

Online Appendix

Coworkers, Networks, and Job-Search Outcomes among Displaced Workers

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Appendix Tables

Table A.1. Job-Finding Rate: Effect of Time-Varying Network Characteristics

	(1)	(2)	(3)	(4)	(5)
Log Network Size	0.018 (0.005)	0.009 (0.006)	0.009 (0.006)	0.009 (0.006)	0.008 (0.006)
Share of Network Members Employed	0.171 (0.028)	0.078 (0.032)	0.033 (0.034)	0.065 (0.032)	0.019 (0.036)
Employed in Same Industry		0.146 (0.025)	0.148 (0.025)	0.145 (0.025)	0.144 (0.025)
Employed in Net Hiring Firms			0.101 (0.021)		0.100 (0.021)
Employed in Net Hiring Firms in 2 Qtrs.				0.078 (0.029)	
Employed in Above-Median-Wage Firms					0.027 (0.022)
Observations	247,926	247,926	247,926	247,926	247,926

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007. In each column we add a different measure of the network employment rate, as indicated. Share of network members employed, share of network members employed in same industry, and share of network members employed in net hiring firms are included as time-varying variables, changing at the quarterly level. All estimations allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.2. Effect of Network Characteristics on Probability of Finding a Job within 3 Months

	(1)	(2)	(3)	(4)	(5)
Log Network Size	0.005 (0.003)	0.001 (0.003)	0.000 (0.003)	0.001 (0.003)	0.000 (0.003)
Share of Network Members Employed	0.072 (0.014)	0.021 (0.017)	0.003 (0.017)	0.016 (0.017)	0.015 (0.018)
Employed in Same Industry		0.080 (0.013)	0.081 (0.013)	0.080 (0.013)	0.079 (0.013)
Employed at Net Hiring Firms			0.040 (0.011)		
Employed at Net Hiring Firms in 2 Qtrs.				0.028 (0.015)	
Employed at Above-Median-Wage Firms					0.011 (0.012)
Observations	151,432	151,432	151,432	151,432	151,432

Notes: Estimation results from OLS regressions in which the dependent variable is a dummy variable equal to 1 if the individual finds a new job within 90 days. The mean of the dependent variable is 0.72, standard deviation 0.45. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007. In each column we add a different measure of the network employment rate, as indicated. All specifications include closing-firm fixed effects. For a list of additional covariates, see Table 4 in the main text.

Table A.3. Job Finding Rate: Networks Excluding Coworkers from Last Year before Displacement

	(1)	(2)	(3)	(4)	(5)
Log Network Size	0.016 (0.004)	0.007 (0.004)	0.007 (0.003)	0.007 (0.004)	0.007 (0.004)
Employed	0.182 (0.023)	0.088 (0.026)	0.048 (0.022)	0.077 (0.026)	0.078 (0.028)
Employed in Same Industry		0.161 (0.021)	0.164 (0.018)	0.161 (0.021)	0.160 (0.021)
Employed in Net Hiring Firms			0.094 (0.016)		
Employed in Net Hiring Firms in 2 Qtrs.				0.066 (0.026)	
Employed in Above-Median-Wage Firms					0.018 (0.019)
Observations	148,000	148,000	148,000	148,000	148,000

Notes: Coworker network is defined by all workers who shared a workplace with the displaced worker over the past five years, excluding coworkers in the last year before displacement. Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007. In each column we add a different measure of the network employment rate, as indicated. All estimations allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.4. Job Finding Rate: Networks Excluding Coworkers from the Closing Firm

	(1)	(2)	(3)	(4)	(5)
Log Network Size	0.004 (0.003)	0.001 (0.003)	-0.000 (0.003)	0.000 (0.003)	0.001 (0.004)
Employed	0.241 (0.023)	0.129 (0.027)	0.088 (0.024)	0.117 (0.028)	0.125 (0.029)
Employed in Same Industry		0.136 (0.020)	0.139 (0.016)	0.136 (0.020)	0.136 (0.020)
Employed in Net Hiring Firms			0.095 (0.015)		
Employed in Net Hiring Firms in 2 Qtrs.				0.082 (0.023)	
Employed in Above-Median-Wage Firms					0.008 (0.018)
Observations	81,863	81,863	81,863	81,863	81,863

Notes: Coworker network is defined by all workers who shared a workplace with the displaced worker over the past five years, excluding coworkers in the closing firm. Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007. In each column we add a different measure of the network employment rate, as indicated. All estimations allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.5. Job-Finding Rate: Impact of Stayers

	(1)	(2)	(3)	(4)	(5)
Log Network Size	0.007 (0.006)	0.007 (0.006)	0.006 (0.004)	0.006 (0.006)	0.007 (0.006)
Share of Network Members Employed	0.122 (0.031)	0.109 (0.032)	0.071 (0.026)	0.097 (0.032)	0.104 (0.034)
Stayers in Old Firm	0.148 (0.028)	0.111 (0.047)	0.116 (0.033)	0.113 (0.047)	0.109 (0.047)
Employed in Same Industry		0.048 (0.042)	0.046 (0.033)	0.046 (0.043)	0.048 (0.042)
Employed in Net Hiring Firms			0.089 (0.018)		
Employed in Net Hiring Firms in 2 Qtrs.				0.075 (0.029)	
Employed in Above-Median-Wage Firms					0.011 (0.022)
Observations	151,432	151,432	151,432	151,432	151,432

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007. In each column we add a different measure of the network employment rate, as indicated. All estimations allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.6. Job-Finding Rate: Excluding Seasonal Industries

	(1)	(2)	(3)	(4)	(5)
Log Network Size	0.022 (0.006)	0.015 (0.007)	0.014 (0.007)	0.014 (0.007)	0.014 (0.007)
Share of Network Members Employed	0.228 (0.033)	0.149 (0.037)	0.114 (0.039)	0.134 (0.038)	0.141 (0.040)
Employed in Same Industry		0.121 (0.029)	0.123 (0.029)	0.121 (0.029)	0.119 (0.029)
Employed in Net Hiring Firms			0.080 (0.024)		
Employed in Net Hiring Firms in 2 Qtrs.				0.092 (0.033)	
Employed in Above-Median-Wage Firms					0.013 (0.025)
Observations	109,728	109,728	109,728	109,728	109,728

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007 excluding firms in the agriculture, construction, and tourism industries. In each column we add a different measure of the network employment rate, as indicated. All estimations allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.7. Job-Finding Rate: Robustness to Network Size and Average Size of Former Employers

	Baseline		Network <1,000		Network <500		Firm size ≤ 100	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log Network Size	0.016 (0.005)	0.008 (0.006)	0.021 (0.007)	0.012 (0.007)	0.023 (0.008)	0.012 (0.009)	0.021 (0.006)	0.009 (0.006)
Share of Network Members Employed	0.195 (0.028)	0.071 (0.034)	0.193 (0.030)	0.067 (0.035)	0.190 (0.032)	0.058 (0.038)	0.188 (0.029)	0.042 (0.036)
Employed in Same Industry		0.136 (0.025)		0.150 (0.027)		0.160 (0.029)		0.166 (0.028)
Employed in Net Hiring Firms		0.086 (0.021)		0.079 (0.023)		0.089 (0.025)		0.110 (0.025)
Observations	151,432	151,432	146,693	146,693	139,563	139,563	134,389	134,389

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. In the first two columns, the estimation sample includes workers displaced from firm closures in 1980-2007. In columns (3)-(4) and (5)-(6), the samples are restricted to the displaced workers with network size smaller than 1,000 and 500, respectively. Columns (7) and (8) show the estimates from the sample of displaced workers who worked at firms with average size of 100 or below over the past five years before displacement. All estimations allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.8. Job-Finding Rate: Effect of Network Characteristics, Blue vs White Collar

	White	Blue	Blue Weighted	White	Blue	Blue Weighted
Log Network Size	0.032 (0.009)	-0.001 (0.006)	-0.008 (0.010)	0.022 (0.010)	-0.006 (0.007)	-0.012 (0.011)
Share of Network Members Employed	0.213 (0.045)	0.152 (0.038)	0.115 (0.059)	0.078 (0.053)	0.042 (0.047)	0.021 (0.076)
Employed in Same Industry				0.160 (0.039)	0.078 (0.037)	0.076 (0.059)
Employed in Net Hiring Firms				0.072 (0.031)	0.139 (0.033)	0.102 (0.049)
Observations	70,828	80,604	80,604	70,828	80,604	80,604

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes white- and blue-collar workers displaced from firm closures in 1980-2007 in separate columns. The 3rd and 6th columns include the estimations on blue-collar workers sample with weights estimated to equalize the mean network characteristics of blue- and white-collar workers. All specifications allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.9. Job-Finding Rate: Effect of Network Characteristics, Austrian vs Non-Austrian

	Austrian	Non-Austrian	Non-Austrian Weighted	Austrian	Non-Austrian	Non-Austrian Weighted
Log Network Size	0.021 (0.006)	-0.023 (0.018)	-0.003 (0.024)	0.013 (0.006)	-0.040 (0.019)	-0.017 (0.025)
Share of Network Members Employed	0.195 (0.029)	0.049 (0.134)	-0.106 (0.171)	0.072 (0.035)	-0.248 (0.166)	-0.333 (0.215)
Employed in Same Industry				0.131 (0.026)	0.347 (0.123)	0.258 (0.147)
Employed in Net Hiring Firms				0.091 (0.022)	0.111 (0.104)	0.129 (0.124)
Observations	138,010	13,422	13,422	138,010	13,422	13,422

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes Austrian and non-Austrian workers displaced from firm closures in 1980-2007 in separate columns. The 3rd and 6th columns include the estimations on non-Austrian workers sample with weights estimated to equalize the mean network characteristics of Austrian and non-Austrian workers. All specifications allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.10. Job-Finding Rate: Effect of Network Characteristics, Young vs Older

	Age $\geq$ 36	Age<36	Age<36 Weighted	Age $\geq$ 36	Age<36	Age<36 Weighted
Log Network Size	0.007 (0.007)	0.018 (0.009)	0.008 (0.008)	-0.006 (0.007)	0.015 (0.010)	0.007 (0.009)
Share of Network Members Employed	0.285 (0.047)	0.176 (0.043)	0.145 (0.046)	0.096 (0.057)	0.102 (0.052)	0.090 (0.057)
Employed in Same Industry				0.218 (0.043)	0.050 (0.037)	0.025 (0.039)
Employed in Net Hiring Firms				0.108 (0.038)	0.091 (0.030)	0.098 (0.034)
Observations	80,158	71,274	71,274	80,158	71,274	71,274

Notes: Estimation results from Cox regressions in which the dependent variable is the hazard to a new job in days. Standard errors are in parentheses and clustered at the closing-firm level. The estimation sample includes workers displaced from firm closures in 1980-2007 who are younger than 36 years old and 36 years old and above in separate columns. The 3rd and 6th columns include the estimations on the sample of workers below age 36 with weights estimated to equalize the mean network characteristics of young and older workers. All specifications allow for closing-firm-specific baseline hazards. For a list of additional covariates, see Table 4 in the main text.

Table A.11. Wage Growth: Effect of Network Characteristics, Blue vs White Collar

	White	Blue	Blue Weighted	White	Blue	Blue Weighted
Log Network Size	0.007 (0.003)	0.002 (0.003)	0.008 (0.005)	0.004 (0.003)	0.001 (0.003)	0.007 (0.005)
Share of Network Members Employed	0.027 (0.018)	0.015 (0.015)	-0.014 (0.026)	-0.025 (0.023)	-0.006 (0.019)	-0.041 (0.033)
Employed in Same Industry				0.026 (0.016)	-0.009 (0.015)	-0.003 (0.022)
Employed at Above-Med.-Wage Firms				0.047 (0.016)	0.047 (0.014)	0.041 (0.023)
Observations	58,363	72,114	72,114	58,363	72,114	72,114

Notes: Estimation results from linear regressions in which the dependent variable is the difference in log wages between the last job and the new job. The sample is restricted to white- and blue-collar workers displaced from firm closures in 1980-2007 who find a new job within 365 days of firm closure in separate columns. The 3rd and 6th columns include the estimations on the sample of blue-collar workers with weights estimated to equalize the mean network characteristics of white- and blue-collar workers. Standard errors are in parentheses and clustered at the closing-firm level. All estimations include closing-firm fixed effects. For a list of additional covariates, see Table 4 in the main text.

Table A.12. Wage Growth: Effect of Network Characteristics, Austrian vs Non-Austrian

	Austrian	Non-Austrian	Non-Austrian Weighted	Austrian	Non-Austrian	Non-Austrian Weighted
Log Network Size	0.006 (0.002)	0.007 (0.010)	0.033 (0.014)	0.004 (0.002)	0.007 (0.011)	0.031 (0.015)
Share of Network Members Employed	0.030 (0.011)	-0.046 (0.068)	-0.078 (0.099)	-0.009 (0.015)	-0.094 (0.087)	-0.148 (0.127)
Employed in Same Industry				0.015 (0.011)	-0.014 (0.064)	0.005 (0.077)
Employed at Above-Med.-Wage Firms				0.045 (0.010)	0.099 (0.053)	0.104 (0.065)
Observations	118205	12272	12272	118205	12272	12272

Notes: Estimation results from linear regressions in which the dependent variable is the difference in log wages between the last job and the new job. The sample is restricted to Austrian and non-Austrian workers displaced from firm closures in 1980-2007 who find a new job within 365 days of firm closure in separate columns. The 3rd and 6th columns include the estimations on the sample of non-Austrian workers with weights estimated to equalize the mean network characteristics of Austrian and non-Austrian workers. Standard errors are in parentheses and clustered at the closing-firm level. All estimations include closing-firm fixed effects. For a list of additional covariates, see Table 4 in the main text.

Table A.13. Wage Growth: Effect of Network Characteristics, Young vs Older

	Age $\geq$ 36	Age<36	Age<36 Weighted	Age $\geq$ 36	Age<36	Age<36 Weighted
Log Network Size	0.007 (0.004)	0.003 (0.003)	0.000 (0.003)	0.005 (0.004)	0.002 (0.003)	-0.000 (0.004)
Share of Network Members Employed	0.035 (0.021)	0.025 (0.016)	0.011 (0.020)	-0.013 (0.026)	-0.009 (0.021)	-0.020 (0.026)
Employed in Same Industry				0.037 (0.020)	-0.009 (0.015)	-0.005 (0.017)
Employed at Above-Med.-Wage Firms				0.035 (0.018)	0.061 (0.014)	0.053 (0.017)
Observations	67,511	62,966	62,966	67,511	62,966	62,966

Notes: Estimation results from linear regressions in which the dependent variable is the difference in log wages between the last job and the new job. The sample is restricted to workers displaced from firm closures in 1980-2007 who find a new job within 365 days of firm closure and who are younger than 36 years old and 36 and above in separate columns. The 3rd and 6th columns include the estimations on the sample of workers age below 36 with weights estimated to equalize the mean network characteristics of young and older workers. Standard errors in parentheses and clustered at the closing-firm level. All estimations include closing-firm fixed effects. For a list of additional covariates, see Table 4 in the main text.

Table A.14. Hiring Probabilities: Unweighted

	All	Vienna	Same industry	Year > 1995	# Layoffs > 10
coeff. β	0.00062 (0.00001)	0.00047 (0.00002)	0.00133 (0.00005)	0.00047 (0.00002)	0.00040 (0.00002)
t-stat	45.47	25.07	24.18	30.79	22.75
$R_{j,l}^{Link}$	0.00087 (0.00001)	0.00066 (0.00002)	0.00214 (0.00005)	0.00070 (0.00002)	0.00058 (0.00002)
$R_{j,l}^{noLink}$	0.00025 (0.00001)	0.00020 (0.00001)	0.00081 (0.00003)	0.00023 (0.00001)	0.00017 (0.00001)
Ratio	3.45	3.40	2.64	3.06	3.38
Observations	4,168,303	1,704,759	662,346	2,579,934	1,350,377

Notes: Estimation for the probability of finding a new job in a connected firm from linear probability model. The parameter β measures the effect of having a direct link via a former coworker. Observations are pairs of closing and connected firms. For the definition of the dependent variable, see Equation (4) in the main text. The columns present estimation results for different subsamples of workers displaced from firm closures in 1980-2007. Standard errors are in parentheses and clustered at the closing-firm level.