

# Online Appendix for “Managing Long Working Hours: Evidence from a Management Practice Survey”

Mari Tanaka\* Taisuke Kameda Takuma Kawamoto

Shigeru Sugihara Ryo Kambayashi

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\*Mari Tanaka (corresponding author): Hitotsubashi University, Institute of Economic Research. 2-1 Naka, Kunitachi, Tokyo, Japan, email: mari.tanaka@r.hit-u.ac.jp, phone: +81-42(580)8369. Taisuke Kameda: Social Research Institute (ESRI) of the Cabinet Office of Japan. Takuma Kawamoto: Social Research Institute (ESRI) of the Cabinet Office of Japan. Shigeru Sugihara: Nihon University, College of Economics. Tokyo, Japan. Ryo Kambayashi: Hitotsubashi University, Institute of Economic Research. 2-1 Naka, Kunitachi, Tokyo, Japan; email: kambayas@ier.hit-u.ac.jp.

# **A Online Appendix for “Managing Long Working Hours: Evidence from a Management Survey”**

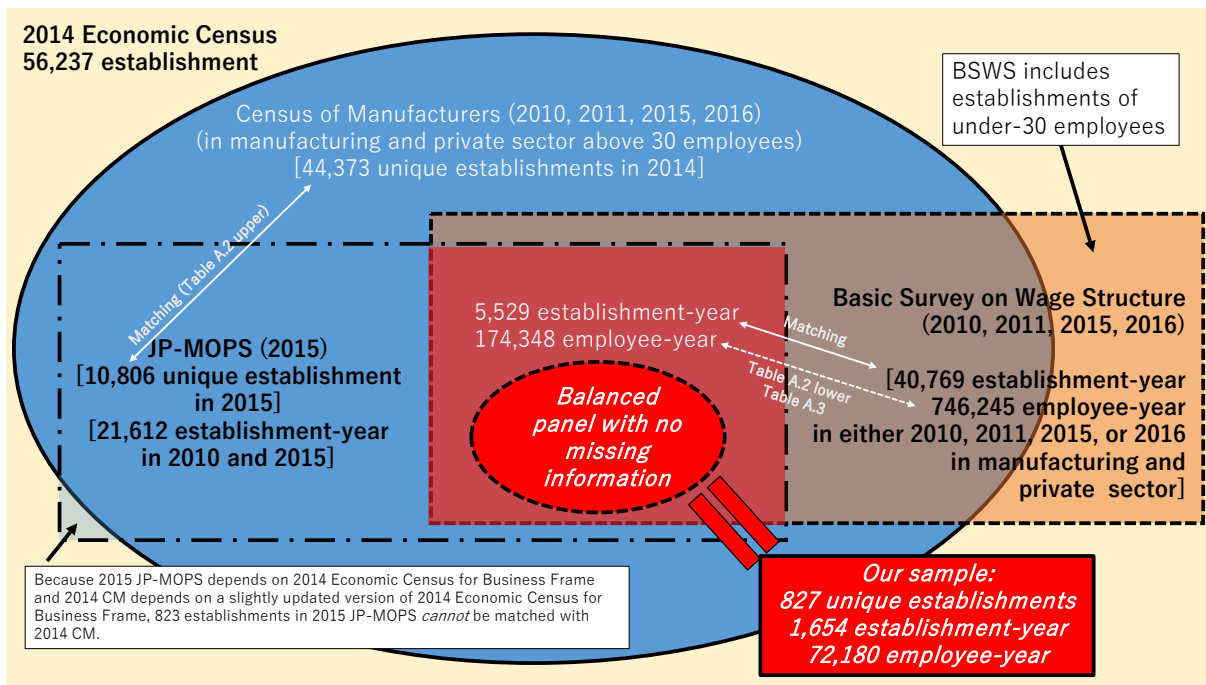
## **A.1 Data Appendix on the Survey of Employment Trends**

The Survey of Employment Trends (SET) is a survey conducted semi-annually by the Japanese Ministry of Labor, Health, and Welfare (MLHW). The information used in this survey is the total number of hires and separations of full-time workers over six months, either January–June or July–December, and the total number of full-time workers at the beginning of each period. We aggregate the semi-annual data at the annual level and define “hiring rate” (or “separation rate”) by the total number of hires (or separations) of full-time workers over the calendar year divided by the number of full-time workers at the beginning of the year.

We use the SET in 2010, 2011, 2014, and 2015 for the analysis described in Section 4. The total number of private manufacturing establishments observed in the original establishment sample of the SET is 1682 (in 2010), 1654 (in 2011), 1829 (in 2014), and 1843 (in 2015). Then, the JP-MOPS data on management practices in 2010 are matched to the SET in 2010 and 2011, and the JP-MOPS data for 2015 are matched the SET data in 2014 and 2015. The number of establishments matched to the JP-MOPS data is 316 (in 2010), 312 (in 2011), 339 (in 2014), and 411 (in 2015). In our analysis, we use a balanced panel sample of establishments that are matched to the JP-MOPS for at least one year in each period of 2010–2011 and 2014–2015. The balanced panel sample contained 166 unique establishments. In the analysis described in Section 4, we additionally match the information on intermediate input costs and shipment value of the establishments from the Census of Manufacturers. This balanced panel sample, matched with the shipment value, contains 155 unique establishments.

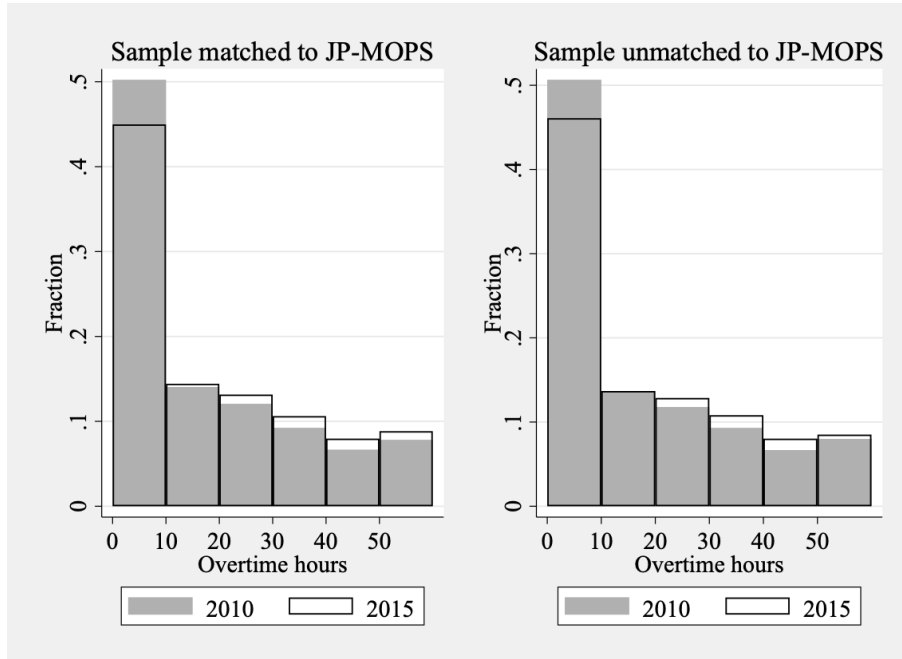
## A.2 Appendix Figures

Figure A.1: Illustration of Data Matching



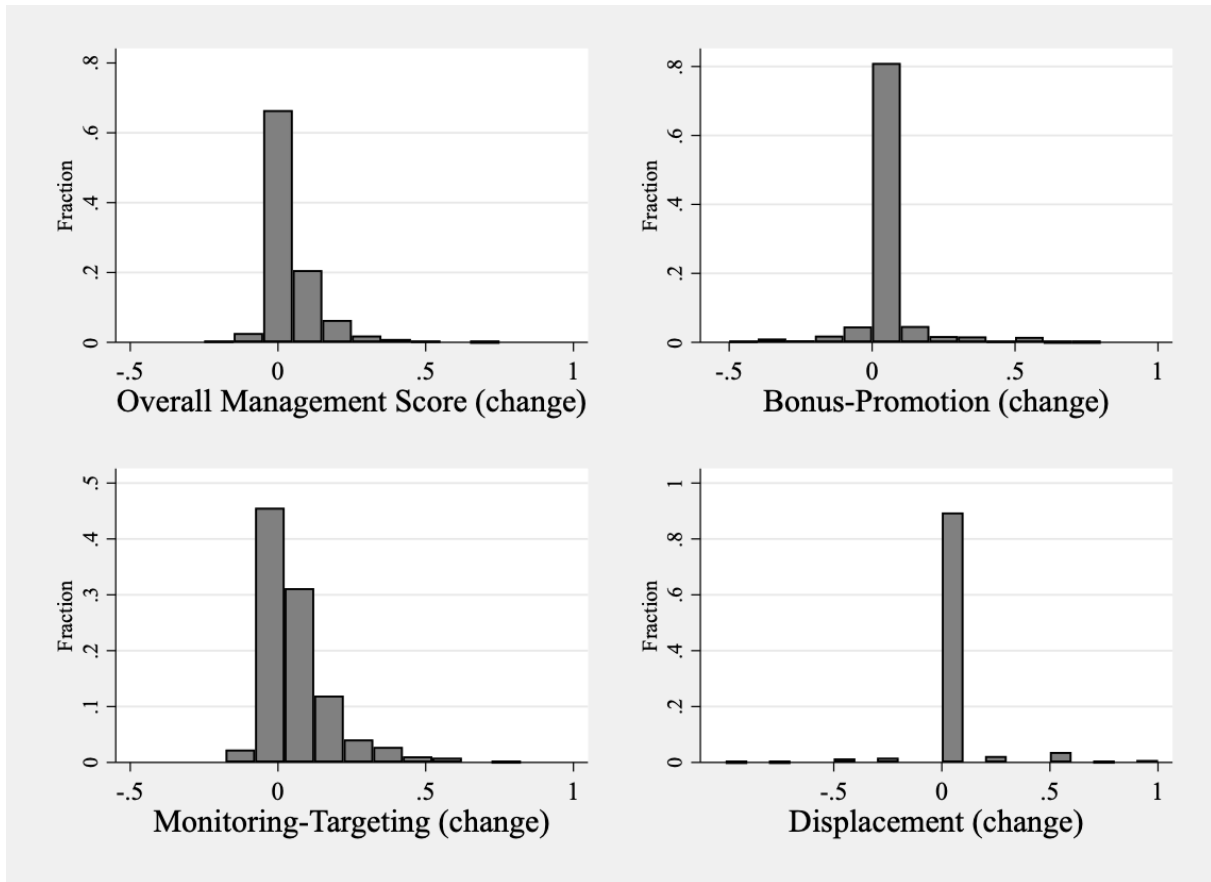
Notes: This figure illustrates the data we match to construct the sample for the main analysis. See Section ?? for the discussion.

Figure A.2: Distribution of Working Hours in Sample Matched to JP-MOPS and in Unmatched Sample



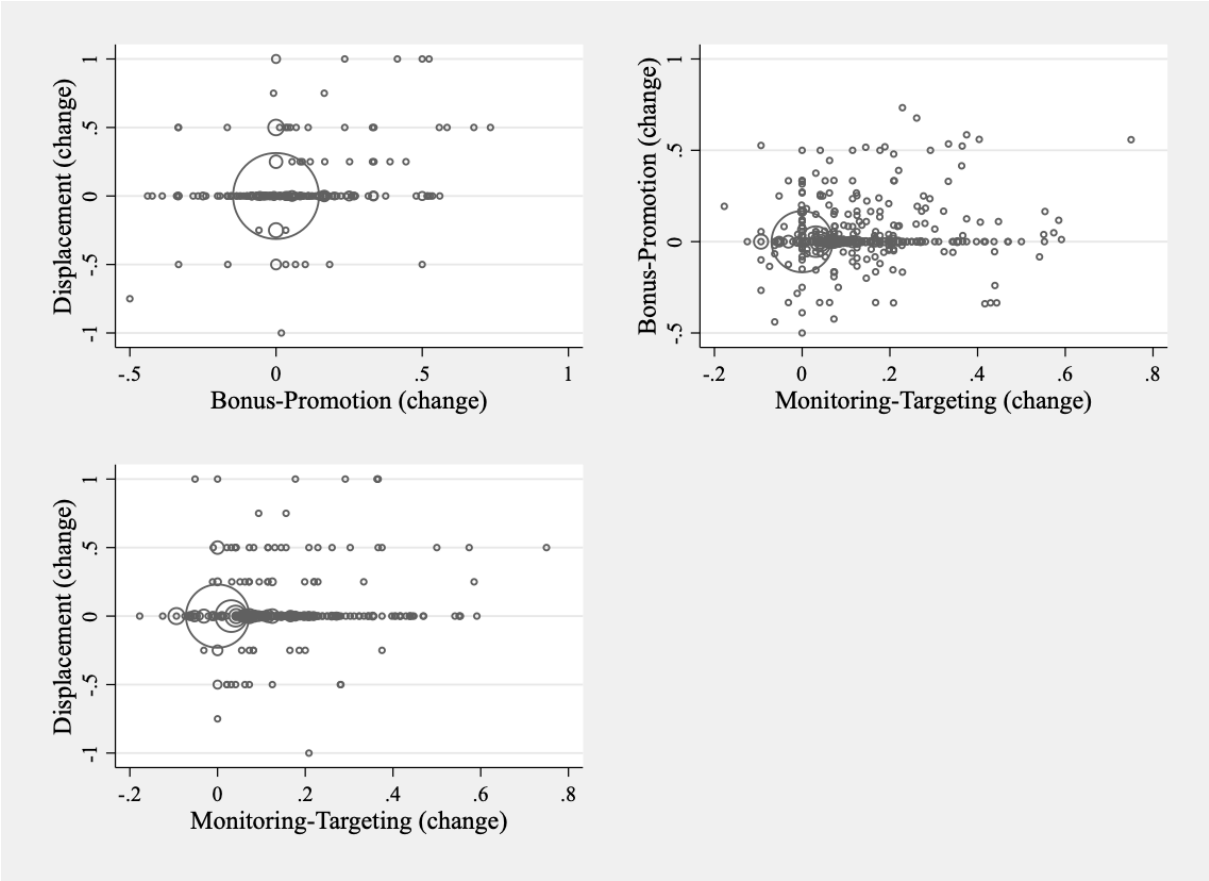
Notes: We divide the sample of establishments observed in the BSWs into two groups according to whether the sample is matched to the JP-MOPS (left figure) or not (right figure). The figures show the histograms of overtime hours among male workers by two groups of establishments and by periods 2010–2011 (light gray) and 2015–2016 (transparent). All workers working for more than 50 hours are top-coded as above 50 hours.

Figure A.3: Distribution of Changes in Scores



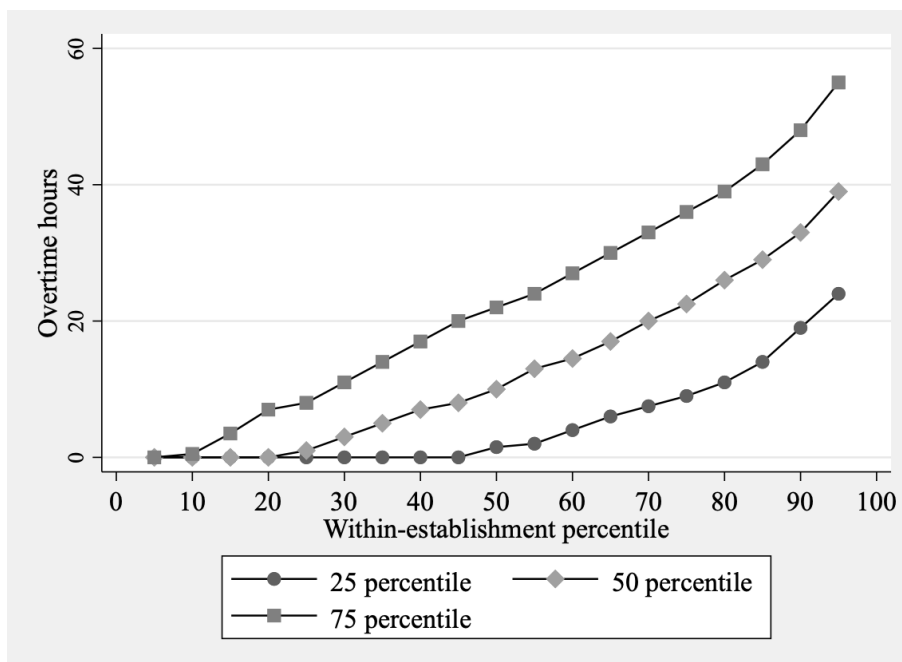
Notes: The figures distribution of establishment-level changes in the management scores using the sample of establishments in the JP-MOPS matched with the BSWs data for at least one year during each period of 2010–2011 and 2015–2016.

Figure A.4: Scatter Plots of Changes in Scores (Size of Circle = # of Observations)



Notes: The figures show scatter plots of establishment-level changes in the management scores for each pair of management categories. The size of the circle reflects the number of observations at the point (larger circles imply more observations at the point). We use the sample of establishments in JP-MOPS matched with the BSWs data for at least one year during each period of 2010–2011 and 2015–2016.

Figure A.5: Within- and Across-Establishments Distribution of Overtime Hours



Notes: To make this figure, we first identify overtime hours at the 5th, 10th, ..., and 95th percentiles in each establishment, and then for each percentile shown on the x-axis, we plot the 25, 50, and 75 percentiles of the across-establishment distribution. The figure indicates that 1) three-quarters of the establishments have 0 as the 10th percentile of the establishment's distribution of overtime hours, 2) half of the establishments have 0 as the 20th percentile of the establishment's distribution of overtime hours, and 3) a quarter of the establishments have 0 as the 45th percentile of the establishment's distribution of overtime hours. The figure uses the BSWs data for overtime hours in 2010.

## Appendix Tables

Table A.1: Titles of JP-MOPS Contacts by HR-Related and Non-HR-Related Departments

Title	Non-HR	HR	Share of the title
President	537	0	5%
Director/Chairman/Executive Officer	2,460	9	23%
Plant Manager	1,272	3	12%
Manager (e.g., General Manager, Department Manager, excluding Plant Manager)	2,276	65	22%
Section Chief/Head	2,016	172	20%
Others	1,365	97	14 %
Total	9,926	346	100 %

Notes: The table uses data from the JP-MOPS metadata on the titles of contacts, asked in a free-answer format. We classified the original titles into six mutually exclusive groups, as indicated in the table. For each title, the column “HR” shows the number of responses from departments/sections related to human resource, and “Non-HR” shows those from any of the other categories. The numbers in this table exclude 534 establishments that did not report the respondent’s title.



Table A.2: Characteristics of Sample Matched to JP-MOPS in Census of Manufacturers and BSWS

	Matched to MOPS			Unmatched to MOPS		
	Mean	S.D.	Median	Mean	S.D.	Median
<i>Census of Manufacturers in 2014 (establishment level)</i>		(N=9,983)			(N=34,390)	
Number of employees	140	349	70	122	286	60
Paid-up capital	490,030	2,716,451	5,000	303,562	2,264,533	4,212
Tangible assets	178,296	821,277	42,357	134,907	638,852	34,705
Value of production	741,724	3,738,793	144,261	523,660	3,123,739	115,031
Per-employee wage	413	158	396	391	194	374
Fraction of exports	2.98	11.18	0.00	2.55	10.82	0.00
<i>BSWS in 2010 (worker level)</i>		(N=37,952)			(N=145,807)	
Overtime hours	15.68	19.73	8	15.38	19.57	8
Ln(wage)	2.97	0.47	2.95	2.99	0.5	2.97
Female	0.22	0.41	0	0.23	0.42	0
Age	40.42	11.84	40	40.56	11.80	40
Tenure	14.21	11.45	12	13.96	11.39	12
High school grads.	0.66	0.47	1	0.62	0.49	1
2-year college grads.	0.09	0.28	0	0.09	0.29	0
4-year college grads.	0.20	0.40	0	0.24	0.43	0

Notes: The upper table uses the establishment data from the 2014 Japanese Census of Manufacturers that asks about production to establishments with more than 30 employees in the 2014 Economic Census for Business Frame. Since the sampling frame of the JP-MOPS is based on the 2014 Economic Census for Business, we use the 2014 Japanese Census of Manufacturers to compare the production characteristics of establishments between matched and unmatched samples. The lower table uses worker data of the BSWS in the manufacturing sector in 2010 (we use the sample in one year to be consistent with the table for establishments). The columns under “Matched to MOPS” indicate the characteristics of the establishments/workers matched with the JP-MOPS, and the columns under “Unmatched to MOPS” show those of the unmatched sample. Employees in the Census of Manufacturers include part-time workers and contractual workers. Tangible assets consist of land, buildings, machines, and equipment. Wage includes basic salaries and bonuses.

Table A.3: Scoring MOPS Survey Questions

<b>Question 1:</b> What best describes what happens at your firm when a problem in the production process arises?	
<b>Response</b>	<b>Score</b>
We fixed it but did not take further action	1/3
We fixed it and took action to make sure that it did not happen again	2/3
We fixed it and took action to make sure that it did not happen again, and had a continuous improvement process to anticipate problems such as those in advance	1
No action was taken	0
<b>Question 2:</b> How many key performance indicators are monitored in your firm?	
<b>Response</b>	<b>Score</b>
1–2 key performance indicators	1/3
3–9 key performance indicators	2/3
10 or more key performance indicators	1
No key performance indicators	0
<b>Question 3:</b> How frequently are key performance indicators typically reviewed by managers at your firm?	
<b>Response</b>	<b>Score</b>
Yearly	1/6
Quarterly	1/3
Monthly	1/2
Weekly	2/3
Daily	5/6
Hourly or more frequently	1
Never	0
<b>Question 4:</b> How frequently are key performance indicators typically reviewed by non-managers at your firm?	
<b>Response</b>	<b>Score</b>
See question 3	See Question 3
<b>Question 5:</b> Where are display boards showing service quality, output and other key performance indicators located in your firm?	
<b>Response</b>	<b>Score</b>
All display boards were located in one place (for example, in the store back office or at the end of the production line)	1/2
Display boards were located in multiple places (for example, at multiple places in the store or establishment)	1
No display boards	0
<b>Question 6:</b> What best describes the time frame of operational targets at your firm?	
<b>Response</b>	<b>Score</b>
Main focus was on short-term (less than one year) targets	1/3
Main focus was on long-term (more than one year) targets	2/3
Combination of short-term and long-term targets	1
No targets	0
<b>Question 7:</b> How easy or difficult is it in your firm for people to typically achieve their operational targets?	
<b>Response</b>	<b>Score</b>
Possible to achieve without much effort	0
Possible to achieve with some effort	1/2
Possible to achieve with normal amount of effort	3/4
Possible to achieve with more than normal effort	1
Only possible to achieve with extraordinary effort	1/4
<b>Question 8:</b> Who was aware of the operational targets at your firm?	
<b>Response</b>	<b>Score</b>
Only senior managers	0
Most managers and some workers	1/3
Most managers and most workers	2/3
All managers and most workers	1

Table A.3: Scoring MOPS survey questions (continued)

<b>Question 9:</b> What are non-managers' performance bonuses usually based on in your firm?	
<b>Response</b>	<b>Score</b>
Their own performance	1
Their team or shift performance	3/4
Their local establishment or branch's performance	1/2
Their entire company's performance	1/4
No performance bonuses	0
<b>Question 10:</b> When targets are met, what percent of non-managers received performance bonuses?	
<b>Response</b>	<b>Score</b>
0%	1/5
1-33%	2/5
34-66%	3/5
67-99%	4/5
100%	1
Targets not met	0
<b>Question 11:</b> What were managers' performance bonuses usually based on in your firm?	
<b>Response</b>	<b>Score</b>
See question 9	See question 9
<b>Question 12:</b> When production targets are met, what percent of managers at your firm received performance bonuses?	
<b>Response</b>	<b>Score</b>
See question 10	See question 10
<b>Question 13:</b> What is the primary way non-managers are promoted in your firm?	
<b>Response</b>	<b>Score</b>
Promotions are based solely on performance and ability	1
Promotions are based partly on performance and ability, and partly on other factors (for example, tenure or family connections)	2/3
Promotions are based mainly on factors other than performance and ability (for example, tenure or family connections)	1/3
Non-managers are normally not promoted	0
<b>Question 14:</b> What is the primary way managers are promoted in your firm?	
<b>Response</b>	<b>Score</b>
See question 13 (Replace "non-manager" with "manager")	See question 13
<b>Question 15:</b> When is an under-performing non-manager usually reassigned or dismissed?	
<b>Response</b>	<b>Score</b>
Within 6 months of identifying non-manager underperformance	1
After 6 months of identifying non-manager underperformance	1/2
Rarely or never	0
<b>Question 16:</b> When an under-performing manager is usually reassigned or dismissed?	
<b>Response</b>	<b>Score</b>
See question 15 (Replace "non-manager" with "manager")	See question 15

Notes: Management practices are scored on a 0-1 scale following ?. Questions 3, 4, and 5 are scored as 0 if missing, which typically arises when firms report "no performance indicators" to questions 2 and 6. The rationale for this is that firms with no performance indicators have no managerial or non-managerial review of performance indicators and have no performance display boards. For questions with multiple possible responses (those with "mark all that apply"), the average value was used. Only establishments with at least 10 scored responses were included.

Table A.4: Differences in Wage and Hours Regressions by Matched and Unmatched Samples

Sample	(1) Hour All	(2) Hour Matched	(3) Hour Unmatched	(4) Ln(Wage) All	(5) Ln(Wage) Matched	(6) Ln(Wage) Unmatched
Matched with JP-MOPS	0.082 (0.202)			-0.004 (0.004)		
Female	-7.249*** (0.097)	-7.444*** (0.195)	-7.168*** (0.111)	-0.289*** (0.002)	-0.289*** (0.003)	-0.288*** (0.002)
Tenure	-0.113*** (0.014)	-0.071** (0.028)	-0.120*** (0.016)	0.032*** (0.000)	0.033*** (0.001)	0.032*** (0.000)
Tenure squared	-0.149*** (0.031)	-0.179*** (0.062)	-0.150*** (0.036)	-0.037*** (0.001)	-0.041*** (0.001)	-0.036*** (0.001)
Education (middle school)	2.380*** (0.164)	2.315*** (0.310)	2.378*** (0.190)	-0.107*** (0.003)	-0.106*** (0.006)	-0.106*** (0.003)
Education (2-year college/technical)	-2.039*** (0.117)	-1.941*** (0.235)	-2.085*** (0.133)	0.081*** (0.002)	0.076*** (0.004)	0.082*** (0.002)
Education (4-year college)	-5.067*** (0.116)	-5.028*** (0.222)	-5.033*** (0.134)	0.235*** (0.002)	0.216*** (0.004)	0.240*** (0.003)
Age	0.590*** (0.023)	0.661*** (0.043)	0.564*** (0.026)	0.041*** (0.000)	0.040*** (0.001)	0.041*** (0.000)
Age squared	-0.970*** (0.026)	-1.068*** (0.049)	-0.936*** (0.030)	-0.049*** (0.000)	-0.048*** (0.001)	-0.049*** (0.001)
Observations	746,245	174,348	571,897	746,245	174,348	571,897
R-squared	0.112	0.134	0.111	0.654	0.643	0.660

Notes: This table uses the sample of employees in the 2010–2011 and 2015–2016 BSWS, restricting them to establishments with more than 30 employees. Columns (1) and (4) show the results of regressing overtime hours and the log of hourly wage on workers’ characteristics, and a dummy variable indicating that the observation is matched with the JP-MOPS. Columns (2) and (5) use the sample matched with the JP-MOPS, and columns (3) and (6) use the rest. All regressions additionally control for year fixed effects, industry fixed effects (3-digit codes in the BSWS), prefecture fixed effects, and the log of employment size. Standard errors are clustered at the level of establishments, and are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.5: Basic Statistics (Establishment-Level Variables)

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>	<b>N</b>
<i>2010 Management practice scores</i>						
Overall Management	0.507	0.166	0.513	0	0.937	827
Bonus–Promotion	0.618	0.217	0.650	0	1	827
Monitoring–Targeting	0.507	0.220	0.510	0	0.957	827
Displacement	0.222	0.339	0	0	1	827
Employment	320	554	133	23	6440	827
Cost of intermediate inputs	11621	50105	1647	0.17	831908	827
<i>2015 Management practice scores</i>						
Overall Management	0.551	0.161	0.569	0.033	0.952	827
Bonus–Promotion	0.638	0.209	0.670	0	1	827
Monitoring–Targeting	0.573	0.217	0.615	0	0.957	827
Displacement	0.244	0.350	0	0	1	827
Employment	309	535	130	12	6527	827
Cost of intermediate inputs	11127	45582	1742	3	765063	827
<i>Changes in management practice scores 2010–2015</i>						
Overall Management (change)	0.044	0.086	0.016	-0.25	0.653	827
Bonus–Promotion (change)	0.020	0.115	0	-0.5	0.733	827
Monitoring–Targeting (change)	0.066	0.114	0.031	-0.178	0.75	827
Displacement (change)	0.021	0.164	0	-1	1	827
Employment (change)	-11	138	-1	-1826	756	827
Cost of intermediate inputs (change)	-494	13739	25	-277463	124737	827

Notes: This table shows the statistics of the establishment-level variables. The sample is a balanced panel of establishments in the JP-MOPS (2015) that are observed in the BSWS data for at least one year during each period of 2010–2011 and 2015–2016 and have non-missing observations for the establishment’s cost of intermediate inputs.

Table A.6: Firm Characteristics in 2010 and Management Practices in 2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Overall management score in 2010						
Average overtime hours	0.0014*** (0.0004)						
Share of employees working long hours		0.0037 (0.0328)					
Average tenure			0.0033*** (0.0012)				
Share of home-grown employees				0.2063*** (0.0248)			
Share of female employees					-0.1215*** (0.0295)		
Share of college graduates						0.1416*** (0.0333)	
Log Shipment							0.0467*** (0.0029)
Constant	0.4783*** (0.0091)	0.5009*** (0.0066)	0.4590*** (0.0157)	0.4283*** (0.0105)	0.5304*** (0.0089)	0.4758*** (0.0083)	-0.1026*** (0.0380)
Observations	933	933	933	933	933	933	862
R-squared	0.0114	0.0000	0.0092	0.0694	0.0178	0.0180	0.2146

Notes: This table regresses the level of overall management practice score in 2010 on the establishment's characteristics in 2010. For each establishment, the following variables were calculated from the sample of regular workers in the BSWs from 2010 to 2011. "Average overtime hours" is the average overtime hours in the establishment. "Share of employees working long hours" is the share of workers who worked more than 45 hours of overtime per month. "Share of home-grown employees" is the share of regular workers who were hired directly upon graduation. "Share of female employees" and "Share of college graduates" is the share of female workers and the share of college graduates, respectively. "Log(Shipment)" is the average of the log of shipment value in 2010–2011. Robust standard errors are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.7: Decomposing Changes in Management Practices

	(1)	(2)	(3)	(4)	(5)	(6)
	Changes in management practice scores 2010–2015					
Industry FE	Yes	No	No	Yes	Yes	Yes
Size bin FE	No	Yes	No	Yes	Yes	Yes
Prefecture FE	No	No	Yes	Yes	Yes	Yes
Change in flexible input use	No	No	No	No	No	Yes
Observations	827	827	827	827	827	827
R-squared	0.185	0.024	0.078	0.295	0.295	0.296

Notes: This table examines how much of the changes in management practice scores are explained by industry, firm size, prefecture, and firm-specific demand. The size bin takes one of the seven categories of firm size in the BSWS. The change in flexible input from 2010 to 2015, measured by the change in the log of the total cost for materials, fuel, and electricity, is included only in column (6) as a proxy for firm-specific demand. Column (5) restricts the sample to establishments with non-missing values for the change in flexible input. Industry fixed effects are included at the level of the 3-digit industry code in the BSWS.

Table A.8: Production Shocks and Changes in Management Practices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Changes in scores from 2010–2015							
	Overall management		Monitoring and targeting		Bonus and promotion		Displacement	
D Log(Shipment)	0.0036		0.0063		0.0018		-0.0001	
	(0.0034)		(0.0054)		(0.0045)		(0.0045)	
D Log(Cost of intermediate inputs)		0.0027		0.0041		0.0011		0.0003
		(0.0033)		(0.0048)		(0.0042)		(0.0044)
Observations	853	820	853	820	853	820	853	820
R-squared	0.0018	0.0010	0.0031	0.0013	0.0002	0.0001	0.0000	0.0000

Notes: This table regresses the changes in management practice scores on production shocks around the baseline years. The production shocks in the baseline years are measured by the average yearly establishment shipment growth and intermediate input cost (both measured in log differences) from 2009 to 2011. Both measures are rescaled to a mean of 0 and a standard deviation of 1 to ease the interpretation of the coefficients. Robust standard errors are reported in parentheses.

Table A.9: Firm Characteristics in 2010 and Changes in Management Practices in 2010–2015

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Changes in overall management score from 2010–2015						
Average overtime hours	-0.0002 (0.00002)						
Share of employees working long hours		-0.0053 (0.0147)					
Average tenure			-0.0019*** (0.00005)				
Share of home-grown employees				-0.0341*** (0.0128)			
Share of female employees					0.0485*** (0.0180)		
Share of college graduates						0.0009 (0.0193)	
Log Shipment							-0.0058*** (0.0015)
Constant	0.0494*** (0.0050)	0.0459*** (0.0035)	0.0701*** (0.0080)	0.0574*** (0.0060)	0.0337*** (0.0046)	0.0452*** (0.0044)	0.1201*** (0.0207)
Observations	933	933	933	933	933	933	862
R-squared	0.0013	0.0001	0.0118	0.0072	0.0107	0.0000	0.0126

Notes: This table regresses changes in overall management practice scores from 2010 to 2015 on the establishment's characteristics in 2010. For each establishment, the following variables were calculated from the sample of regular workers in the BSWS from 2010 to 2011. "Average overtime hours" is the average overtime hours in the establishment. "Share of employees working long hours" is the share of workers who worked more than 45 hours of overtime per month. "Share of home-grown employees" is the share of regular workers who were hired directly upon graduation. "Share of female employees" and "Share of college graduates" is the share of female workers and the share of college graduates, respectively. "Log Shipment" is the average of the log of shipment value in 2010–2011. Robust standard errors are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.



Table A.10: Basic Statistics (Employee-Level Variables)

Variable	Mean	Std. Dev.	Min,	Max	N
Wage (hourly, 100 JPY)	21.561	10.256	3.913	468.222	72180
Ln(Wage)	2.971	0.445	1.364	6.149	72180
Overtime hours	18.068	20.264	0	195	72180
Female	0.22	0.414	0	1	72180
Age	38.743	10.895	16	59	72180
Tenure	13.582	10.841	0	44	72180
Middle school	0.032	0.177	0	1	72180
High school	0.679	0.467	0	1	72180
Junior/technical college	0.096	0.295	0	1	72180
4-year college	0.192	0.394	0	1	72180

Notes: This table shows the statistics of employee-level variables. The sample comprises the employees in the BSWS in the balanced panel of establishments that are matched to the JP-MOPS for at least one year in each period of 2010–2011 and 2015–2016 and have non-missing observations for the establishment’s total cost of inputs.

Table A.11: Overtime Hours Basic Statistics

	Mean	SD	Median	Over 10h	Over 45h	N
Year=2010, 2011	17.42	20.17	11	0.52	0.10	35773
Year=2015, 2016	18.7	20.33	13	0.55	0.11	36407
Tenure $\leq 9$	19.32	20.79	13	0.56	0.12	32896
Year=2010, 2011	18.94	21.06	12	0.55	0.12	16325
Year=2010, 2011	18.94	21.06	14	0.58	0.12	16325
Tenure $\geq 10$	17.02	19.75	10	0.51	0.09	39284
Year=2010, 2011	16.15	19.3	9	0.50	0.09	19448
Year=2010, 2011	16.15	19.3	11	0.53	0.10	19448
Male	20.18	21.07	15	0.59	0.12	56322
Year=2010, 2011	19.38	21	14	0.57	0.12	27891
Year=2015, 2016	20.97	21.1	16	0.61	0.13	28431
Female	10.56	14.85	4	0.36	0.04	15858
Year=2010, 2011	10.48	14.96	4	0.35	0.04	7882
Year=2015, 2016	10.63	14.74	4	0.36	0.04	7976

Notes: This table shows the statistics for overtime hours. The sample comprises the employees in the BSWS in the balanced panel of establishments that are matched to the JP-MOPS for at least one year in each period of 2010–2011 and 2015–2016 and have non-missing observations for the establishment’s total cost of inputs. The column labeled “Over 10h” (or “Over 45h”) shows the share of workers who work more than 10 hours (or 45 hours) overtime.

Table A.12: Overtime Hours and Management Practices by Tenure, Disaggregating Bonus and Promotion Score

	(1)	(2)	(3)	(4)
	Over 10h	Over 10h	Over 45h	Over 45h
Sample: by tenure	Junior	Senior	Junior	Senior
Bonus	0.242*** (0.080)	0.170** (0.074)	0.130* (0.070)	-0.005 (0.054)
Promotion	0.066 (0.089)	-0.049 (0.073)	0.012 (0.044)	-0.008 (0.066)
Monitoring-Targeting	0.025 (0.105)	-0.008 (0.086)	-0.118* (0.063)	-0.031 (0.059)
Replacement	-0.045 (0.067)	-0.011 (0.060)	-0.057 (0.046)	-0.017 (0.031)
Observations	33,398	35,240	33,398	35,240
Mean dep. var.	0.566	0.513	0.120	0.0917

Notes: Columns labeled “Junior” use the sample of workers whose tenure is less than 11 years (median), and columns labeled “Senior” use the rest. All regressions control for year fixed effects, establishment fixed effects, the log of intermediate input cost, and worker attributes: age, age squared, female dummy, and three education dummies. Standard errors are clustered at the level of the establishment and are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.13: Overtime Hours and Management Practices by Age

	(1)	(2)	(3)	(4)
	Over 10h	Over 10h	Over 45h	Over 45h
Sample: by age	Young	Mid-Career	Young	Mid-Career
Bonus-Promotion	0.255*** (0.096)	0.264*** (0.090)	0.088 (0.055)	0.025 (0.056)
Monitoring-Targeting	-0.021 (0.092)	-0.057 (0.078)	-0.102* (0.056)	-0.068 (0.048)
Displacement	-0.038 (0.059)	-0.042 (0.059)	-0.029 (0.039)	-0.038 (0.033)
Observations	33,897	38,278	33,897	38,278
Mean dep. var.	0.595	0.484	0.127	0.0868

Notes: Columns labeled “Young” use the sample of workers aged less than 38 years old (sample median), and columns labeled “Mid-Career” use the rest. All regressions control for year fixed effects, establishment fixed effects, the log of intermediate input cost, and worker attributes such as age, age squared, tenure, tenure squared, female dummy, and three education dummies. Standard errors are clustered at the level of the establishment and are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.14: Characteristics of Workers Working Overtime (Estimates of Propensity Score)

	(1)	(2)
	Over 10h	Over 45h
Age	0.027*** (0.002)	0.036*** (0.004)
Age <sup>2</sup>	-0.051*** (0.003)	-0.056*** (0.004)
Female	-0.380*** (0.007)	-0.533*** (0.013)
Tenure	-0.006*** (0.001)	-0.011*** (0.002)
Tenure <sup>2</sup>	0.007*** (0.003)	0.006 (0.005)
Middle school	0.035*** (0.013)	0.072*** (0.020)
Junior/technical college	-0.075*** (0.010)	-0.063*** (0.016)
College	-0.207*** (0.007)	-0.135*** (0.012)
Constant	-0.499*** (0.038)	-1.882*** (0.062)
Observations	222,293	222,293

Notes: Probit models are estimated for the probability of working overtime above  $x$  hours ( $\text{OH} \geq x$ ) for  $x = 10, 45$ . Data on full-time workers at non-managerial positions in the BSWs 2009 are used. The reference group for the education dummies is high-school graduates. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A.15: Additional control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Over 10h	Over 45h	Over 10h	Over 45h	Over 10h	Over 45h	Over 10h	Over 45h	Over 10h	Over 45h
Bonus-Promotion	0.255*** (0.084)	0.052 (0.050)	0.256*** (0.083)	0.052 (0.049)	0.251*** (0.083)	0.054 (0.049)	0.256*** (0.083)	0.055 (0.050)	0.272*** (0.083)	0.069 (0.050)
Monitoring-Targeting	-0.028 (0.079)	-0.084* (0.048)	-0.019 (0.080)	-0.072 (0.047)	-0.029 (0.079)	-0.077 (0.047)	-0.023 (0.078)	-0.074 (0.047)	-0.001 (0.076)	-0.054 (0.046)
Displacement	-0.040 (0.056)	-0.032 (0.033)	-0.042 (0.056)	-0.034 (0.032)	-0.043 (0.055)	-0.034 (0.033)	-0.040 (0.056)	-0.030 (0.033)	-0.038 (0.056)	-0.029 (0.033)
Log(Shipment)	0.021 (0.020)	0.025** (0.011)								
Average tenure in 2010 × Year 2015–16			0.001 (0.002)	0.002 (0.002)						
Home-grown share in 2010 × Year 2015–16					-0.016 (0.045)	0.030 (0.030)				
Female share in 2010 × Year 2015–16							-0.024 (0.057)	-0.046 (0.031)		
Log(Shipment in 2010) × Year 2015–16									0.012** (0.006)	0.013*** (0.004)
Observations	72,180	72,180	72,180	72,180	72,180	72,180	72,180	72,180	72,180	72,180
Mean dep. var.	0.536	0.106	0.536	0.106	0.536	0.106	0.536	0.106	0.536	0.106

Notes: The regressions control for the following variables in addition to establishment fixed effects, the log of intermediate input cost, and worker attributes that are age, age squared, tenure, tenure squared, female dummy, and three education dummies. “Log(Shipment)” is the log of sales of the establishment in the year of observation. “Average tenure in 2010 × Year 2015” is the average tenure of workers in 2010–2011, interacting with a dummy variable indicating years 2015–2016. “Home-grown share in 2010 × Year 2015” is the share of regular workers who were hired directly upon graduation in 2010–2011, interacting with a dummy variable indicating years 2015–2016. “Female share in 2010 × Year 2015” is the share of female workers in 2010–2011, interacting with a dummy variable indicating years 2015–2016. Average tenure, home-grown share, and female share in 2010 are calculated for each establishment from the worker sample of the BSWS in 2010–2011. “Log(Shipment in 2010) × Year 2015” is the log of sales in 2010–2011, interacting with a dummy variable indicating years 2015–2016. Standard errors are clustered at the level of establishments and reported in the parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.16: Overtime Hours and Management Practices, Restricted to Respondents Whose Tenure is Longer than 7 Years

	(1)	(2)
	Over 10h	Over 45h
Bonus–Promotion	0.226** (0.094)	0.041 (0.055)
Monitoring–Targeting	-0.022 (0.092)	-0.079 (0.054)
Displacement	-0.051 (0.061)	-0.038 (0.036)
Observations	59,160	59,160
Mean dep. var.	0.529	0.102

Notes: The sample is restricted to JP-MOPS respondents whose tenure is longer than seven years. All regressions control for establishment fixed effects, the log of intermediate input cost, and worker attributes such as age, age squared, tenure, tenure squared, female dummy, and three education dummies. Standard errors are clustered at the level of the establishment and are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.17: Overtime Hours and Management Practices: Redefining Management Scores by Dropping Questions about Managers

	(1)	(2)
	Over 5h	Over 45h
Bonus–Promotion	0.128 (0.084)	0.029 (0.043)
Monitoring–Targeting	-0.007 (0.071)	-0.087* (0.048)
Displacement	-0.044 (0.042)	-0.003 (0.026)
Observations	71,942	71,942
Mean dep. var.	0.634	0.106

Notes: This table shows the results of using alternative management scores that are defined only by MOPS questions regarding non-managers. More specifically, the bonus–promotion score is defined by MOPS questions 9–10 and 13 (instead of 9–14) and displacement score is defined by question 15 (instead of 15–16). All regressions control for establishment fixed effects, the log of intermediate input cost, and worker attributes that are age, age squared, tenure, tenure squared, female dummy, and three education dummies. Standard errors are clustered at the level of the establishment and are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.18: Shares of Newly Hired and Staying Workers

	(1)	(2)	(3)	(4)
	Share of employees who are...			
Tenure	Hired	Hired	Hired	Stayer
Age	All	Young	Mid-Career	All
Bonus–Promotion	0.051 (0.054)	0.028 (0.035)	0.023 (0.039)	-0.051 (0.054)
Monitoring–Targeting	-0.048 (0.048)	-0.003 (0.040)	-0.045 (0.035)	0.048 (0.048)
Displacement	-0.019 (0.029)	-0.024 (0.023)	0.005 (0.018)	0.019 (0.029)
Observations	2,353	2,353	2,353	2,353
Number of establishments	878	878	878	878
Mean dep. var.	0.267	0.159	0.107	0.733

Notes: This table uses the employees’ sample in the BSWS (in the balanced panel of establishments that are matched to the JP-MOPS for at least one year in each period of 2010–2011 and 2015–2016) aggregated at the level of establishment-year observations. Regression controls for year fixed effects, establishment fixed effects, and the log of intermediate input cost. The dependent variables are the within-establishment shares of employees with the specified characteristics among the employees observed in the BSWS. “Hired” indicates that the employee’s tenure is shorter than 5 years. “Stayer” indicates that the employee’s tenure is equal to or longer than 5 years. “Young” indicates that the worker’s age is equal to or less than 30 years. “Mid-Career” indicates that the worker’s age is above 30 years. Standard errors are clustered at the level of the establishment and are reported in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.19: Hiring of New Graduates

	(1)	(2)	(3)	(4)	(5)	(6)
	Number of hiring			Indicator of hiring		
	Total	Male	Female	Total	Male	Female
Bonus–Promotion	-0.434 (1.565)	-0.168 (1.155)	-0.267 (0.757)	0.048 (0.164)	0.118 (0.162)	-0.122 (0.137)
Monitoring–Targeting	-1.013 (2.242)	-0.570 (1.952)	-0.443 (0.599)	-0.039 (0.139)	-0.073 (0.148)	-0.045 (0.139)
Displacement	-1.314 (1.201)	-0.343 (0.839)	-0.971 (0.700)	-0.077 (0.090)	-0.140 (0.096)	-0.095 (0.100)
Observations	2,399	2,399	2,399	2,399	2,399	2,399
Number of establishments	896	896	896	896	896	896
Mean dep var	6.866	5.536	1.330	0.649	0.602	0.356

Notes: This table uses the establishment sample of the BSWs in 2010–2011 and 2015–2016, restricting to the balanced panel of establishments that are matched to the JP-MOPS for at least one year in each period of 2010–2011 and 2015–2016. Regression controls for year fixed effects, establishment fixed effects, and the log of intermediate input cost. The dependent variables in columns (1)–(3) are the total number of new graduates hired by the establishment under regular contracts and those by gender. These variables are converted to dummy variables, which indicates the hiring of new graduates, and used as alternative dependent variables in columns (4)–(6). Standard errors are clustered at the level of the establishment and are reported in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .