Web Supplement for
Interregional Labour Migration and Real Wage Disparities: Evidence from Japan

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This supplement provides details of estimation results.

Figures 8

Figure 8 shows the map of land price, P_s^H, by prefecture.

Figures 9

Figure 9 shows the map of cost-of-living index, $(\hat{P}_s^M)^{\hat{\mu}}(P_s^H)^{1-\hat{\mu}}$, by prefecture.

Figures 10

Figure 10 shows the map of relative real wage, $\hat{\omega}_s/\hat{\omega}_s^{\text{ne}}$ by prefecture.

Table 6

Table 6 shows the estimation results of the migration equation (6), in which the expected nominal wage $W_{s,t-5}^e$ is replaced by the nominal wage $W_{s,t-5}$.

Table 7

Table 7 shows descriptive statistics for the variables used in the estimation of the net migration equation (7).

Table 8

Table 8 shows the estimation results of the net migration equation (7), in which the relative nominal wage is used.

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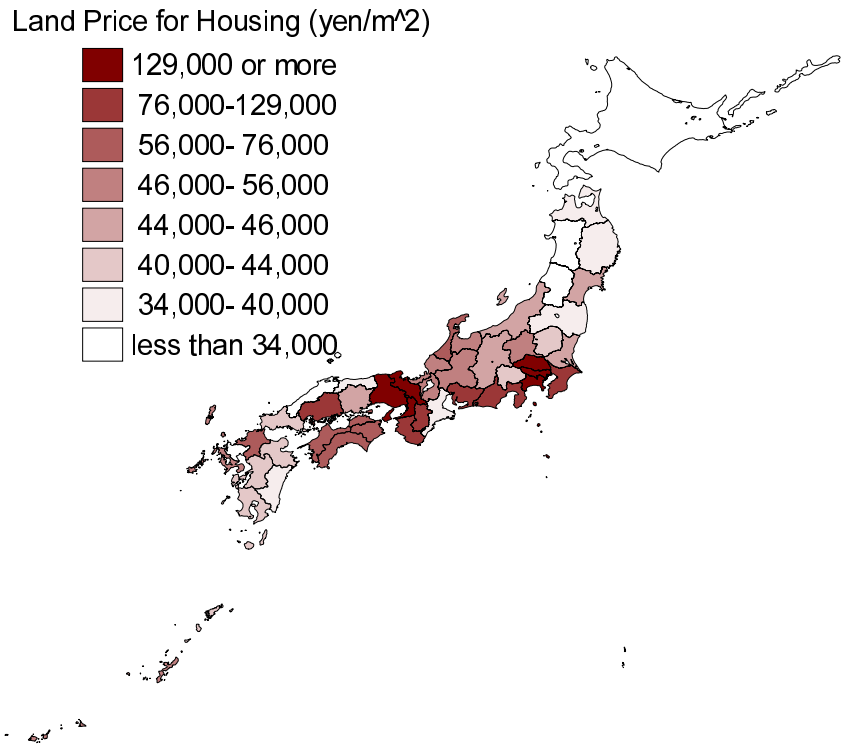
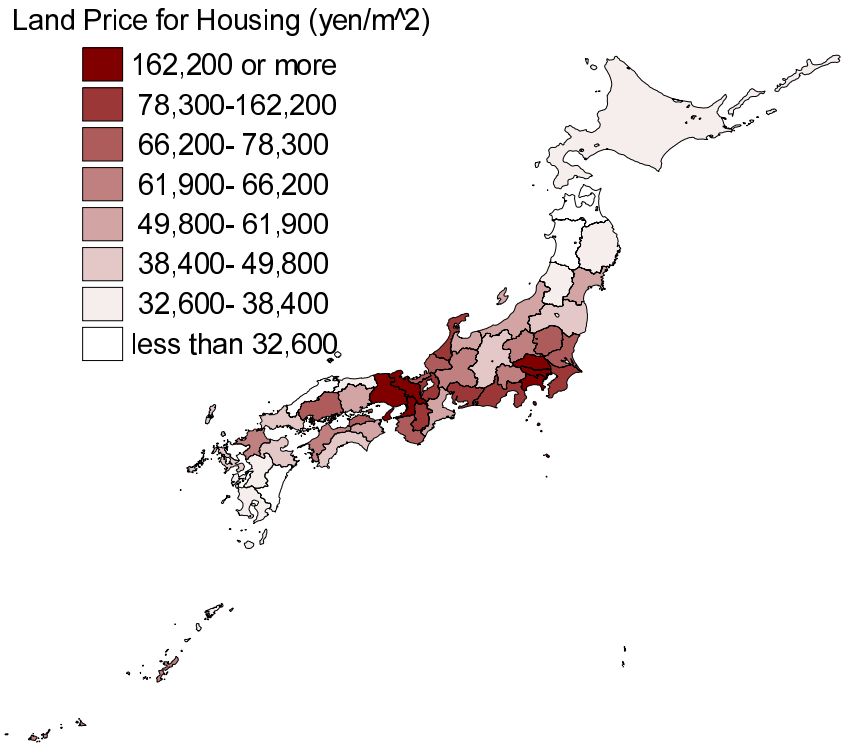
Table 9

Table 9 shows the estimation results of the net migration equation (7), in which the relative expected nominal wage is used.

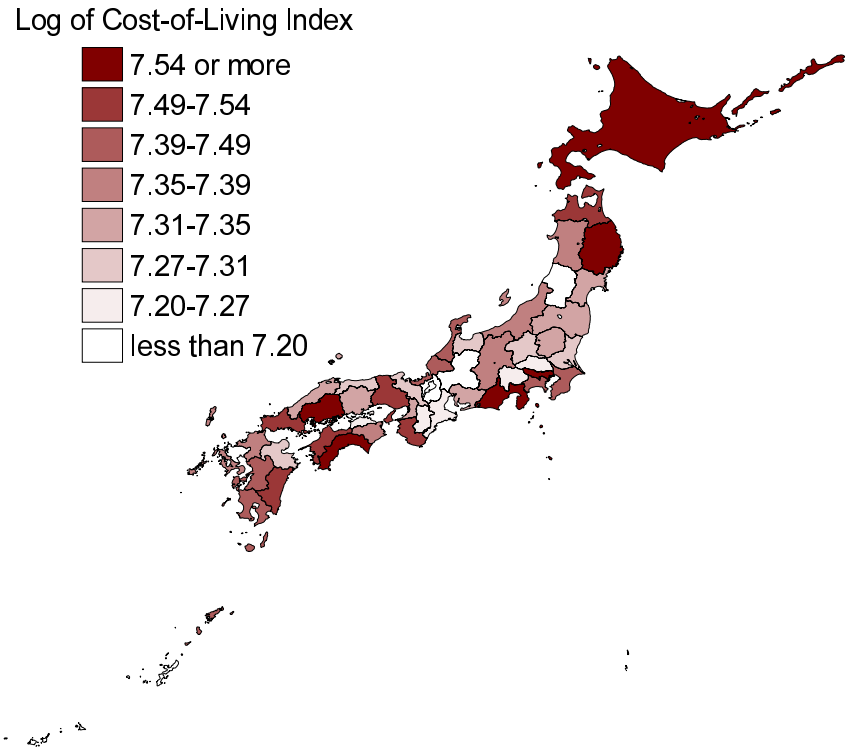


(a) 1985

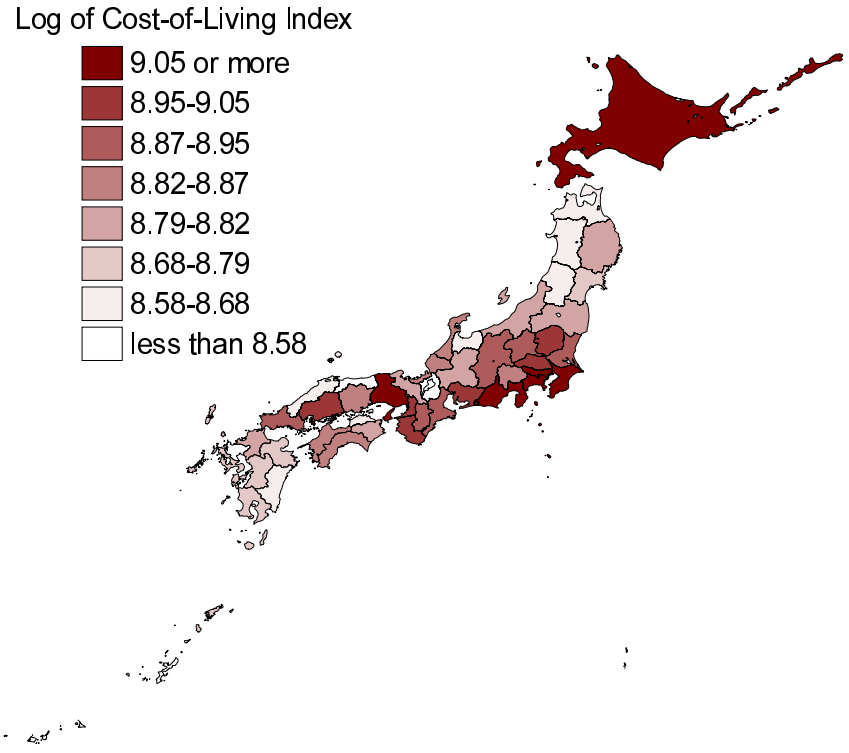


(b) 1995

Figure 8: Land Price

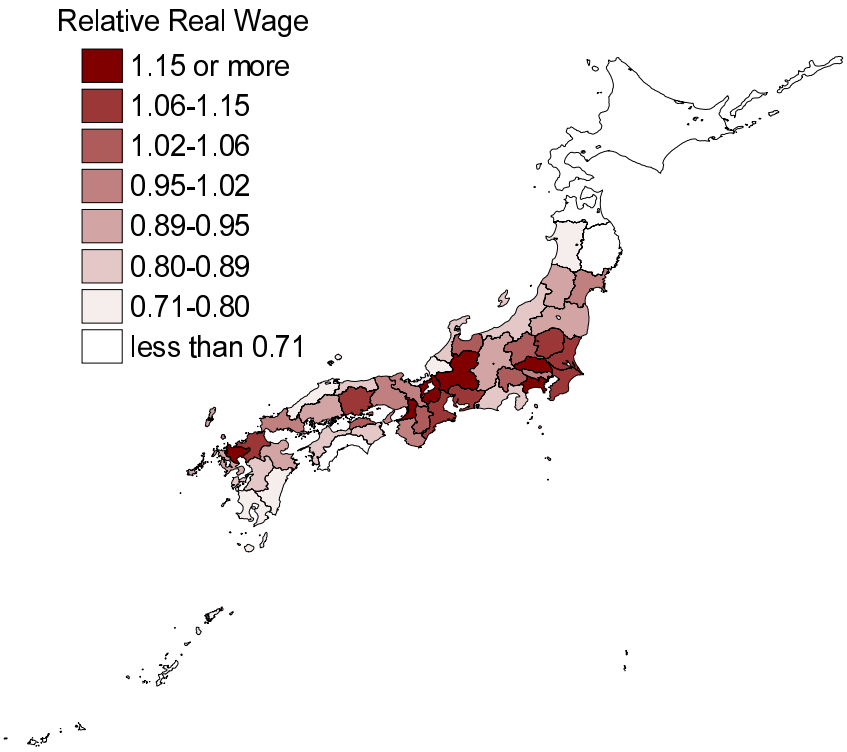


(a) 1985

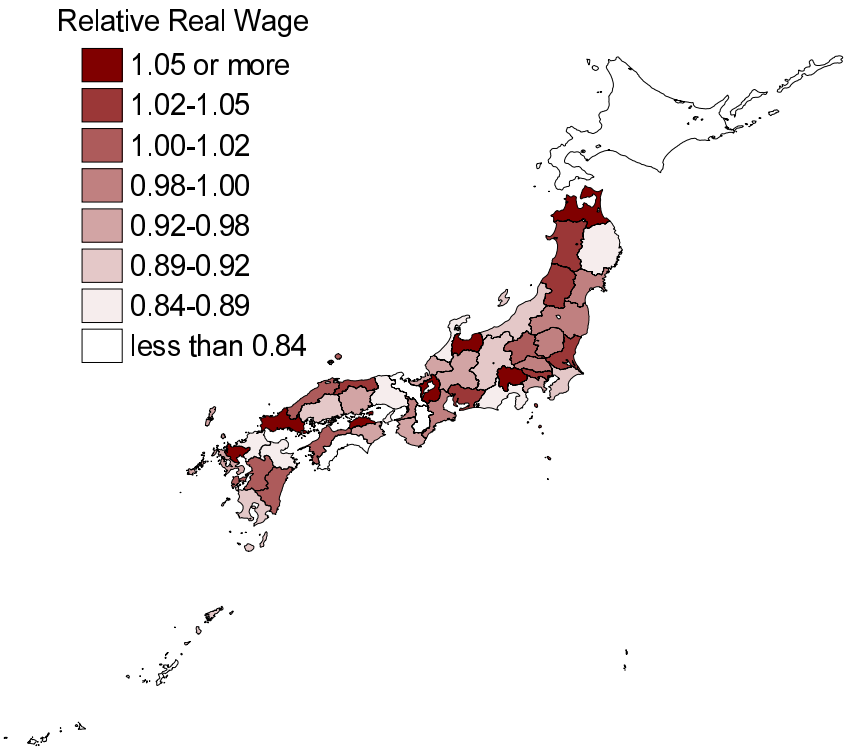


(b) 1995

Figure 9: Cost-of-Living Index



(a) 1985



(b) 1995

Figure 10: Relative Real Wage

Table 6: Estimates of Structural Parameters in Migration Equation

	Dependent Variable: Logarithm of Ratio of Out-Migrants to Stayers			
	Period: 1985-1990		Period: 1995-2000	
Parameters	(1)	(2)	(3)	(4)
σ **(Elasticity of Substitution)**	2.527^{***}	2.443^{***}	6.896^{***}	7.143^{***}
	(0.388)	(0.376)	(1.988)	(2.089)
δ **(Elasticity of Transport Cost)**	1.349^{***}	1.333^{***}	0.771^{***}	0.739^{***}
	(0.324)	(0.337)	(0.165)	(0.162)
μ **(Expenditure Share)**	0.512^{***}	0.496^{***}	0.701^{***}	0.709^{***}
	(0.083)	(0.084)	(0.072)	(0.072)
λ (Elasticity of Migration Cost)	-0.907^{***}	-0.906^{***}	-0.930^{***}	-0.930^{***}
	(0.028)	(0.028)	(0.025)	(0.025)
β_2 (Contiguity)	-0.503^{***}	-0.505^{***}	-0.475^{***}	-0.475^{***}
	(0.049)	(0.049)	(0.045)	(0.045)
β_1 (Nominal Wage)	1.437^{***}	1.432^{***}	2.674^{***}	2.695^{***}
	(0.185)	(0.182)	(0.185)	(0.184)
η_1 (Population)	1.463^{***}	1.464^{***}	1.277^{***}	1.274^{***}
	(0.053)	(0.054)	(0.054)	(0.054)
η_2 (Urbanization Rate)	-0.388^{***}	-0.369^{***}	-0.547^{***}	-0.548^{***}
	(0.114)	(0.115)	(0.092)	(0.091)
η_3 (Area)	-0.023	-0.044	0.127^{***}	0.124^{***}
	(0.055)	(0.056)	(0.047)	(0.047)
η_4 (Landlock Dummy)	0.120^{**}	0.117^{**}	0.094^{**}	0.095^{**}
	(0.056)	(0.057)	(0.043)	(0.043)
Dummy of Origin Regions	Yes	Yes	Yes	Yes
Number of Observations	2153	2153	2149	2149
SSR	1194.766	1196.613	881.229	881.712
p-value (σ)	0.000	0.000	0.002	0.002
p-value (μ)	0.000	0.000	0.000	0.000

Note: Heteroskedasticity-consistent standard errors are in the parenthesis. Population, urbanization rate, and area are expressed in logarithm. Labour force in habitation place is used in columns (1) and (3) and labour force in working place in column (2) and (4). p-value (σ) means the result of the hypothesis testing $H_0 : \sigma = 1,\ H_1 : \sigma > 1$. p-value (μ) means the result of the hypothesis testing $H_0 : \mu = 1,\ H_1 : \mu < 1$. * denotes statistical significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 7: Descriptive Statistics for Net Migration Equation

Variable	Mean	Std. Dev.	Min	Max
Period: 1985–1990				
Net Migration Rate	−0.019	0.048	−0.144	0.060
Relative Real Wage ($\nu = 1$)	0.948	0.207	0.509	1.721
Relative Real Wage ($\nu = 2$)	0.929	0.168	0.559	1.536
Relative Real Wage ($\nu = 3$)	0.936	0.155	0.616	1.506
Relative Expected Real Wage ($\nu = 1$)	0.948	0.210	0.502	1.741
Relative Expected Real Wage ($\nu = 2$)	0.929	0.172	0.552	1.557
Relative Expected Real Wage ($\nu = 3$)	0.936	0.159	0.604	1.527
Relative Nominal Wage ($\nu = 1$)	0.996	0.022	0.955	1.040
Relative Nominal Wage ($\nu = 2$)	0.995	0.018	0.962	1.034
Relative Nominal Wage ($\nu = 3$)	0.996	0.018	0.962	1.038
Relative Expected Nominal Wage ($\nu = 1$)	0.996	0.022	0.954	1.039
Relative Expected Nominal Wage ($\nu = 2$)	0.995	0.018	0.962	1.031
Relative Expected Nominal Wage ($\nu = 3$)	0.996	0.018	0.962	1.035
Population Density	625.666	1102.358	68.074	5703.757
Neighbouring Population Density ($\nu = 1$)	732.142	299.242	451.200	1877.845
Neighbouring Population Density ($\nu = 2$)	845.517	780.790	307.327	4009.212
Neighbouring Population Density ($\nu = 3$)	897.182	1073.473	186.981	5101.721
Landlock Dummy	0.174	0.383	0.000	1.000
Temperature	14.611	2.097	8.300	18.100
Yearly Snow Days	35.587	34.768	1.000	128.000
Period: 1995–2000				
Net Migration Rate	−0.003	0.021	−0.055	0.050
Relative Real Wage ($\nu = 1$)	0.981	0.131	0.619	1.514
Relative Real Wage ($\nu = 2$)	0.969	0.120	0.636	1.368
Relative Real Wage ($\nu = 3$)	0.967	0.121	0.654	1.327
Relative Expected Real Wage ($\nu = 1$)	0.982	0.134	0.615	1.530
Relative Expected Real Wage ($\nu = 2$)	0.969	0.124	0.633	1.386
Relative Expected Real Wage ($\nu = 3$)	0.968	0.125	0.651	1.345
Relative Nominal Wage ($\nu = 1$)	0.996	0.018	0.960	1.036
Relative Nominal Wage ($\nu = 2$)	0.995	0.014	0.967	1.024
Relative Nominal Wage ($\nu = 3$)	0.996	0.014	0.967	1.024
Relative Expected Nominal Wage ($\nu = 1$)	0.996	0.018	0.960	1.035
Relative Expected Nominal Wage ($\nu = 2$)	0.996	0.014	0.968	1.024
Relative Expected Nominal Wage ($\nu = 3$)	0.996	0.014	0.969	1.023
Population Density	649.707	1129.074	68.228	5676.872
Neighbouring Population Density ($\nu = 1$)	760.228	311.871	460.582	1922.723
Neighbouring Population Density ($\nu = 2$)	875.177	800.782	317.002	4043.523
Neighbouring Population Density ($\nu = 3$)	925.155	1091.581	190.317	5106.391
Landlock Dummy	0.174	0.383	0.000	1.000
Temperature	14.726	1.911	9.200	17.800
Yearly Snow Days	35.804	34.900	0.000	130.000

Note: The number of observations is 46 for each period. Okinawa is excluded from our sample.

Table 8: Impacts of Relative Nominal Wages in Net Migration Equation

	Dependent Variable: Net Migration Rate					
	Period: 1985-1990			Period: 1995-2000		
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Relative Nominal Wage	0.0528	0.0374	0.0261	0.0117	0.0056	0.0020
	(0.0678)	(0.0611)	(0.0558)	(0.0317)	(0.0295)	(0.0290)
Population Density	0.0015	0.0024	0.0031	−0.0043	−0.0040	−0.0038
	(0.0092)	(0.0079)	(0.0073)	(0.0034)	(0.0031)	(0.0032)
Ne. Population Density	0.0413**	0.0183*	0.0128	0.0076	0.0008	−0.0004
	(0.0188)	(0.0107)	(0.0093)	(0.0121)	(0.0075)	(0.0060)
Landlock Dummy	0.0205	0.0191	0.0175	0.0045	0.0039	0.0036
	(0.0152)	(0.0158)	(0.0158)	(0.0130)	(0.0128)	(0.0125)
Temperature	0.1039***	0.1050***	0.1035***	0.0459*	0.0448*	0.0439*
	(0.0301)	(0.0309)	(0.0325)	(0.0262)	(0.0256)	(0.0259)
Temperature Squared	−0.0041***	−0.0042***	−0.0042***	−0.0019**	−0.0019**	−0.0019**
	(0.0010)	(0.0011)	(0.0011)	(0.0009)	(0.0009)	(0.0009)
Yearly Snow Days	−0.0003	−0.0004	−0.0005	−0.0002	−0.0003	−0.0003
	(0.0004)	(0.0004)	(0.0004)	(0.0002)	(0.0002)	(0.0002)
Constant	−0.9265***	−0.7721***	−0.7189**	−0.2873	−0.2277	−0.2111
	(0.2968)	(0.2801)	(0.2864)	(0.2087)	(0.1997)	(0.1999)
District Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	46	46	46	46	46	46
Adjusted R^2	0.7148	0.7046	0.7018	0.4872	0.4833	0.4831
Distance Decay Parameter	$\nu = 1$	$\nu = 2$	$\nu = 3$	$\nu = 1$	$\nu = 2$	$\nu = 3$

Note: Heteroskedasticity-consistent standard errors are in the parenthesis. Relative nominal wage, population density, and those neighbouring variables are expressed in logarithm. Okinawa is excluded from our sample. "Ne." indicates the neighbouring variable. * denotes statistical significance at the 10% level, ** at the 5% level and *** at the 1% level.

Table 9: Impacts of Relative Expected Nominal Wages in Net Migration Equation

	Dependent Variable: Net Migration Rate					
	Period: 1985-1990			Period: 1995-2000		
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Rel. Expected Nominal Wage	0.0638	0.0486	0.0368	0.0202	0.0147	0.0107
	(0.0706)	(0.0643)	(0.0590)	(0.0322)	(0.0298)	(0.0293)
Population Density	0.0007	0.0017	0.0024	−0.0049	−0.0046	−0.0044
	(0.0094)	(0.0082)	(0.0075)	(0.0032)	(0.0030)	(0.0030)
Ne. Population Density	0.0419**	0.0193*	0.0137	0.0084	0.0016	0.0003
	(0.0192)	(0.0108)	(0.0093)	(0.0120)	(0.0073)	(0.0058)
Landlock Dummy	0.0210	0.0198	0.0181	0.0049	0.0044	0.0040
	(0.0152)	(0.0158)	(0.0158)	(0.0130)	(0.0127)	(0.0125)
Temperature	0.1049***	0.1067***	0.1060***	0.0467*	0.0461*	0.0457*
	(0.0291)	(0.0304)	(0.0323)	(0.0264)	(0.0257)	(0.0258)
Temperature Squared	−0.0041***	−0.0042***	−0.0042***	−0.0019**	−0.0019**	−0.0019**
	(0.0010)	(0.0010)	(0.0011)	(0.0009)	(0.0009)	(0.0009)
Yearly Snow Days	−0.0002	−0.0004	−0.0004	−0.0002	−0.0003	−0.0003
	(0.0005)	(0.0004)	(0.0004)	(0.0002)	(0.0002)	(0.0002)
Constant	−0.9393***	−0.7925***	−0.7434**	−0.2992	−0.2432	−0.2286
	(0.2922)	(0.2764)	(0.2849)	(0.2084)	(0.1982)	(0.1984)
District Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	46	46	46	46	46	46
Adjusted R^2	0.7195	0.7084	0.7046	0.4906	0.4859	0.4848
Distance Decay Parameter	$\nu = 1$	$\nu = 2$	$\nu = 3$	$\nu = 1$	$\nu = 2$	$\nu = 3$

Note: Heteroskedasticity-consistent standard errors are in the parenthesis. Relative nominal wage, population density, and those neighbouring variables are expressed in logarithm. Okinawa is excluded from our sample. "Rel." indicates relative values to the neighbouring variables. "Ne." indicates the neighbouring variable. * denotes statistical significance at the 10% level, ** at the 5% level and *** at the 1% level.