

The Diffusion of New Management Technologies

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Motivation

- Quantitative approach to measuring management practices started with Bloom & Van Reenen (2007)
- What determines differences in practices and their diffusion?
- Less attention paid to substantial within firm variation in management practices
- Here we explore the role of contingent value
- Firms apply better management practices to those activities that matter most for sales and profitability
- If assets become more strategically important, it should lead to the adoption of newer, more advanced management practices

Motivation

- Central challenge: the strategic asset is endogenous and unobservable
- We use data on an embodied management practice, AB testing, along with exogenous shock, Covid, that raised the returns to the same asset
- Builtwith data tracks web-based software types on a monthly basis globally
- Matched to firm level data we have monthly observations on 655,000 firms from 16 countries
- Use timing of Covid lockdowns and the data intensity of tasks at the monthly level (June 2019 – June 2021)
- Empirical approach accounts for differences in baseline capabilities

Data & Empirical Approach

- AB testing from Builtwith
- Matched to firm Aberdeen-Ci Technology database for industries and ex-ante technologies
- O-Net data on data intensity of tasks (6-digit industries)
- 654,915 firms in 16 countries from July 2019 until June 2021 (monthly obs.) giving 12.6 million observations
- Triple diff (Covid*data intensity) with firm, country-month, industry-month FEs

TABLE I. Sample countries

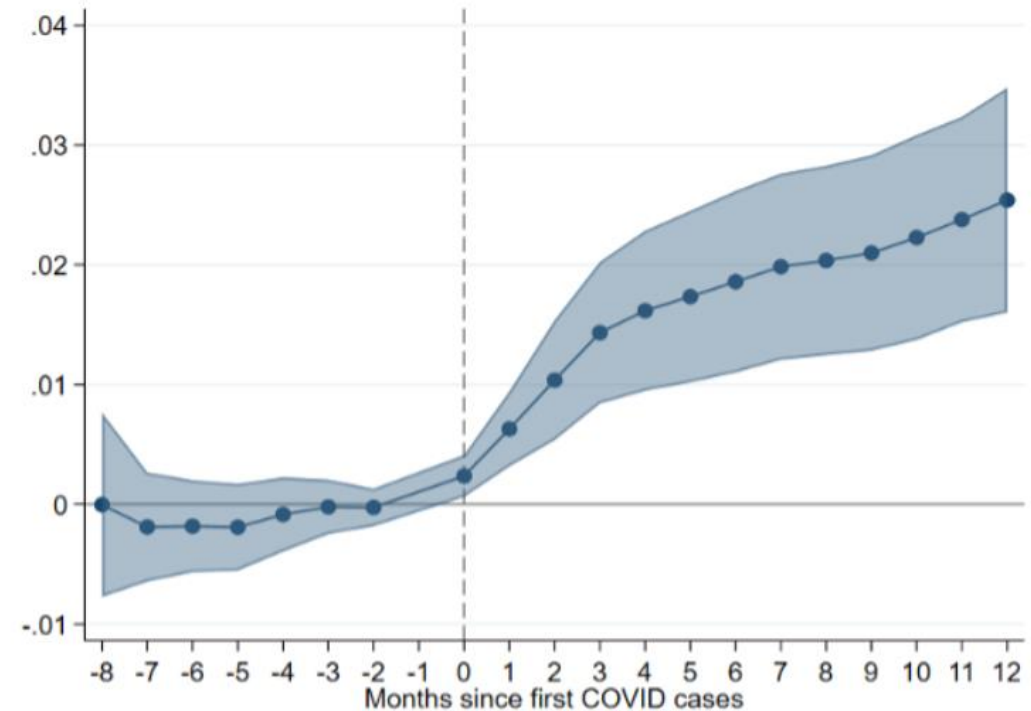
Austria	Hungary
Belgium	Netherlands
Canada	Norway
Czech Republic	Poland
Denmark	Slovak Republic
Finland	Sweden
France	United Kingdom
Germany	United States

Results

Correlation with World Management Survey

	(1)	(2)	(3)	(4)
Sample:	All WMS	Same Countries	Same Firms	Same Sample
Outcome:	A/B testing			
Overall Management	0.0279*** (0.0065)	0.0322*** (0.0074)	0.0773*** (0.0166)	0.0612*** (0.0202)
Log employment	0.0216*** (0.0041)	0.0242*** (0.0045)	0.0280*** (0.0090)	0.0227** (0.0100)
Foreign Owned	0.0848*** (0.0096)	0.0610*** (0.0101)	0.0243 (0.0186)	0.0340 (0.0224)
Log age	0.0047 (0.0043)	0.0006 (0.0047)	-0.0027 (0.0111)	-0.006 (0.0136)
Country-Year, Sector-Year FE	Y	Y	Y	Y
Observations	9,840	7,691	2,599	1,521

Event Study AB Testing Adoption



Results

Other Management Software & Supply Side Shocks

	(1)	(2)	(3)	(4)
Outcome:	Conversion tracking	Tag manager	Marketing personalization	AB testing
Post COVID*Data Intensity	0.0444*** (0.008)	0.0319*** (0.011)	0.0161*** (0.003)	0.0217*** (0.007)
Post Google Link*Data Intensity				0.0166** (0.007)
Industry-Month FE	Y	Y	Y	Y
Observations	10,019,760	9,600,144	12,800,952	15,809,640

- Also led to adoption of other types of embodied management improvements
- Can extend data period to include supply side shocks. Google Link Tracker, based on past use of Google Link

A/B testing and Ex-ante firm characteristics

[illegible]

Results

AB Testing Adoption and Firm Performance

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome:	Labor Productivity		Revenue		Employment	
AB testing	0.0176*	-0.0006	0.0161*	-0.0019	-0.0015	-0.0013
	(0.010)	(0.013)	(0.010)	(0.012)	(0.005)	(0.007)
AB testing* Data Intensity		0.1232**		0.1209**		-0.0023
		(0.055)		(0.052)		(0.025)
Observations	828,320	828,320	828,320	828,320	828,320	828,320

- Annual data, reduced form DID
- Revenue and LP effects but not employment effects

Conclusion

- Firms adopt input-optimising management practise for strategic inputs
- Consistent with variation in management practices within firms using WMS-type data
- This adoption depends on complementary capabilities
- Shocks can redirect managerial attention and raise returns to adoption of better practices for key inputs, but this ability is shaped by pre-existing organisation quality and complementary technologies