

Supplemental Appendix for
“Learning from Coworkers”
Not Intended for Publication

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D Dataset Construction

Construction of Basic Annual Panel

The basic dataset comes in spell format where a spell can correspond either to employment or to a period of benefit receipt. We implement the publicly available code by Eberle, Schmucker and Seth (2013) to convert the spells into monthly cross sections which we then merge into a monthly panel covering 1993-2010.¹ For each spell that runs through an entire calendar year we see one observation per variable (occupation, employment status, average hourly wage, type of benefit receipt,...) per year. For all other spells, we see one observation per variable per spell.

Our main analysis is carried out on an annual panel and we select the spell overlapping January 31st of a given year as the observation for the year. This implies that the peer groups we study are the full workforce of the sample establishments on January 31st of each year from 1999 to 2009.

When assigning a wage observation we assign the daily wage during spells of full time employment unless otherwise noted.² As a consequence, we ignore information on earnings from part time employment and construct peer groups only from full time employees for full time employees. The reason is that, while we observe a part time flag, we do not have good information on hours which blurs the mapping between daily earnings—as reported to the social security administration—and the wage for non full time employees.

Construction of Regression Sample for Section 2

Team Construction We identify all workers that work at one of the sample establishments and construct teams with minimum size 2 as the collection of workers employed full time subject to social security during the reference spell for a given calendar year. We exclude workers in vocational training and interns. Thus, our reduced form exploration projects log wages for individual i working full time subject to social security in year $t + n$ on the wages

¹Download link accessed under http://doku.iab.de/fdz/reporte/2013/MR_04-13_EN.pdf.

²We follow the routine in the aforementioned code to select a main employment spell in case individuals hold several jobs.

of her full-time coworkers in year t if she worked in one of our sample establishments in year t .

Wages We drop the bottom percentile and the top .1 percentile of the annual wage observations and, since our approach requires information on wages, we only use information on full time workers who work subject to social security.³ We flag observations as top-coded due to the social security ceiling when they fall into one of the two masspoints which are easily identified in the wage distribution in a given year. We further omit any observations from the regressions in section 2 where wage growth over the corresponding horizon h falls into the top or bottom tenths of percentile of the pooled sample. To construct real wages we deflate using a CPI.

Mass Layoffs and Job Loss To identify a mass layoff event at an establishment, we use information from the IAB establishment panel, which is the annual survey from which the panel cases in our dataset are sampled. In particular, we identify a mass layoff event if the following is true: The establishment reduces full time employment by at least 25% since two years prior, still has a strictly positive number of full time employees, had more than 25 employees two years prior, did not build up employment by more than 30% between three and two years prior, does not rebuild to more than 90% of employment two years prior within the next year, and was surveyed each years from three years prior to one year past.⁴

We register a job loss for individual i in year t if there is at least one instance where she is employed subject to social security at the end of a month but not anymore at the end of the following month.⁵ We register a job loss in the context of a mass layoff event in year t if we register a job loss at the individual level during year t and a mass layoff event at her ascribed establishment, that is the one she works at during the spell overlapping January 31st of that year, during the same year t .

³The reason for the asymmetry is that almost no wage observations lie above the social security ceiling. A small number of observations have a wage that is above the ceiling which the data provider suspects may either be due to bonuses or actually incorrect. Dropping the top .1 percentile each year eliminates any such observations.

⁴These criteria closely follow Davis and von Wachter (2011).

⁵We do so when we actually have information on that worker for the following month, that is when we see her receiving benefits. If we do not have any information for the subsequent month we only register job loss if the worker disappears for more than two months from the dataset.

Construction of Estimation Sample for Section 4

To construct the sample for the structural estimation in section 4, we build on the same annual worker panel underlying our reduced form work.

We largely mimic the construction of the sample used in the reduced form part. We likewise drop the bottom percentile and the top .1 percentile of wage observations and only use information on full time workers who work subject to social security. As in the reduced form, we assign the workforce on January 31 during any year to the establishment in that year. We keep the same panel case establishments as in the reduced form and use only the years 1999-2009 since only in those years do we observe the full workforce of the establishments.

E Tables for Team Definition 1

This subsection reports all empirical results from the main body of the paper when we define a peer group to be all workers at an establishment.

Decile of the Wage Distribution										
	1	2	3	4	5	6	7	8	9	10
\bar{w}^+	0.19*** (0.010)	0.14*** (0.013)	0.16*** (0.017)	0.16*** (0.021)	0.15*** (0.026)	0.15*** (0.031)	0.13*** (0.038)	0.100** (0.031)	0.43*** (0.020)	0.32*** (0.074)
\bar{w}^-	0.060*** (0.011)	0.076*** (0.012)	0.083*** (0.013)	0.096*** (0.016)	0.092*** (0.017)	0.094*** (0.018)	0.11*** (0.017)	0.094*** (0.012)	0.060*** (0.011)	0.011* (0.0050)
Within R^2	0.42	0.091	0.058	0.045	0.043	0.046	0.058	0.087	0.21	0.057
Observations	287759	303889	306947	306718	304500	303378	303475	303665	315004	296800
Decile of the Age Distribution										
	1	2	3	4	5	6	7	8	9	10
\bar{w}^+	0.31*** (0.018)	0.27*** (0.020)	0.17*** (0.015)	0.14*** (0.013)	0.12*** (0.012)	0.10*** (0.012)	0.084*** (0.010)	0.072*** (0.0099)	0.051*** (0.0095)	0.038*** (0.0092)
\bar{w}^-	0.055** (0.019)	0.074*** (0.013)	0.056*** (0.0098)	0.053*** (0.0090)	0.049*** (0.0085)	0.056*** (0.0083)	0.063*** (0.0081)	0.070*** (0.0077)	0.070*** (0.0076)	0.069*** (0.0061)
Within R^2	0.61	0.70	0.75	0.78	0.80	0.80	0.81	0.83	0.83	0.84
Observations	348673	285365	286022	336003	354897	232921	333851	309471	265648	279320
Decile of the Tenure Distribution										
	1	2	3	4	5	6	7	8	9	10
\bar{w}^+	0.23*** (0.019)	0.24*** (0.020)	0.20*** (0.021)	0.18*** (0.016)	0.14*** (0.013)	0.094*** (0.013)	0.099*** (0.014)	0.084*** (0.014)	0.070*** (0.018)	0.086*** (0.024)
\bar{w}^-	0.056*** (0.012)	0.066*** (0.0097)	0.066*** (0.0093)	0.068*** (0.0089)	0.057*** (0.0085)	0.067*** (0.0088)	0.073*** (0.010)	0.082*** (0.011)	0.050*** (0.015)	0.053*** (0.016)
Within R^2	0.67	0.74	0.78	0.80	0.80	0.81	0.80	0.80	0.75	0.76
Observations	302698	296147	303727	304230	305582	307905	307934	306307	301182	296473
Decile of the Size Distribution										
	1	2	3	4	5	6	7	8	9	10
\bar{w}^+	0.068*** (0.0069)	0.098*** (0.014)	0.13*** (0.017)	0.14*** (0.022)	0.11*** (0.025)	0.14*** (0.030)	0.19*** (0.037)	0.20*** (0.037)	0.24** (0.066)	0.63** (0.12)
\bar{w}^-	0.030*** (0.0052)	0.048*** (0.0088)	0.043*** (0.012)	0.026 (0.014)	0.0033 (0.018)	0.017 (0.020)	0.011 (0.026)	-0.053 (0.041)	0.026 (0.053)	0.018 (0.017)
Within R^2	0.76	0.75	0.72	0.70	0.70	0.71	0.69	0.62	0.61	0.69
Observations	292073	299230	301358	309821	310036	311021	312640	312095	312825	271044

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: $\hat{\beta}^+$ and β^- as estimated from specification (2) for separate deciles of the wage, age, tenure, and team size distributions. We include observation i in the decile k in t if i falls into the k 'th decile of the distribution in year t . Team definition 1 at horizon $h = 3$ years. Standard errors clustered at the establishment level. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year (whenever possible).

Table E.I Baseline results for different deciles of the wage, age, tenure, and team size distribution. Team Definition 1. Counterpart to table IV.

Panel A: All Switchers					
Horizon in Years	1	2	3	5	10
\bar{w}^+	0.080*** (0.019)	0.15*** (0.019)	0.18*** (0.021)	0.23*** (0.022)	0.35*** (0.028)
\bar{w}^-	-0.033** (0.011)	-0.0037 (0.010)	0.0065 (0.012)	0.029 (0.015)	0.052* (0.024)
Within R^2	0.61	0.56	0.51	0.42	0.28
Observations	236844	275172	245570	193710	52114
Panel B: Switchers with Nonemployment Spell					
Horizon in Years	1	2	3	5	10
\bar{w}^+	0.092*** (0.018)	0.17*** (0.015)	0.19*** (0.016)	0.22*** (0.018)	0.33*** (0.026)
\bar{w}^-	-0.038* (0.019)	0.052*** (0.015)	0.056*** (0.017)	0.049* (0.019)	0.062* (0.031)
Within R^2	0.39	0.47	0.41	0.32	0.21
Observations	26822	87818	83827	70084	19542
Panel C: Switchers, Mass Layoff Event					
Horizon in Years	1	2	3	5	10
\bar{w}^+	0.15** (0.053)	0.15*** (0.035)	0.17*** (0.036)	0.17*** (0.043)	0.35*** (0.073)
\bar{w}^-	0.078 (0.061)	0.10* (0.043)	0.042 (0.049)	0.062 (0.054)	0.091 (0.087)
Within R^2	0.37	0.36	0.31	0.23	0.16
Observations	2871	6617	6855	6139	1895

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: $\hat{\beta}^+$ and β^- as estimated from specification (2) on a sample of establishment switchers. Team Definition 1. Column titles indicate horizon h . Standard errors clustered at the establishment level. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year.

Table E.II Establishment switchers. Counterpart to table V.

Horizon in Years	1	2	3	5
Specification (C.1)				
\hat{w}	0.087*** (0.0029)	0.13*** (0.0044)	0.17*** (0.0059)	0.23*** (0.0087)
Specification (C.2) - OLS				
D. \hat{w}	1.18*** (0.018)	1.00*** (0.015)	1.03*** (0.015)	1.08*** (0.015)
Specification (C.2) - First IV				
D. \hat{w}	0.070 (0.33)	0.32 (0.32)	0.11 (0.25)	0.25 (0.31)
C-D F-Stat	2781.2	2668.8	2280.3	1623.1
K-P F-Stat	75.2	77.3	73.4	65.6
Observations	2591738	2205499	1874646	1307635
Specification (C.2) - Second IV				
D. \hat{w}	0.15 (0.52)	0.53 (0.48)	0.16 (0.41)	-0.24 (0.58)
C-D F-Stat	1277.2	1134.5	859.3	476.8
K-P F-Stat	35.7	33.4	27.9	20.7
Observations	2362091	2016292	1717940	1201808

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Standard errors clustered at the establishment level. Cragg-Donald and Kleibergen-Paap F statistics.

Table E.III IV Results. Team Definition 1. Counterpart to table C.1.

	Horizon in Years				
	1	2	3	5	10
Bin 2	0.000038 (0.000043)	0.00018*** (0.000050)	0.00028*** (0.000072)	0.00045*** (0.00010)	0.00068*** (0.00016)
Bin 3	0.00018*** (0.000029)	0.00033*** (0.000045)	0.00050*** (0.000058)	0.00076*** (0.000089)	0.0011*** (0.00014)
Bin 4	0.00015*** (0.000022)	0.00030*** (0.000034)	0.00046*** (0.000048)	0.00066*** (0.000072)	0.00093*** (0.00014)
Bin 5	0.000025 (0.000031)	0.00014** (0.000048)	0.00029*** (0.000066)	0.00055*** (0.00010)	0.0011*** (0.00017)
Bin 6	0.000066** (0.000022)	0.00020*** (0.000035)	0.00035*** (0.000048)	0.00056*** (0.000078)	0.00073*** (0.00014)
Bin 7	0.00029*** (0.000029)	0.00041*** (0.000043)	0.00056*** (0.000060)	0.00080*** (0.000095)	0.0012*** (0.00017)
Bin 8	0.00040*** (0.000034)	0.00058*** (0.000044)	0.00078*** (0.000057)	0.0011*** (0.000089)	0.0015*** (0.00018)
Bin 9	0.00045*** (0.000041)	0.00067*** (0.000061)	0.00092*** (0.000076)	0.0013*** (0.00010)	0.0017*** (0.00019)
Bin 10	0.00050*** (0.000049)	0.00075*** (0.000071)	0.00100*** (0.000092)	0.0014*** (0.00012)	0.0018*** (0.00022)
Bin 11	0.00075*** (0.000034)	0.0011*** (0.000054)	0.0015*** (0.000075)	0.0022*** (0.00012)	0.0031*** (0.00019)
Within R^2	0.89	0.82	0.77	0.68	0.48
Observations	4061699	3553684	3057261	2215146	518545

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Each row reports the coefficient on the weight of bins 2 through 11 where the weight on the bottom bin is the omitted category. Each column corresponds to one line in figure 1. Team definition 1. Column titles indicate horizon h . Standard errors clustered at the establishment level. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year.

Table E.IV Results from specification (3) under team definition 1. Counterpart to table C.2.

	All	Above Team-Median	Below Team-Median	2nd Pct.	4th Pct.	7th Pct.	9th Pct.
Bin 2	0.00028*** (0.000072)	0.00038 (0.00086)	0.00029*** (0.000063)	0.00055** (0.00020)	0.000011 (0.00027)	0.00090*** (0.00018)	0.00019 (0.00010)
Bin 3	0.00050*** (0.000058)	0.0027** (0.00095)	0.00040*** (0.000052)	0.00016 (0.00023)	0.00042* (0.00021)	0.00048** (0.00016)	0.00032* (0.00013)
Bin 4	0.00046*** (0.000048)	0.0021** (0.00080)	0.00032*** (0.000047)	0.00020 (0.00016)	0.00080*** (0.00021)	0.00084*** (0.00018)	0.00027 (0.00016)
Bin 5	0.00029*** (0.000066)	0.0017* (0.00075)	0.00032*** (0.000086)	0.00052** (0.00016)	0.00040 (0.00021)	0.00029 (0.00023)	0.00062** (0.00023)
Bin 6	0.00035*** (0.000048)	0.0018* (0.00074)	0.00036*** (0.000046)	0.00053*** (0.00016)	0.00025 (0.00021)	0.0012*** (0.00023)	0.00016 (0.00012)
Bin 7	0.00056*** (0.000060)	0.0020** (0.00075)	0.00058*** (0.000066)	0.0011*** (0.00015)	0.00097*** (0.00024)	0.00086*** (0.00018)	0.00049*** (0.00010)
Bin 8	0.00078*** (0.000057)	0.0022** (0.00074)	0.0011*** (0.000089)	0.00088*** (0.00018)	0.00055 (0.00032)	0.0011*** (0.00019)	0.0013*** (0.00011)
Bin 9	0.00092*** (0.000076)	0.0024** (0.00075)	0.0013*** (0.00014)	0.00093*** (0.00019)	0.0012* (0.00055)	0.0013*** (0.00017)	0.0020*** (0.00012)
Bin 10	0.00100*** (0.000092)	0.0026*** (0.00076)	0.0011*** (0.00017)	0.00092*** (0.00027)	0.0011*** (0.00030)	0.0015*** (0.00021)	0.014 (0.0083)
Bin 11	0.0015*** (0.000075)	0.0030*** (0.00075)	0.0014*** (0.00020)	0.0016*** (0.00015)	0.0015*** (0.00020)	0.0016*** (0.00020)	0 (.)
Within R^2	0.77	0.72	0.79	0.10	0.053	0.064	0.20
Observations	3057261	1479286	1577972	300910	305370	302901	314668

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Each row reports the coefficient on the weight of bins 2 through 11 where the weight on the bottom bin is the omitted category. Columns 2 and 3 report the results when the sample is restricted to workers above (below) the team median wage. The remaining columns restrict the sample to workers from particular parts of the wage distribution. Team definition 1. Column titles indicate horizon h . Standard errors clustered at the establishment level. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year.

Table E.V Results from specification (3) under team definition 1 for various restricted samples. Counterpart to table C.3.

	Baseline	Teams w/o Apprentices	Teams w/o Top Coded Wages	Before 2005	After 2004
\bar{w}^+	0.17*** (0.012)	0.065*** (0.018)	0.085*** (0.0099)	0.17*** (0.014)	0.17*** (0.014)
\bar{w}^-	0.057*** (0.0081)	0.048*** (0.0095)	0.064*** (0.0075)	0.064*** (0.0096)	0.049*** (0.0088)
Within R^2	0.77	0.75	0.73	0.77	0.78
Observations	3032228	304525	298771	2107976	924249

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: $\hat{\beta}^+$ and $\hat{\beta}^-$ as estimated from specification (2). Team definition 2. Column (1): Baseline. Column (2): Sample restricted to teams without workers in apprenticeship. Column (3): Sample restricted to teams without top-coded wages. Columns(4) and (5) restrict split sample by years. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year (whenever possible).

Table E.VI Subsamples. Team Definition 1. Counterpart to table C.4.

	All 2000	>10% CB	No CB, No Benchmarking
\bar{w}^+	0.13*** (0.018)	0.13*** (0.020)	0.096* (0.043)
\bar{w}^-	0.033** (0.012)	0.047*** (0.013)	0.024 (0.023)
Within R^2	0.76	0.76	0.70
Observations	389140	318634	14251

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: $\hat{\beta}$ and $\hat{\beta}^-$ as estimated from specification (2). Team definition 1. Column (1): Benchmark results for year 2000 at horizon $h = 3$ years. Column (2): Restrict sample to establishments which report to pay at least 10% above their collective bargaining agreement. Column (3): Restrict sample to establishments which neither have a collective bargaining agreement nor benchmark their wage structure with one. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year.

Table E.VII Collective Bargaining. Team Definition 1. Counterpart to table C.5.

	Baseline	Est FE	Team	Occ x Yr
$\bar{w}^+ - \bar{w}^-$	0.045*** (0.0073)	0.11*** (0.0082)	0.10*** (0.0088)	0.047*** (0.0074)
Within R^2	0.77	0.56	0.58	0.77
Observations	3032228	3031943	3029247	3032165

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: We replace the separate right hand side variables \bar{w}^+ and \bar{w}^- in specification (2) with the gap $\bar{w}^+ - \bar{w}^-$. Team definition 1, horizon $h = 3$. Column (1): Baseline. Column (2): Baseline plus establishment fixed effects. Column (3): Baseline plus establishment x year fixed effects. Column (4): Baseline plus occupation x year fixed effects. The regressions include current wage and fixed effects for age decile, tenure decile, gender, education, occupation, and year.

Table E.VIII Fixed Effects. Team Definition 1. Counterpart to table C.6.

	Horizon in Years			
	1	2	3	5
\bar{w}^+	0.060*** (0.0058)	0.094*** (0.010)	0.12*** (0.014)	0.16*** (0.019)
\bar{w}^-	0.024*** (0.0046)	0.039*** (0.0072)	0.060*** (0.0096)	0.079*** (0.014)
Within R^2	0.91	0.87	0.82	0.74
Observations	1248289	1011117	767326	335135

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Baseline specification (2) with 5 additional lags of log wage.

Table E.IX Additional Lags. Team Definition 1. Counterpart to table C.7.

Wage Bill Growth Controls				
Horizon in Years	1	2	3	5
\bar{w}^+	0.089*** (0.0070)	0.13*** (0.0098)	0.17*** (0.013)	0.25*** (0.018)
\bar{w}^-	0.032*** (0.0048)	0.043*** (0.0063)	0.061*** (0.0084)	0.087*** (0.012)
Within R^2	0.89	0.83	0.78	0.69
Employment Growth Controls				
\bar{w}^+	0.089*** (0.0070)	0.13*** (0.0099)	0.18*** (0.013)	0.25*** (0.018)
\bar{w}^-	0.033*** (0.0050)	0.043*** (0.0065)	0.061*** (0.0085)	0.088*** (0.012)
Within R^2	0.89	0.83	0.78	0.69
Observations	2685544	2534701	2157995	1435300

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Additional Controls: Growth in total wage bill (or number) of the full time employed at the establishment between $t - 2$ and $t - 1$, $t - 1$ and t , and t and $t + 1$.

Table E.X Additional controls for establishment level wage bill (or employment) growth. Team Definition 1. Counterpart to table C.8.

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