0.0311)	(0.0530)	(0.0291)	(0.0502)	(0.0340)	(0.0578)
Total experience	0.0157***	0.0358***	0.0197***	0.0533***	0.0206***	0.0353***	0.0177***	0.0434***	0.0213***	0.0398***
	(0.0030)	(0.0090)	(0.0044)	(0.0140)	(0.0032)	(0.0108)	(0.0028)	(0.0087)	(0.0030)	(0.0087)
Experience^2	-0.0002***	-0.0006***	-0.0003***	-0.0009***	-0.0004***	-0.0007***	-0.0003***	-0.0007***	-0.0004***	-0.0006***
	(0.0001)	(0.0002)	(0.0001)	(0.0003)	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0002)
Observations	7754	7754	3325	3325	5276	5276	7337	7337	7708	7708

Notes: Robust standard errors are in parentheses.

* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.

The dependent variable is log real hourly wages. Other covariates include an intercept, education dummies, occupation and industry dummies, a union member dummy, a marital status dummy, dummies of firm size, and regular employee dummy. Columns (1), (3), (5), (7) and (9) denote the coefficients of earnings function (**??**) which is estimated by the OLS, and columns (2), (4), (6), (8) and (10) denote those by AS's IV method. We present the coefficients for which we use the sample of individuals under 59-year-old in columns (1) and (2), the sample of individuals who belong to firms with more than 500 employee in columns (3) and (4), the sample of individuals who belong to firms with les than 500 employee in columns (5) and (6), the sample of individuals excepting workers who repond that s/he works as professional in columns (7) and (8), and the sample of the regular employees in columns (9) and (10).

Table 8: Estimated Returns to Employer Tenure, using Various Subsamples.

	Under 59-year-old		Large Firms (≥ 500)		Small Firms (< 500)		Non-Professional		Regular Employee	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2 Years	0.1160***	0.0515	0.0743	0.0578	0.1226***	0.0554	0.0881***	0.0420	0.1154***	0.0595
	(0.0288)	(0.0466)	(0.0533)	(0.0805)	(0.0296)	(0.0488)	(0.0279)	(0.0465)	(0.0327)	(0.0542)
5 Years	0.1539***	0.0570	0.1279**	0.0753	0.1578***	0.0634	0.1353***	0.0443	0.1545***	0.0654
	(0.0279)	(0.0465)	(0.0526)	(0.0833)	(0.0286)	(0.0496)	(0.0271)	(0.0464)	(0.0316)	(0.0532)
10 Years	0.2139***	0.0677	0.2081***	0.0991	0.2113***	0.0760	0.2060***	0.0459	0.2152***	0.0723
	(0.0282)	(0.0549)	(0.0538)	(0.0972)	(0.0288)	(0.0629)	(0.0275)	(0.0554)	(0.0315)	(0.0590)
15 Years	0.2699***	0.0802	0.2769***	0.1161	0.2584***	0.0873	0.2667***	0.0447	0.2704***	0.0756
	(0.0293)	(0.0669)	(0.0561)	(0.1121)	(0.0298)	(0.0818)	(0.0284)	(0.0678)	(0.0321)	(0.0684)
20 Years	0.3220***	0.0945	0.3342***	0.1264	0.2989***	0.0974	0.3174***	0.0406	0.3200***	0.0752
	(0.0301)	(0.0803)	(0.0579)	(0.1239)	(0.0305)	(0.1034)	(0.0292)	(0.0807)	(0.0326)	(0.0791)
25 Years	0.3700***	0.1107	0.3802***	0.1299	0.3329***	0.1064	0.3582***	0.0338	0.3641***	0.0713
	(0.0308)	(0.0962)	(0.0589)	(0.1339)	(0.0308)	(0.1287)	(0.0296)	(0.0945)	(0.0329)	(0.0919)
Observations	7754	7754	3325	3325	5276	5276	7337	7337	7708	7708

Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
This table rebports the calculated wage returns to 2, 5, 10, 15, 20 and 25 years of employer tenure based on th coefficient of the corresponding colmns of Table 4. Columns (1), (3), (5), (7) and (9) denote the wage returns to employer tenure using estimatorw based on the OLS, and columns (2), (4), (6), (8) and (10) denote those based on the AS's IV method. We present the returns for calculating which we use the sample of individuals under 59-year-old in columns (1) and (2), the sample of individuals who belong to firms with more than 500 employee in columns (3) and (4), the sample of individuals who belong to firms with les than 500 employee in columns (5) and (6), the sample of individuals excepting workers who repond that s/he works as professional in columns (7) and (8), and the sample of the regular employees in columns (9) and (10).

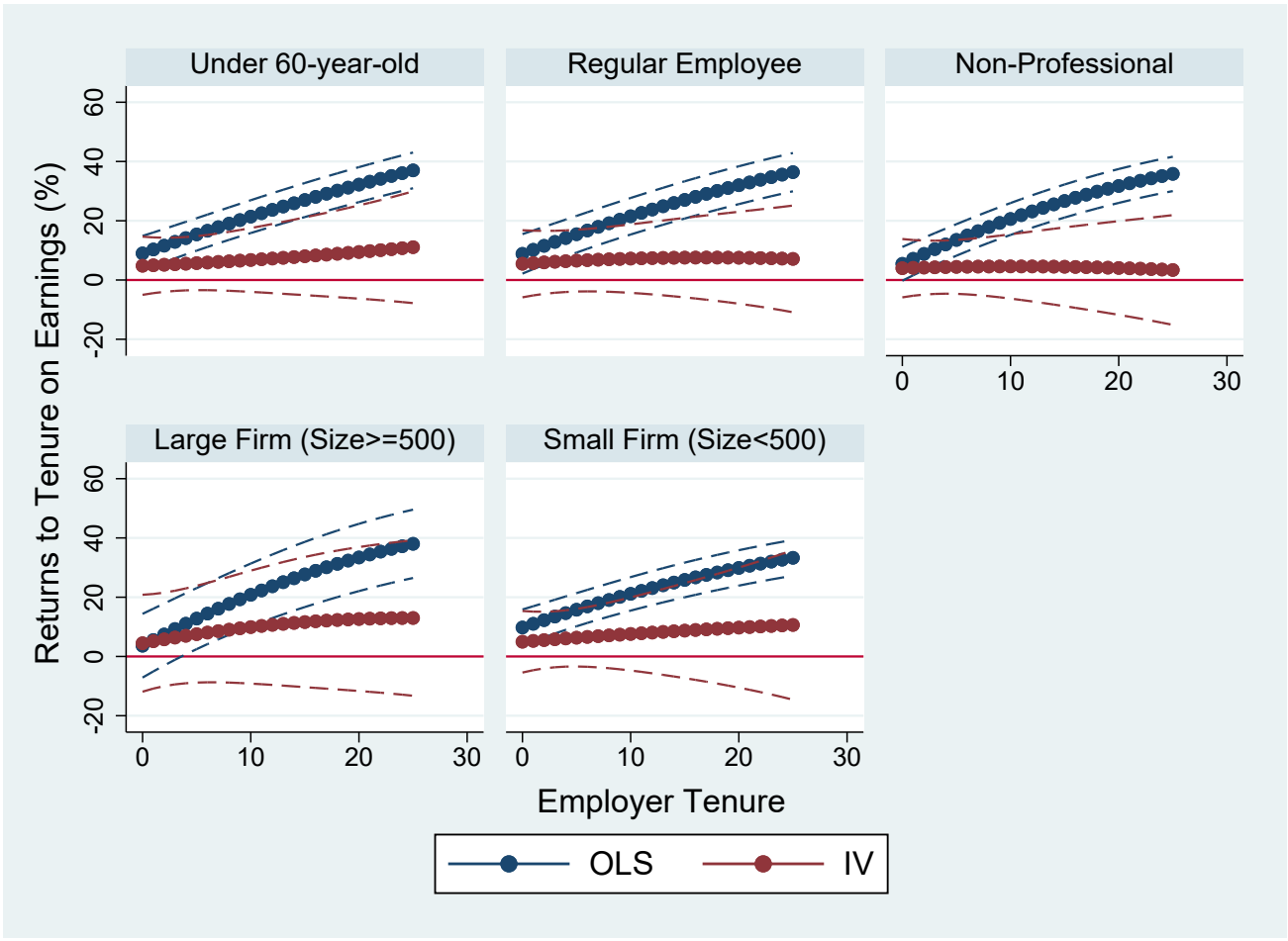
Under 60-year-old
Regular Employee
Non-Professional
Large Firm (Size>=500)
Small Firm (Size<500)
Returns to Tenure on Earnings (%)
-20
0
20
40
60
0
10
20
30
Employer Tenure
OLS
IV

Table 9: Estimation Results, using the Method of 2SFD Estimation.

	(1)	(2)	(3)	(4)
1st stage				
Constant	0.0488**	0.0547**	0.0575*	0.1250**
	(0.0199)	(0.0234)	(0.0340)	(0.0537)
Emp.ten.$^2 \times 100$		-0.0031	0.1356	-0.1841
		(0.0259)	(0.0908)	(0.2029)
Emp.ten.$^3 \times 1000$			-0.0256	0.1194
			(0.0162)	(0.0823)
Emp.ten.$^4 \times 10000$				-0.0188*
				(0.0103)
Experience$^2 \times 100$		-0.0103	-0.1123	-0.4653
		(0.0274)	(0.1314)	(0.3785)
Experience$^3 \times 1000$			0.0150	0.1090
			(0.0169)	(0.1088)
Experience$^4 \times 10000$				-0.0085
				(0.0107)
2nd stage				
Total Experience	.0255***	.0305***	.0504***	.1003***
	(.0010)	(.0010)	(.0010)	(.0010)
Employer Tenure	.0234	.0242	.0072	.0247
	(.0165)	(.0207)	(.0345)	(.0613)
Observations				
1st stage	5582	5579	5579	5579
2nd stage	8797	8794	8794	8794

Notes: Robust standard errors are in parentheses.
* , ** and *** Denote statistical significance at the 10%, 5% and 1% level, respectively.
The dependent variable is log real hourly wages. Other covariates include education dummies, occupation and industry dummies, a union member dummy, a marital status dummy, dummies of firm size, and regular employee dummy. The model for estimation is given by earning function (**??**).