KIEL INSTITUTE FOR THE WORLD ECONOMY

KIEL WORKING PAPER

Firms' Global Engagement and Management Practices

No. 2073 March 2017

Holger Görg and Aoife Hanley

Kiel Institute for the World Economy
ISSN 2195–7525

KIEL INSTITUTE FOR THE WORLD ECONOMY

ABSTRACT

FIRMS' GLOBAL ENGAGEMENT AND MANAGEMENT PRACTICES*

Holger Görg and Aoife Hanley

We 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. We use new and unique data from a recent large scale firm survey of management practices in Germany. We calculate management scores for firms as in Bloom et al. (2013), which indicate how structured management is in a given firm. We find 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.

Keywords: Management practices, global engagement, exporting, outward investment
JEL classification: F2, L2, M2

Holger Görg
Kiel Institute for the World Economy
Kiellinie 66,
D-24105 Kiel, Germany
Email: holger.goerg@ifw-kiel.de

Aoife Hanley
Kiel Institute for the World Economy
Kiellinie 66,
D-24105 Kiel, Germany
Email: aoife.hanley@ifw-kiel.de

* Financial support from the Leibniz Association is gratefully acknowledged.

1 Introduction

Recent firm level analyses of management practices show for the US and Germany that management in firms has changed over time, in the sense that firms tend to employ more structured management practices (e.g., Bloom et al., 2013; Broszeit et al., 2016). This echoes a somewhat related literature on organizational practices in firms, which shows that hierarchies have become flatter, that demand for managers has increased and that managerial compensation has risen in industrialized countries over time (e.g., Cunat and Guadalupe, 2009; Guadalupe and Wulf, 2010; Fabbri and Marin, 2012). These papers also argue that "competitive pressure", taking the form of domestic or global competition, can help to explain these developments.

Against this backdrop, the purpose of this paper is to investigate whether firms' "global engagement", either in the form of exporting or the opening up of affiliates abroad, is related to changes in management performance in Germany. We have access to new and unique data from a recent large scale firm survey of management practices in Germany which we use for this purpose. We calculate management scores for firms as in Bloom et al. (2013), which indicate how structured management is in a given firm. We then investigate how these management indices change over time and whether firms' engagement abroad can partly explain these changes.

Why should we expect a nexus between a firm's management practices and its engagement abroad? In line with the cited literature, we posit that a firm engaging abroad is subject to competitive pressure in the destination or host country. In order to overcome this pressure, it may need to improve its management performance in order to be able to increase output and penetrate the foreign market. This harks back to the ideas formulated by Horn et al. (1995) who show theoretically that opening up to trade increases competition (the number of firms producing the same output), incentivizes firms to produce more output and thus induces managers to expend more effort.

2 Description of the data

We use data from a new and unique establishment level survey on management practices and firm performance in Germany, called the "German Management and Organization Practices Survey" (GMOP), described in detail by Broszeit et al. (2016).[1] The survey was carried out in 2015 and provides detailed information on management practices and establishment characteristics. Specifically, we collect data for the years 2008 and 2013 pertaining to about 1,900 establishments. As Broszeit et al. (2016) show, the sample can be considered representative of the population of establishments with 25 or more employees in manufacturing industries.[2] The information on management practices collected in

[1] Access to the data is possible for external researchers via the IAB Research Data Centre, see http://fdz.iab.de/en/FDZ_Establishment_Data/GMOP/GMOP_Outline.aspx

[2] Smaller firms were not sampled.

the survey is very similar to the "Management and Organizational Practices Survey" (MOPS) which was carried out by the US Census Bureau in 2010 (see Bloom et al., 2013).[3]

The GMOP survey included 16 questions on management practices interrelated on three key criteria: *Monitoring* (measures to record, use and review how employees are performing), *Targets* (the timeframe for delivery and effort required to achieve production targets) and *Incentives* (the use of performance bonuses, promotions and penalties for underperformance). We aggregate information from these 16 questions into an aggregate synthetic management indicator taking on values between 0 and 1, where larger numbers signify the use of more structured management practices in the establishment.

We illustrate the calculation of the index using, by way of example, a question related to *Monitoring*. Specifically, establishments are asked 'How many key performance indicators were monitored at this establishment?' Respondents can select an answer from four categories, the lowest category being, "1-2", suggesting the lowest level of performance structuring, and the most structured category corresponding to "50 or more". Consistent with Bloom et al., (2013), the four categories in this question are assigned values of 0, 0.25, 0.75 and 1. The remaining 15 questions are similarly organized. An overall management score is then calculated as the unweighted average of the normalized responses, higher values implying more structured management. More details on the construction of this management indicator, is available in Broszeit et al. (2016) and Bloom et al. (2013).

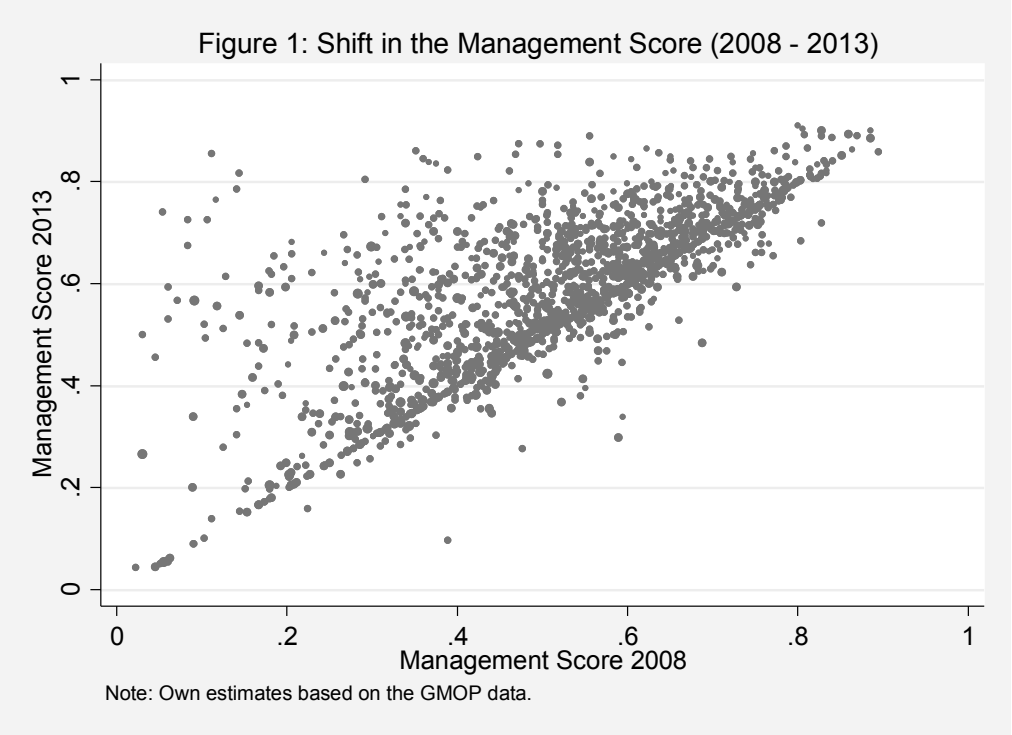
The survey also provides information on some firm characteristics, such as employment size and ownership details and, most importantly from our point of view, on global engagement of firms. In particular, we know whether a firm exports or not, and whether it maintains affiliates abroad. It is these two aspects of firm performance that we focus on in this paper.

Figure 1 shows the overall dynamic of management scores for the two years 2008 and 2013 for the surveyed firms. It is worth noting that the majority of management scores have improved over this period, with most points located above the 45 degree line. The average management score has risen from 0.50 (s.d. 0.17) in 2008 to 0.57 (s.d. 0.16) in 2013, suggesting that German management practices have become increasingly structured. At the same time, aggregate data show that German exports increased by 11 percent over the same time period, totaling 1.1 trillion euro in 2013, while German outward investment increased by 6 percent, amounting to 907 billion in 2013.[4] The question we pose in this paper is whether changes in the global engagement of German firms can partly explain this increased structuring of management.

[3] Both MOPS and GMOP are related to the World Management Surveys used by, e.g., Bloom and van Reenen (2007, 2010). They differ in a number of respects, however. Most importantly, GMOP and MOPS are based on larger samples of firms and include only closed ended questions (while WMS uses open ended questions in person-to-person interviews), making the calculation of an aggregate firm level management index quite straightforward.

[4] Export data are provided by the Federal Statistical Office at destatis.de, while FDI data are collected by the German Bundesbank, see https://www.bundesbank.de/Navigation/DE/Publikationen/Statistiken/Statistische_Sonderveroeffentlichungen/Statso_10/statistische_sonderveroeffentlichungen_10.html

Figure 1: Distribution of the management score in 2008 and 2013



We start with some summary statistics. Overall, as Table 1 shows, about two-thirds of firms are exporters, and just under a quarter have affiliates abroad in 2013. Both exporters and outward investors have higher management scores than firms that are not globally engaged in these ways. There is no statistically significant difference in terms of employment size. Importantly, roughly 94 percent of firms with affiliates abroad are also exporters, while just under one third of exporters also maintain affiliates abroad.

Table 1: Descriptives for key firm characteristics in 2013

	Export = 1	Export = 0	OFDI = 1	OFDI = 0
Management Index	0.601	0.521	0.618	0.566
	(0.139)	(0.157)***	(0.130)	(0.152)***
Employees	333.55	93.53	313.51	243.9
	(3670.6)	(199.0)	(710.7)	(3442.0)
Affiliates overseas (OFDI)	0.308	0.042		
dummy	(0.462)	(0.201)***		
Exporter dummy			0.944	0.625
			(0.231)	(0.484)***
# in 2013	1,323	579	431	1,467

Note: asterisks indicate statistical significance of a t-test for equality of means for exporters vs. non-exporters and FDI vs. non-FDI respectively. *** indicates 1 percent level

3 Econometric model and results

In order to look more closely at whether international activities impact on management performance, we start by estimating a model that relates management to global engagement,

$$M_{i13} = \alpha GLOB_{i08} + \beta M_{i08} + \gamma CRISIS_i + \lambda X_{i08} + D + \varepsilon_{i13} \quad (1)$$

where M_{i13} is the management score for firm *i* in 2013, GLOB is a vector of export and outward investment dummies (1 if firm engages in the activity), where the latter are measured in 2008 to mitigate endogeneity concerns. As we are interested in the change in the management score between 2008 and 2013, we control for M in 2008 on the right-hand-side. Given that studies cited above show that competitive pressure may increase management performance, we also include a firm's assessment of the 2008 crisis as an additional regressor. Specifically, we include a dummy equal to one if the firm perceives that it was negatively affected by the crisis (which may indicate increased pressure on the firm). X is a set of firm level controls, namely size, domestic ownership, and family ownership.[5] D is a set of industry and area type dummies.[6]

Results are reported in Table 2. Columns (1) and (2) include export and outward investment dummies separately while column (3) includes both dummies. As concerns the controls, we find persistence in structured management i.e. a high management score in 2008 is a strong predictor of a high management score in 2013. Furthermore, domestic owned firms have lower management scores than foreign firms, while large and medium firms have higher scores than smaller ones. Both findings are also in line with the literature (e.g., Bloom and van Reenen, 2010). Neither family ownership nor the crisis dummy appear to have any significant effect in our data. Controlling for the latter aspects of firm heterogeneity, exporting or investments abroad seem unrelated to the management scores.

Recall that two thirds of firms are exporters in 2013, and most of these exported also in 2008. Hence, it is difficult, if not impossible, to adequately control for the fact that exporters (outward investors) are "better" performers than non-exporters (non-investors) with the above estimation strategy. We, hence, turn to a different identification strategy, which places a heavier burden on the data but may be considered cleaner in order to identify an exporter or outward investor effect on management performance. The idea is to look at switchers.

For this, we restrict our sample to firms that did not export or report foreign affiliates in 2008. Out of this group, we can then identify switchers as those reporting exports or foreign affiliates in 2013, and we compare the development of management scores for these switchers compared to the control group comprised of firms having no exports or foreign affiliates in both 2008 and 2013. The identifying assumption is that the switch into exporting or foreign investment is exogenous, i.e., not correlated to

[5] We have grouped firms into three size classes, namely small (25-49 employees), medium (50-99 employees), and large (100 or more employees). Small is the omitted category in the regressions. The other two dummies are 0/1 dummies whether or not a firm is domestic owned or family owned.

[6] Industry dummies are food and consumption, consumer products, industrial goods, investment and durable goods and construction. Area type dummies are larger cities, urban regions, and rural regions with signs of densification as well as sparsely populated rural regions.

unobservables. As we control for a number of important observables and, in particular, the management score in 2008, this may not be too unreasonable an assumption.

Table 2: Regression of Management Score on Export and FDI dummies

	(1)	(2)	(3)
Export dummy	0.007		0.006
	(0.007)		(0.007)
Affiliates overseas		0.009	0.008
dummy		(0.006)	(0.006)
Lagged Management	0.653	0.653	0.652
	(0.022)***	(0.022)***	(0.022)***
Crisis	0.009	0.009	0.009
	(0.006)	(0.006)	(0.006)
Medium size	0.035	0.036	0.035
	(0.006)***	(0.006)***	(0.006)***
Large size	0.057	0.056	0.055
	(0.006)***	(0.006)***	(0.006)***
Firm is domestic	-0.025	-0.025	-0.025
	(0.008)***	(0.008)***	(0.008)***
Family ownership	-0.004	-0.005	-0.005
	(0.005)	(0.005)	(0.005)
R-squared	0.60	0.59	0.59
# of obs	1521	1521	1521

Note: Estimated using OLS. Model includes industry and area type dummies. Heteroskedasticity-consistent standard errors in parentheses. ***, **, * indicate statistical significant at 1, 5, 10 percent level, respectively

The regression for export switchers is reported in column (1) of Table 3. Given that we dropped all firms that exported or had foreign affiliates in 2008, our sample size is considerably reduced compared to Table 2. Out of the 509 observations, 57 are for firms switching into exports, 402 are for the control group. Results show that controlling for observables, switching into exporting is associated with a statistically significant higher management score in 2013. We also find a similar result for switching into outward FDI in column (2). Note, however, that in this restricted sample we only have 19 firms reporting affiliates abroad in 2013 (no affiliates in 2008) and that were identified as non-exporters in 2008. Putting both switching variables into one model in column (3) shows that only the result for exporting remains statistically significant, in line with (as in Table 1) the fact that the majority of firms conducting outward FDI, are also exporters.

Table 3: Regression of Management Score on Export and FDI switchers

	(1)	(2)	(3)	(4)
Export switcher	0.060		0.057	0.048
	(0.020)***		(0.020)***	(0.016)***
FDI switcher		0.043	0.024	0.005
		(0.023)*	(0.022)	(0.011)
Lagged Management	0.779	0.785	0.780	0.654
	(0.038)***	(0.039)***	(0.038)***	(0.022)***
Medium size	0.025	0.026	0.024	0.036
	(0.010)**	(0.010)**	(0.010)**	(0.006)***
Large size	0.039	0.038	0.038	0.058
	(0.013)***	(0.014)***	(0.013)***	(0.006)***
Crisis	0.011	0.008	0.011	0.011
	(0.008)	(0.008)	(0.008)	(0.006)
Firm is domestic	-0.014	-0.025	-0.013	-0.025
	(0.025)	(0.024)	(0.025)	(0.008)***
Family ownership	-0.002	-0.004	-0.003	-0.004
	(0.009)	(0.009)	(0.009)	(0.005)
R-squared	0.65	0.64	0.64	0.60
# of obs	509	509	509	1521

Note: Estimated using OLS. Model includes industry and area type dummies. Heteroskedasticity-consistent standard errors in parentheses. ***, **, * indicate statistical significant at 1, 5, 10 percent level, respectively

Our sample includes both domestic and (very few) foreign owned firms, and we control for a level effect using a domestic ownership dummy. As a robustness check, we also estimated the model using only domestic firms (not reported here to save space). This action eliminates 31 observations for foreign owned establishments from the regression sample. Results are very similar, both in statistical significance and in magnitude to the ones reported in Table 3.

In an extension, we explored whether the switching effects are different for firms that are affected adversely by the crisis. Or, more generally, the effect of competitive pressure may be different for firms that are engaged abroad (an issue somewhat related to the theoretical analysis in Caliendo and Rossi-Hansberg, 2012). However, we do not find evidence supporting this hypothesis. Interaction terms of the switching variables and the crisis dummy are statistically insignificant, while other results do not change. Results are not reported here to save space, but are available on request.

Column (4) reports results from another alternative specification. Rather than using the very strict control group of firms that did not engage globally in 2008, we now use the full sample of firms. This shows that our results still hold, though the point estimates on the switcher variables are now somewhat lower compared to column (3).

4 Conclusion

We find that switching into exporting, and to a lesser degree opening up affiliates abroad, is related to improving management performance in the sense of firms applying more structured management practices. As more structured management is related to higher productivity (Bender et al., 2016; Broszeit et al., 2016; Bloom and van Reenen, 2013), our findings suggest a mechanism for the productivity enhancing effects of exporting or outward investment often postulated in the literature: firms need to improve their management performance to withstand stronger international competitive pressure, and this action improves productivity performance as well. A more thorough analysis of this mechanism is left for future research.

References

Bender, S., Bloom, N., Card, D., van Reenen, J., & Wolter, S. (2016): Management Practices, Workforce Selection and Productivity. NBER Working Paper 22101

Bloom, N., Brynjolfsson, E., Foster, L., Jarmin, R., Saporta-Eksten, I., & van Reenen, J. (2013): Management in America. Center for Economic Studies, U.S. Census Bureau, 13–01.

Bloom, N. & van Reenen, J. (2007): Measuring and Explaining Management Practices Across Firms and Countries. *Quarterly Journal of Economics*, 122(4), 1351–1408.

Bloom, N. & van Reenen, J. (2010): Why Do Management Practices Differ across Firms and Countries? *Journal of Economic Perspectives*, 24(1), 203–224.

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

Caliendo, L and E. Rossi-Hansberg (2012), The impact of trade on organization and productivity, *Quarterly Journal of Economics*, 127, 1393-1467

Cunat, V. and M. Guadalupe, 2009, **Globalization and the Provision of Incentives inside the Firm**, *Journal of Labor Economics*, 27, 179-212

Fabbri, F. and D. Marin, 2012, What Explains the Rise in CEO Pay in Germany? A Panel Data Analysis for 1977-2009, IZA Discussion Paper 6420

Guadalupe, M. and J. Wulf, 2010, **The Flattening Firm and Product Market Competition: The Effect of Trade Liberalization on Corporate Hierarchies**, *American Economic Journal –Applied Economics*, 2, 105–27

Horn, H., H. Lang and S. Lundgren, 1995, Managerial effort incentives, X-inefficiency and international trade, *European Economic Review*, 39, 117-138

Marin, D. and T. Verdier, 2014, Corporate hierarchies and international trade: Theory and evidence, *Journal of International Economics*, 94, 295-310