

## Final report

# **Management practices, organizational behaviour and firm performance in Germany**

Leibniz-Institute: Institut für Weltwirtschaft an der Universität Kiel

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## **Executive summary**

The question of why productivity levels vary so substantially between countries, within narrow-defined branches and between firms is fundamental to economics. The GMOP project has aimed to address one potentially influential determinant that so far had largely been neglected in the prior literature: variations in management practices.

Building on innovative research from the US, we collected a novel firm-level data set. A survey of 1927 firms has yielded a representative picture of the German economy with respect to management and organizational practices.

The survey data was then combined with existing firm-level data in a unique data set that provides a representative picture of management and organizational practices, performance measure and various other related variables of interest for German firms.

Based on this data set we investigated the various relations between management practices, other firm characteristics and firm performance, as well as the reactions of workers to management practices. Multiple peer-reviewed academic journal articles have been published, addressing topics from “Trust-based Work-time and Product Improvements” to “Firms' Global Engagement and Management Practices”.

The data set has allowed researchers affiliated with the GMOP project to advance the literature on several fronts. With the end of the project, the data has been made available for interested researchers at the Research Data Center (FDZ) of the German Federal Employment Agency at the Institute for Employment Research (IAB).

## Research questions and aim of the project

There are substantial and persistent differences in countries' levels of productivity across the world. We see large gaps between productivity levels in the US and continental Europe, including Germany (Roeger et al., 2010). This is not only academically interesting but also highly policy relevant, as productivity is an important indicator of countries' competitiveness and attractiveness for industry location. Country level productivity is, of course, determined by the productivity levels of individual firms. Here we also see substantial dispersion across firms, even within countries and narrowly defined industries (Syverson, 2011). Economists have made some progress in explaining differences in total factor productivity across firms through factor inputs, exporting and importing, R&D and innovation, variation in output prices, etc. However, even when taking into account such factors, one still finds large productivity dispersion across firms (e.g., Syverson, 2011).

A new and very innovative strand of economic research, spear-headed by Nick Bloom and John Van Reenen, has recently focused attention on the role of management practices in firms (in terms of monitoring, incentivizing and promoting workers) in order to explain productivity differences (e.g. Bloom and van Reenen, 2010, 2007; Bloom, Sadun and van Reenen, 2012). They have also highlighted how the organizational behaviour of firms, in terms of worker autonomy or the decentralization of decision making can translate into increased productivity performance (Bloom, Sadun and Van Reenen, 2013). This line of research, hence, shifts the focus of analysis on aspects of firm behaviour internal to the firm which have long been recognized as potentially important drivers of productivity performance (e.g., Mundlak, 1961) but which have, thus far, not been part of mainstream empirical work in the economic analysis at firm performance.

Management Schools have, of course, provided evidence that management practices and organizational behaviour do impact on firm performance in certain cases (e.g., Lin and Shih, 2008, Datta et al., 2005, Huselid, 1995). Case study evidence, while valuable in itself, does, however, not resolve the important deficit in understanding what role management practices play in shaping a firm's productivity when firms are viewed in the aggregate, or, scaled up to the country level, in co-determining the performance of countries internationally. Hence, what is missing is a systematic and comprehensive impact assessment of management and organizational practices on international competitiveness. The main reason for a lack of empirical research on this topic was the unavailability of large scale data bases that allow one to link management practices and organizational behaviour to firm performance in a consistent manner. Work by Bloom and van Reenen has started to move the literature into this direction, based on own efforts in gathering data.

Against this background, the aim of this project is twofold. Firstly, it aims to provide a new dataset including detailed information from German firms on management practices related to decision making and human resources management, as well as various measures of establishment performance. The second goal is to use these new data to contribute to a better and more systematic understanding of the role of management practices for firm performance in Germany.

More specifically, the following research questions are addressed in the project:

- (i) What management practices do German firms use? How does this use differ across firms in different industries and across firms of different size classes?
- (ii) How does the use of management practices in Germany differ from that in the United States?
- (iii) What is the relationship between management practices and firm performance, in particular productivity and innovation at the firm level?

- (iv) How is management related to firms' decisions about engaging in the global economy through trade or foreign direct investment?

## Project implementation

In order to achieve its aim and to answer the specific research questions, the project was jointly carried out by researchers at the *Institut für Weltwirtschaft (IfW)* in Kiel, the *Institut für Arbeitsmarkt- und Berufsforschung (IAB)* in Nürnberg and the *infas – Institut für angewandte Sozialwissenschaft* in Bonn.

The project proceeded in two steps:

- **Step 1:** collection of new and unique establishment level data on management practices in Germany using a new survey instrument; and building a unique dataset that provides these data for research;
- **Step 2:** analysis of the link between management practices and firm performance for Germany; and comparison of management practices in Germany and the US.

## Collection of data and building of dataset

The work associated with component 1, i.e. the collection of the novel survey data and building of the dataset, started in March 2014. Prof. Nick Bloom and Prof. John Van Reenen (both previously at the Centre for Economic Performance, London School of Economics) were involved in this stage of the project, advising on survey design and sampling frame. The final dataset was made available for researchers through the Research Data Centre at the IAB in late 2017 (detailed information about data access is available at [http://fdz.iab.de/de/FDZ\\_Establishment\\_Data/GMOP.aspx](http://fdz.iab.de/de/FDZ_Establishment_Data/GMOP.aspx)).

The survey design and the questionnaire itself are based on the “Management and Organizational Practices Survey” (MOPS) (see Bloom et al., 2013). The questions on management practices cover issues related to the collection and analysis of production information (e.g., whether a firm collected performance indicators and who reviewed them), production targets (e.g., whether they were used, whether they were difficult to achieve, who was aware of them) and Human Resources (HR) practices related to pay and promotions (whether bonus payments were used, for whom, how workers were promoted).

A number of adjustments from the US version of the survey were made to address specificities of the German economy. Questions pertaining to health practices, work-life balance, and short-time work in response to economic crises were added. Certain questions, e.g. regarding lay-off practices were adapted, and an explicit question as to whether linkage with other datasets were permitted (as required by German law) were included. The questions retrospectively referred to the firm's practices and behaviours in the years 2008 and 2013, allowing for time variation in responses. The full questionnaire is available on the FDZ website as given above.

The sample of participating firms was drawn from the IAB Employment History Panel (BHP), restricted to the manufacturing and construction sector with at least 25 employees liable to social security. After adjustments related to proportionality of establishments in different sub-industries, establishment sizes and settlement structures, the sample size was 32,847 establishments (see Broszeit and Laible, 2016 for details). In total 1,927 complete interviews, either answered online or in paper form, were realised.

This low response rate of just under 6 percent is somewhat disappointing and is significantly below the response rate of around 25 percent that we expected when writing our funding proposal. The expectation at the time was based on the extensive experience of both IAB

and infas in carrying out surveys and collecting primary data. While it is not clear what exactly caused our low response rate, two possible reasons may be given. Firstly, our survey was targeted at the CEO or equivalent of the company. This target group may be less likely to find the time to complete questionnaires than middle managers or administrative staff. Secondly, there may be reluctance on the part of companies that are overloaded with requests to complete questionnaires for research purposes. Still, we can establish that, despite the low response rate, the sample is representative of the target population (Broszeit and Laible, 2017).

One advantage of the GMOP data is the possibility of linkage to other data sets in the Research Data Centre at IAB. The dataset generated through the survey can be linked to company-level data (e.g. from Bureau van Dijk), further establishment-level data (through the IAB's Establishment History Panel, BHP), and individual-level data (e.g. the IAB's Integrated Employment Biographies, IEB). The linkage requires consent by the firm, to which 1,021, or 53 percent, of the responding firms agreed.

### **Link between management practices and firm performance; Comparison between US and Germany**

The available data were then used to analyse the link between management practices and firm performance, and to perform a comparison between patterns of management use in Germany and the US. For the former, the GMOP data were linked to Bureau van Dijk data available at IAB to allow a better measure of productivity at the firm level. For the latter, we aggregated up firm level information on management practices to compare the US and Germany. A more detailed comparison, based on micro-data for Germany and the US was not possible due to confidentiality restrictions on both the German and the US side.

Going beyond the original research proposal, we also exploited existing data at IAB to investigate the link between management and innovation at the firm level. The IAB Establishment Panel has information on the use of trust based work time (*Vertrauensarbeitszeit*), an HR management practice that allows employees to decide fairly freely on work time and place as long as they produce the required output. This data is used to see how the adoption of such a management practice influences innovation activity at the level of the firm.

In the funding proposal we also suggested to investigate the within-firm worker adjustment associated with different management practices. To do so, it would be necessary to link GMOP data to the administrative data at the IAB, here in particular the Integrated Employment Histories (IEB) to obtain linked employer-employee data. Unfortunately, we have not been able to complete this part of the project. The main reasons for this were delays in the completion of the survey, and in the linking of GMOP to administrative data. This issue has, however, high potential for future research.

### **Research findings**

The research output generated by the project has yielded multiple peer-reviewed academic journal articles as well as working papers and data reports.

The paper "The German Management and Organizational Practices (GMOP) Survey" (Laible, M., Görg, H., 2018) introduces the "German Management and Organizational Practices" GMOP Survey. It gives a broad overview of the project. The authors explain in detail the survey design and collection process, issues regarding data quality and outline possible research avenues. Furthermore, it explains the process through which previously unaffiliated researchers can gain access to the data set through the FDZ at IAB.

The report “Managementpraktiken und Maßnahmen zur Förderung der Work-Life-Balance und der Gesundheit in deutschen Unternehmen“ (Broszeit, Fritsch, Laible, 2015; in german) provides some first descriptive evidence on the use of management practices in German firms based on the new data set. The data show that firms use monetary incentives in an attempt to increase productivity of managers and workers. In 2013, 70 percent of firms use bonus payments for their managers, 59 percent for non-managerial workers. When it comes to promotions, firms look very much at the performance and ability of staff. Only about 10 percent also consider other factors, such as tenure or age in promotion decisions. Another finding is that firms have increased substantially their efforts to promote health of their staff, while activities to allow a better work-life balance have also become more widespread.

The paper entitled “Management Practices and Productivity in Germany” (Broszeit, Fritsch, Görg, Laible, 2016) then uses the GMOP data to calculate establishment specific management scores following Bloom and van Reenen as indicators of management quality. The paper finds substantial heterogeneity in management practices across establishments in Germany, with small firms having lower scores than large firms on average. The authors show a robust positive and economically important association between the management score and establishment level productivity in Germany. This association increases with firm size. Comparison to a similar survey in the US indicates that the average management score is lower in Germany than in the US. Overall, the results of this study point towards lower management scores being at least in part to blame for the differences in aggregate productivity between Germany and the US.

The study “Firms' Global Engagement and Management Practices” (Görg, H. and Hanley, A., 2017) uses the GMOP data to investigate whether firms' "global engagement", either in the form of exporting or opening up affiliates abroad, is related to the change in their management performance. The paper uses the management scores as calculated by Broszeit et al. (2016), which indicate how structured management is in a given firm. The findings show that switching into exporting, and to a lesser degree opening up affiliates abroad, is related to improving management performance in the sense of having more structured management practices.

In “Trust-based Work-time and Product Improvements: Evidence from Firm Level Data” (Gordart, O., Görg, H., Hanley, A., 2017), the authors use data from the IAB Establishment Panel to explore whether the introduction of trust based working hours is related to the subsequent innovation performance of firms. Using a propensity score matching approach, they show that firms that over time introduce these measures are, on average, 11 to 14 % more product than those that do not. These results hold when controlling for other types of flexibility in work time arrangements. This suggests that the increased productivity appears to be driven by self-management and control, rather than flexibility per se.

The paper entitled “Examining the Link Between Health Measures, Management Practices and Establishment Performance” (Broszeit, Laible, 2017) examines the relationships between establishment-level health measures, management practices and labor productivity, as well as median wages. A strong increase in the use of health measures between the two survey years can be observed. Further, fixed effects estimations confirm the previous results that management practices positively influence labor productivity; however they do not seem to be related to median wages. A different pattern can be observed for health measures. While they are not related to labor productivity, they significantly and positively relate to median wages.

Finally, a number of technical papers are aimed at providing other interested researchers with detailed information about the data itself. Three “FDZ-Methodenreports” provide insights into “Survey Design and Data Quality” (Broszeit, S., Laible, M.-C., 2017), the process of “Data Collection” (Broszeit, S., Laible, M.-C., 2016a) and a technical report of the field phase explains in detail how the data was collected (Schröder and Weiß, 2016). A detailed “Data

Documentation” (Broszeit, S., Laible, M.-C., 2016b) facilitates the work of external researchers, interested in using the data provided by the FDZ.

## **Cooperation**

The project was pursued primarily in cooperation between the Kiel Institute for the World Economy (IfW), the Institute for Employment Research (IAB) and infas – Institute for Applied Social Science Research. Next to these three main partners, the project collaborated with Prof. John Van Reenen and Prof. Nick Bloom, both previously affiliated with the Center for Economic Performance of the London School of Economics.

The data are now available to external researchers at the Research Data Centre at the IAB. A project between the IAB and the Office for National Statistics in the UK compares management practices in Germany and the UK. There are currently discussions regarding the potential for joint papers with external partners with similar data for other countries (e.g., US, Australia, Finland, Pakistan, UK, etc.). This will certainly be an issue for possible future research.

## **Academic theses**

Two doctoral theses were undertaken in connection with the GMOP project.

### **Doctoral Theses**

Ursula Fritsch (now at the German Federal Ministry of Finance) was a researcher at Kiel Institute for the World Economy and funded through this project. She completed her Ph.D. in Economics at the Faculty of Economics at Christian-Albrechts-Universität zu Kiel in 2017. Her Ph.D. thesis is entitled “Offshoring and technological change as determinants of innovation”.

Marie Christine Laible (IAB) completed her Ph.D. at the Friedrich-Alexander-University of Erlangen Nuremberg in 2017. Her Ph.D. thesis is entitled “Management Practices, Diversity and Labor Market Performance”.

## **List of Publications and Work-in-Progress**

### **Publications**

Broszeit, S., Fritsch, U., Görg, H., Laible, M.-C. (2016): Management Practices and Productivity in Germany. IZA Discussion Paper, 10370, Bonn.

Broszeit, S., Fritsch, U., Görg, H., Laible, M.-C. (2016): Management Practices and Productivity in Germany. IAB-Discussion Paper, 32/2016, Nürnberg.

Broszeit, S., Fritsch, U., Görg, H., Laible, M.-C. (2016). Management Practices and Productivity in Germany. Kiel Working Paper, 2050, Kiel Institute for the World Economy, Kiel.

Broszeit, S., Fritsch, U., Laible, M.-C. (2015). Management-praktiken und Maßnahmen zur Förderung der Work-Life-Balance und der Gesundheit in deutschen Unternehmen. Erste Ergebnisse der Studie. Available at [http://www.gmop-survey.de/berichte/berichtsdateien/gmop\\_report\\_update2016\\_web.pdf](http://www.gmop-survey.de/berichte/berichtsdateien/gmop_report_update2016_web.pdf)



Broszeit, S., Laible, M.-C. (2017). German Management and Organizational Practices Survey (GMOP 0813) \* Survey Design and Data Quality. FDZ-Methodenreport, 02/2017, Nürnberg, 25 S.

Broszeit, S., Laible, M.-C. (2016a). German Management and Organizational Practices Survey (GMOP 0813) \* Data Collection. FDZ-Methodenreport, 06/2016, Nürnberg, 18 S.

Broszeit, S., Laible, M.-C. (2016b). German Management and Organizational Practices Survey (GMOP 0813) \* Data Documentation. FDZ-Datenreport, 09/2016, Nürnberg, 53 S.

Godart, O., Görg, H., Hanley, A. (2017). Trust-based Work-time and Product Improvements: Evidence from Firm Level Data. *Industrial and Labor Relations Review*, 70(4), 894-918.

Görg, H., Hanley, A. (2017). Firms' Global Engagement and Management Practices. *Economics Letters*, 155, 80–83.

Laible, M., Görg, H. (2018). The German Management and Organizational Practices (GMOP) Survey. *Jahrbücher für Nationalökonomie und Statistik*, forthcoming.

Schröder, H., Weiß, T. (2016). Management practices, organizational behaviour and firm performance in Germany: Haupterhebung. FDZ-Methodenreport 05/2016.

Broszeit, S. & Laible, M.-C. Examining the Link Between Health Measures, Management Practices and Firm Performance. IAB-Discussion Paper 26/2017.

## Availability of Data

The GMOP survey data is available for the research community through the FDZ of the BA at the IAB in Nuremberg (see Laible & Görg, forthcoming for detailed information, as well as [http://fdz.iab.de/de/FDZ\\_Scope\\_of\\_Services.aspx](http://fdz.iab.de/de/FDZ_Scope_of_Services.aspx)). For detailed information on the data, including a list of variables, see the GMOP homepage at the FDZ\_ ([http://fdz.iab.de/de/FDZ\\_Establishment\\_Data/GMOP.aspx](http://fdz.iab.de/de/FDZ_Establishment_Data/GMOP.aspx)).

In order to access the data, an application has to be completed by the researcher (see: [http://fdz.iab.de/de/FDZ\\_Data\\_Access.aspx](http://fdz.iab.de/de/FDZ_Data_Access.aspx)) and approved by the German Federal Ministry of Labor and Social Affairs. The application process is coordinated by the FDZ. After the signing of a contract, access to the data is given to the researcher via on-site use or remote execution.

As of January 16<sup>th</sup> one external project uses the GMOP data via FDZ.

## Public Outreach and Presentations

A website with a description of the project is available at [www.gmop-survey.de](http://www.gmop-survey.de) and [http://fdz.iab.de/de/FDZ\\_Establishment\\_Data/GMOP.aspx](http://fdz.iab.de/de/FDZ_Establishment_Data/GMOP.aspx)

## Media coverage

New Economics: Lange Leine. *WirtschaftsWoche* vom 04.08.2014.

Arbeitszeitmodelle. Wie wir unsere Zeit wiederfinden. *WirtschaftsWoche* vom 30.08.2014.

Wie es euch gefällt. *Handelsblatt* vom 17.10.2014.

Unternehmensführung: Mit Bauchgefühl oder harten Zahlen. *Handelsblatt* vom 17.10.2016.

## **Blogs / Policy briefs**

Fritsch, U., Görg, H. (2015). Neues Projekt zu Managementpraktiken und Unternehmenserfolg in Deutschland. *IfW Highlights 2015* (<http://www.gmop-survey.de/berichte/berichtsdateien/ifw-highlights-2015.pdf>).

Godart, O., Görg, H., Hanley, A., Krieger-Boden, C (2014). Trust-based working time spurs innovation. *VoxEU* vom 08.07.2014 (<http://voxeu.org/article/trust-based-working-time-spurs-innovation>).

Godart, O., Görg, H., Hanley, A., Krieger-Boden, C (2014). Vertrauen fördert Innovationen. *Ökonomenstimme* vom 31.07.2014 (<http://www.oekonomenstimme.org/artikel/2014/07/vertrauen-sarbeitszeit-foerdert-innovationen/>).

Hanley, A. (2015). Vertrauen schafft Fortschritt – und macht Mitarbeiter zufrieden. *Huffington Post* vom 10.01.2015 ([http://www.huffingtonpost.de/aoife-hanley-/ohne-vertrauen-kein-fortschritt\\_b\\_6134364.html](http://www.huffingtonpost.de/aoife-hanley-/ohne-vertrauen-kein-fortschritt_b_6134364.html)).

## **Presentations**

Fritsch, U.: „Management and Productivity in German Firms“. Aarhus-Kiel Workshop, Sonderborg, DK, 17 December 2015.

Görg, H.: „Managementmethoden und Produktivität in Deutschland“ Vortrag 7. Konferenz für Sozial- und Wirtschaftsdaten, Berlin, 09.02.2017.

Görg, H.: “Managementpraktiken in deutschen Unternehmen” Vortrag Investitionsbank Schleswig – Holstein, Kiel, 20.02.2017.

Laible, M.: Management Practices and Productivity in Germany. 07-08/12/2016 Harvard-MIT-Stanford Empirical Management Conference, Boston, USA.

Laible, M.: Management Practices and Productivity in Germany. 25-27/10/2016 The Seventh Doctoral Meeting of Montpellier in Economics, Management and Finance (DMM), Montpellier, France.

Laible, M.: Management Practices and Productivity in Germany. 13/10/2016 GradAB Jour Fixe, IAB, Nürnberg.

Laible, M.: Management Practices and Firm Performance – An Establishment Survey amongst German Managers . 20-23/06/2016 Fifth International Conference on Establishment Surveys (ICES-V), Geneva, Switzerland.

Laible, M.: Investigating Executive Boards in Germany: Board Diversity and Establishment Outcome. 24-26/05/2017 22nd Eurasia Business and Economic Society Conference; Rome, Italy.

Broszeit, S.: Examining the Link Between Health Measures, Management Practices and Firm Performance. 25-27/10/2016 The Seventh Doctoral Meeting of Montpellier in Economics, Management and Finance (DMM), Montpellier, France.

Broszeit, S.: Management Practices and Productivity in Germany: Establishment level evidence from the GMOP Survey. 16/06/2016 4th PhD Workshop in Economics, University of Minho, Braga, Portugal.

Laible, M.: Examining the Link Between Health Measures, Management Practices and Firm Performance. 05/10/2017 2017 International Workshop on Establishment Panel Analyses, IAB.

Laible, M.: „The German Management and Organisational Practices Survey (GMOP)“, Vortrag U.S. Census Bureau, Washington DC, 06.12.2017.

**Workshop**

Management and firm performance, Kiel, 29-30 October 2015.