

Examining the Link Between Health Measures, Management Practices and Establishment Performance

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- Persistently large productivity differences between firms (Syverson, 2011)
 - Management is missing in production functions (Mundlak, 1961)
 - Recent focus on management to explain productivity differences (Bloom & van Reenen, 2007; 2010,;2013; Lazear, 2000; Shaw, 2009)
- „Anglo-Saxon“ management practices measured as
 - Systematic performance monitoring
 - Setting appropriate targets
 - Providing incentives for good performance
- More innovative management practices are missing
 - Establishment-level health measures
- Value-Added:
 - Introduction of a new measure of health quality in establishments
 - First evidence that health measures are not subsumed under the management score
 - Investigation of two outcomes at establishment-level: Labor productivity and median wages

- Management practices ...
 - ... are dispersed across firms and nations
 - ... contribute to explaining productivity and performance differences
 - Larger, more productive, faster growth, higher survival rates (WMS) (Bloom & van Reenen, 2007, 2010)
 - More profitable, higher rates of innovation, faster employment growth (MOPS) (Bloom & van Reenen, 2013)
 - Positively related to labor productivity (GMOP) (Broszeit, Fritsch, Görg, Laible, 2016)
- Work-life balance measures' effect disappears when controlling for the management score (Bloom & van Reenen, 2006)
- Impact of health measures on firm performance and impact channels have not yet been resolved
 - Health → Human capital (Becker, 1964)
 - Workplace health and safety measures increase TFP (Buhai et al., 2016)
 - Personnel measures increase productivity of older workers (Göbel & Zwick, 2013)
 - Workplace health promotion programs could ...
 - ... improve health, work ability and productivity, especially for white-collar and younger individuals (Rongen et al., 2013)
 - ... decrease sick days and sickness presenteeism, which reduce performance (van den Heuvel et al., 2009)
- Productivity loss in Germany due to sickness absence (BMAS & BAuA, 2016)
 - 57 Billion Euros in 2014
 - Average of 14.4 days missed per employee

Data: The GMOP Survey

German Management and Organizational Practices Survey

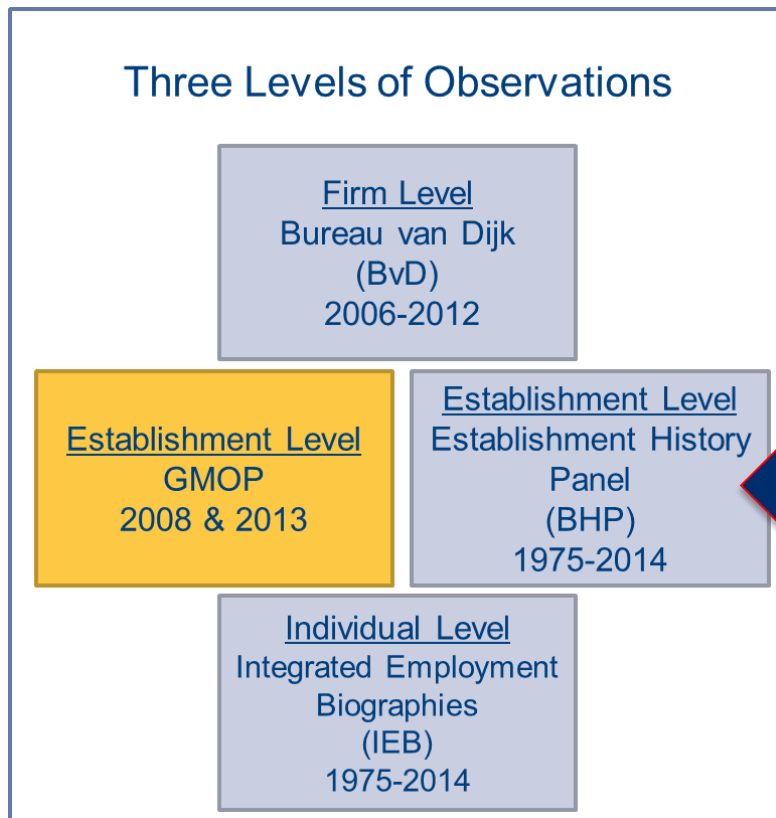


- Study design and questionnaire based on MOPS (US Census Bureau)
- Content
 - Retrospective closed-ended questions for 2008 and 2013
 - Management practices (MP), health and work-life balance measures
 - Establishment background information
 - Economic conditions
- Sample restrictions
 - Manufacturing industry
 - 25 or more employees
- 1,927 valid interviews in 2014/15
- Response rate: 6%
- Consent to linkage: 53%



Data: The GMOP Survey

„Enhanced“ Sample Design



- German administrative data (BHP2011) linked with Bureau van Dijk's Orbis database

- Only establishment-level:

GMOP + BHP

- Administrative data
- At least one employee subject to social security contributions
- Median wages
- Workforce composition

Calculating the Management Score



- Strategy as in Bloom et al. (2013): More structured MP imply “better” management
- Structured = MP that are more specific, formal, frequent or explicit
- 16 questions on management practices
 - Data driven performance monitoring: Collection of performance indicators, display boards
 - Incentives: Requirements for performance bonuses, dealing with underperforming employees
 - Targets: Time frame and communication of production targets
- Steps:
 1. Use only observations with at least 11 non-missings (out of 16)
 2. Normalization of questions on a 0 to 1 scale
 3. Unweighted average of normalized responses
- One management score per establishment in interval [0;1]

Calculating the Management Score - Example



Please guess: How many key performance indicators were approximately monitored at this establishment?
Please only provide information for the year for which you did not provide an answer in question 4.

Examples for key performance indicators are: metrics on production, cost, output, quality, inventory, energy, absenteeism and delivery on time

Please check one box for each year.

	2008	2013
1-2.....	<input type="checkbox"/> 1	<input type="checkbox"/> 1
3-9.....	<input type="checkbox"/> 2	<input type="checkbox"/> 2
10-49.....	<input type="checkbox"/> 3	<input type="checkbox"/> 3
50 or more.....	<input type="checkbox"/> 4	<input type="checkbox"/> 4
I do not know.....	<input type="checkbox"/> 8	<input type="checkbox"/> 8

Rating the answer categories:

1-2 → 0

3-9 → 1/3

10-49 → 2/3

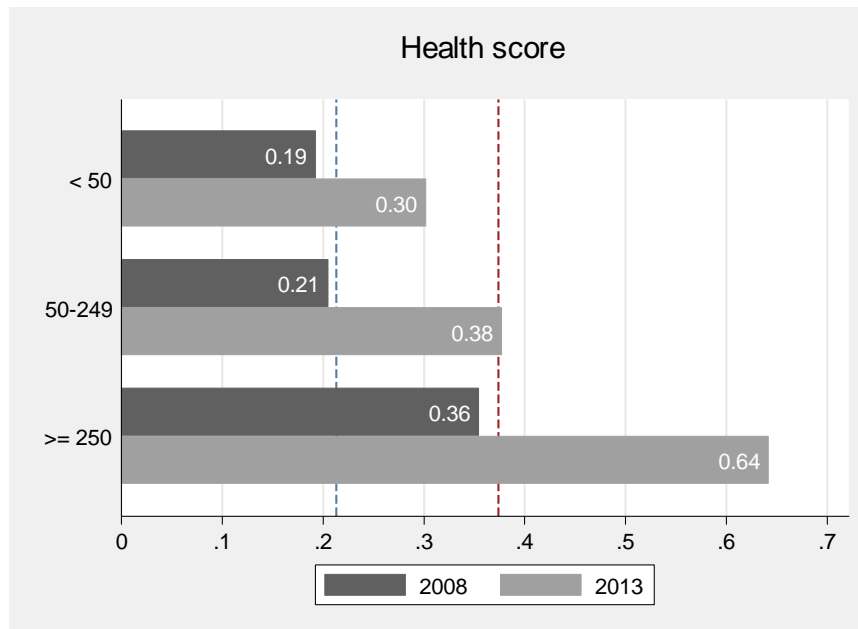
50 or more → 1

Calculating the Health Score



- Construction analogously to management score
- 6 questions on health measures:
 - Health days
 - Health check-ups
 - Management seminars for health-oriented leadership
 - Sport and relaxation offers (e.g. back exercise, autogenous training)
 - Healthy diet
 - Ergonomic measures at the workplace
- Steps:
 1. Use only observations with at least 4 non-missings (out of 6)
 2. Normalization of questions on a 0 to 1 scale
 3. Unweighted average of normalized responses
- One health score per establishment in interval [0;1]

Development of the Management and Health Scores Across Establishment Sizes



Notes: Weighted. Differences for establishment sizes are statistically significant at the 1%-level.

Source: Own calculations based on the GMOP survey.

- Pooled OLS estimations: $Y_{it} = \beta_0 + \beta_1 MS_{it} + \beta_2 HS_{it} + \beta_3 x_{it} + u_{it}$
- First differences estimation: $Y_{it} = \gamma_1 HS_{it} + \gamma_2 MS_{it} + \gamma_3 x_{it} + \alpha_i + e_{it}$
- Dependent variables Y_{it} :
 - labor productivity = $\ln((\text{sales-intermediates})/\text{employees})$
 - median wage = \ln of daily gross wages of full time employees
- Focal variables: Health (HS_{it}) and management (MS_{it}) scores
- Controls:
 - GMOP: Establishment size, foreign ownership, independent company, works council, engagement abroad, exports, crisis, (year)
 - BHP: Share of women, share of highly qualified employees, mean age of employees, age of establishment, East Germany
 - Strata: 2-digit industry, settlement structure (BBSR regions)
 - Paradata: Gender, tenure and position of respondent, answering method, dummy for deviations between survey and administrative data

Results: Labor Productivity



	OLS	OLS	OLS	FE	FE	FE
Health score	0.282*** (0.087)		0.207** (0.087)	0.052 (0.056)		0.019 (0.059)
Management score		0.611*** (0.137)	0.538*** (0.140)		0.239** (0.104)	0.229** (0.110)
Establishment FE	no	no	no	yes	yes	yes
Observations	936	936	936	936	936	936
N. of establishments	468	468	468	468	468	468
Adj. R² , R² within	0.238	0.248	0.254	0.147	0.156	0.156

Notes: Pooled OLS and balanced panel FE. Controls include employees (ln), foreign ownership (D), independent company (D), works council (D), engagement abroad (D), exports (D), crisis (D), women (share), highly qualified (share), mean age of employees (ln), age of establishment (ln), East Germany (D), year (D), 2-digit industry levels, settlement, noise variables (gender, tenure, position and answering method) and a dummy for deviations between the survey and administrative data. Clustered robust standard errors at the establishment-level are in parentheses. Asterisks indicate significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard deviation of the health score is 0.255. Standard deviation of the management score is 0.161.

Source: Own calculations based on the GMOP survey and the BHP.

Why Not Stop at Labor Productivity?



- Labor productivity is only one facet of establishment performance
 - Direct measure of output
- Labor productivity captures both capital and labor
 - Health measures increase costs → reflected in intermediates
 - Often dependent on external factors (shocks, economic situation)
- Health measures should impact labor, i.e. wages
 - Human Capital Theory: Health is an investment in human capital
 - Health measures increase individual-level productivity (wages)
 - Transference to establishment-level median wages

Results: Median Wages

	OLS	OLS	OLS	FE	FE	FE
Health score	0.050*		0.041	0.038**		0.037**
	(0.026)		(0.026)	(0.015)		(0.016)
Management score		0.076*	0.061		0.022	0.001
		(0.041)	(0.042)		(0.034)	(0.036)
Establishment FE	no	no	no	yes	yes	yes
Observations	1,436	1,436	1,436	1,436	1,436	1,436
N. of establishments	718	718	718	718	718	718
Adj. R² , R² within	0.669	0.669	0.670	0.228	0.223	0.228

Notes: Pooled OLS and balanced panel FE. Controls include employees (ln), foreign ownership (D), independent company (D), works council (D), engagement abroad (D), exports (D), crisis (D), women (share), highly qualified (share), mean age of employees (ln), age of establishment (ln), East Germany (D), year (D), 2-digit industry levels, settlement, noise variables (gender, tenure, position and answering method) and a dummy for deviations between the survey and administrative data. Clustered robust standard errors at the establishment-level are in parentheses. Asterisks indicate significance levels: * p < 0.10, ** p < 0.05, *** p < 0.01. Standard deviation of the health score is 0.255. Standard deviation of the management score is 0.161.

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Discussion



	Labor Productivity	Median Wages
Management Score	**	
Health Score		**

- Health measures have a distinct effect on their own!
- Establishments can leverage health measures
- Health measures are a long-term investment for sustainable productivity levels
 - Attract and retain employees (fringe benefit and employer attractiveness)
 - Safeguard employee health and maintain/increase productivity levels

Thank you for your attention!

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