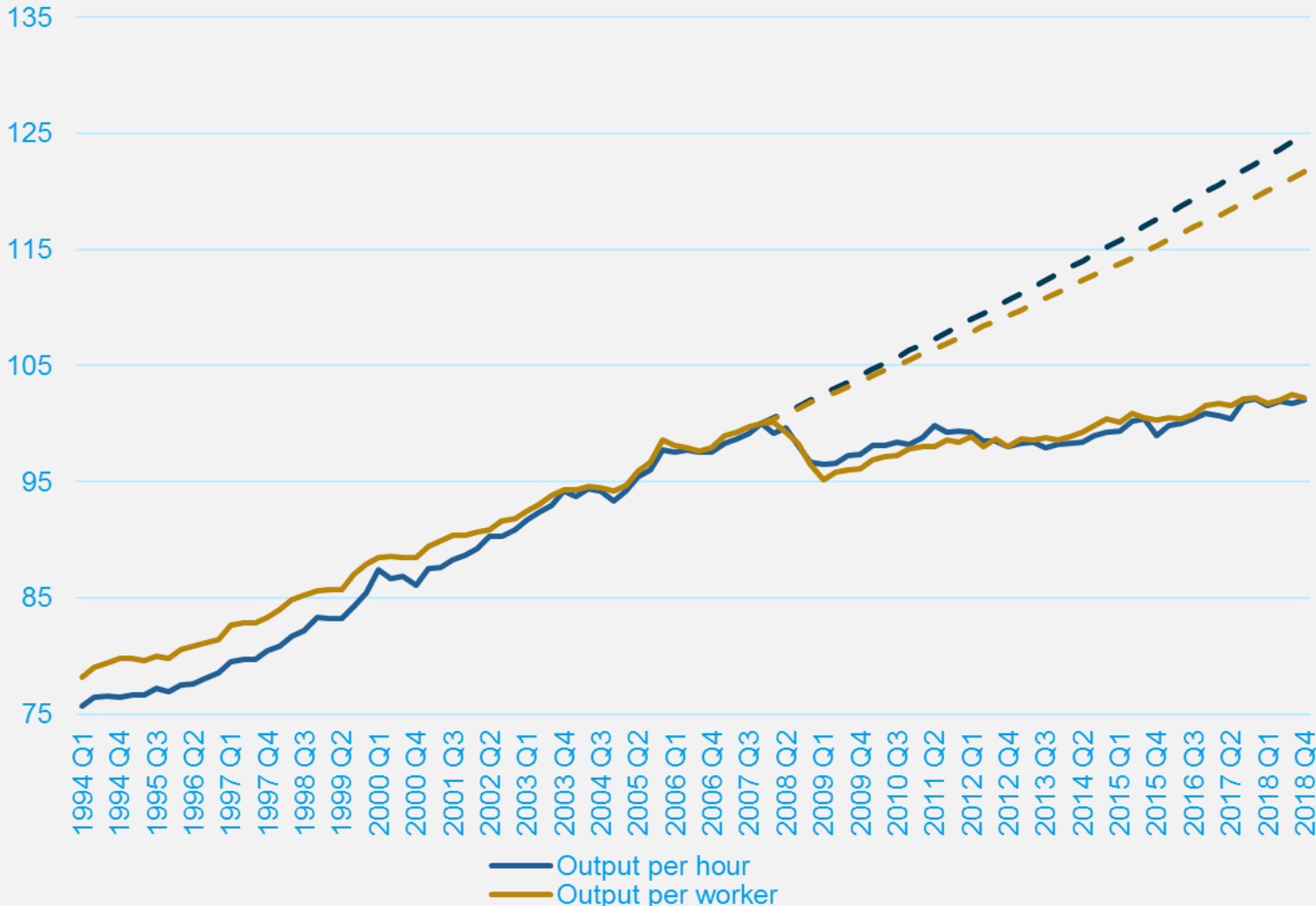# Management practices and productivity in UK production and services industries

Gaganan Awano (ONS), Nicholas Bloom (ESCoE, Stanford), Ted Dolby (ONS), Paul Mizen (ESCoE, Nottingham), Rebecca Riley (ESCoE, NIESR), Tatsuro Senga (ESCoE, QMUL), Jenny Vyas (ONS), Philip Wales (ONS)
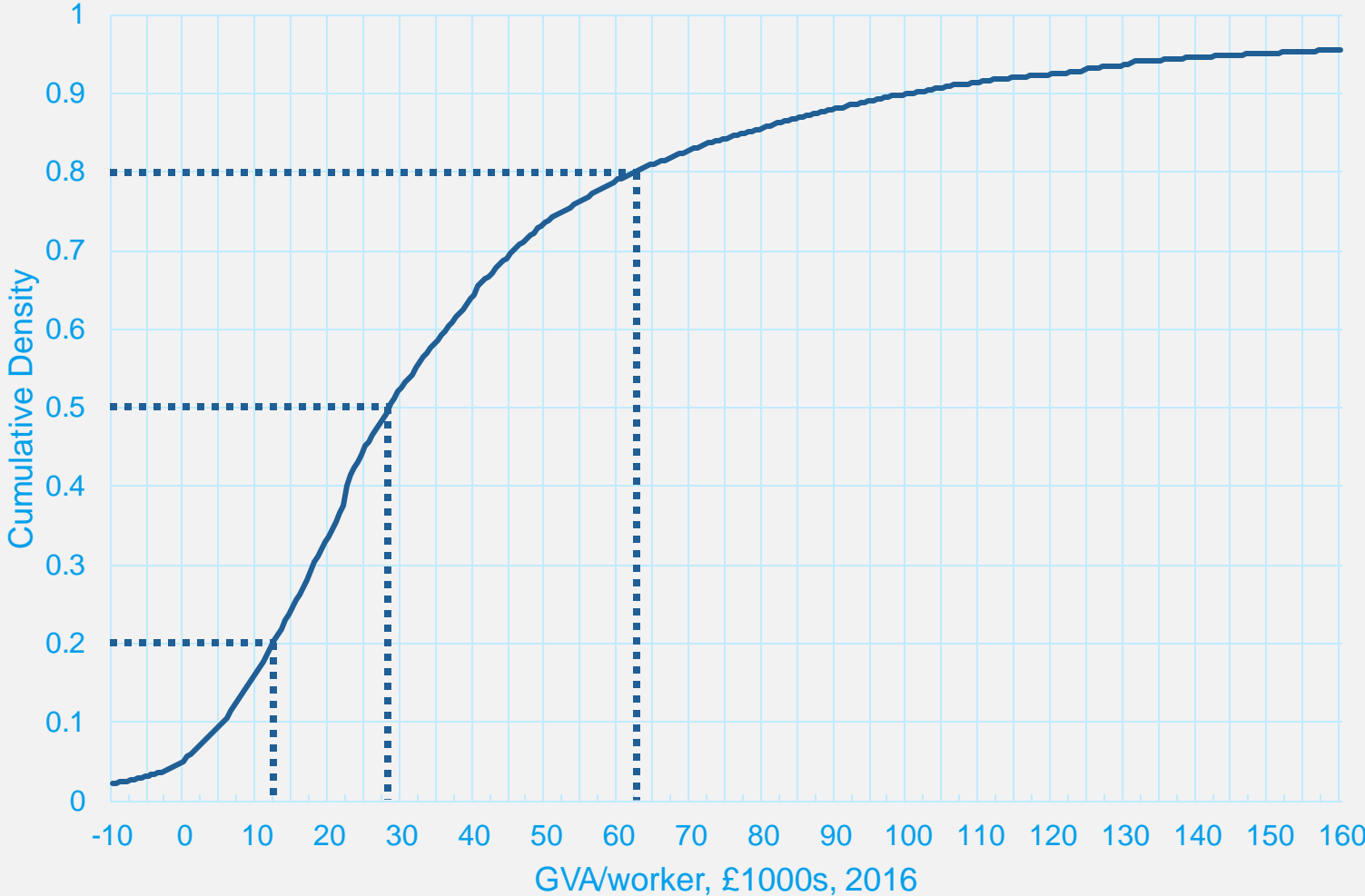
9 May 2019

Motivation – aggregate productivity

The "Productivity Puzzle"

Output per hour
Output per worker

Source: ONS Labour Productivity

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Motivation – distribution of productivity

Source: ONS

Management Practices

- Management found to be a significant covariate with productivity at the business level (Bloom and Van Reenen 2007, 2010)

- The way managers approach the management function may be an important determinant of firm performance (Bloom et al 2012, 2014)

- Earlier ONS pilot survey - Management Practices in the Manufacturing Industries in 2015

- Bryson and Forth (2018)

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Management Practices
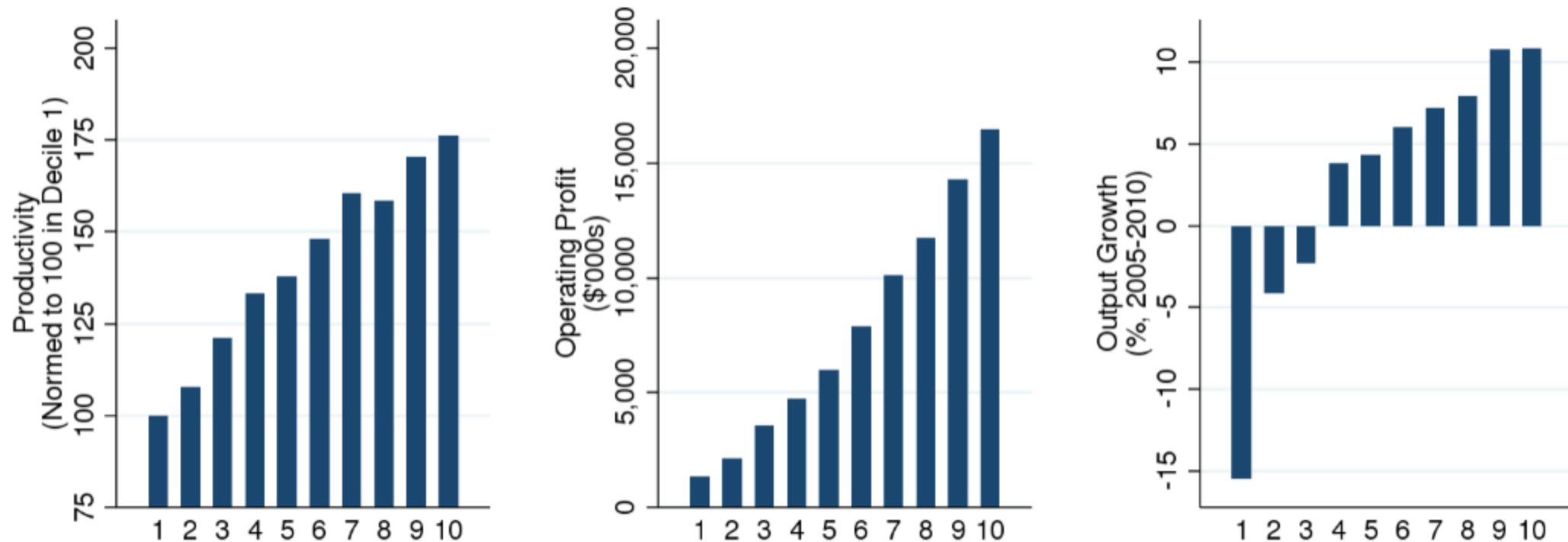
Decile of Management Practice Score

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Management and Expectations Survey (MES) 2016

Management and Expectations Survey (MES)

- Survey of 25,000 firms covering nonfarm nonfinance private business economy

- Dispatched to subset of ABS sample, following ABS

- Voluntary

- Survey stratified by NUTS1 region in Great Britain, SIC section and 13 manufacturing sub-sections, and 10-49, 50-249, 250+ employment size bands

- 20 questions on management and organisation of business, following MOPS

- 11 further questions on firm-level variables and expectations under future scenarios, plus expectations for macroeconomy

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Management and Expectations Survey

Office for National Statistics

Please write any changes to your name and address in the box below, using black ink

To be completed for: THE BUSINESS NAMED ABOVE

Please complete and return by 18 August 2017

Dear Sir or Madam,

Please find the questionnaire for the Management and Expectations Survey attached. Please complete for the period 1 January 2016 to 31 December 2016. The questionnaire focuses on two different themes. These relate to businesses':

- **management practices** such as the use of performance indicators, targets, employment decisions
- current performance and **future expectations** about turnover, investment, employment and spending on resources

The Office for National Statistics (ONS) is responsible for producing key economic statistics that are used to respond to, and manage the economy. Your response is of great value. This survey is voluntary, however the information provided will be used to better understand whether management practices and uncertainty relate to productivity. The information could benefit your business as the published statistics can be used as a benchmark to compare your business against the same, or across different sectors. To find out more, search '*Management Practices*' at www.ons.gov.uk

Once complete, the questionnaire can be returned by post or fax using the details in the box below.

We request that you complete this questionnaire for the business named above, including for any parts of the business located at other addresses within Great Britain. All the information you provide is kept strictly confidential. It is illegal for us to reveal your data or identify your business to unauthorised persons.

Thank you for your co-operation,
Office for National Statistics

Questionnaire return details

To return via fax:	01633 652707

To return via post: Please use the prepaid envelope provided which is addressed to: Office for National Statistics, Government Buildings, Cardiff Road, Newport, NP10 8XG

Contact numbers

Er mwyn gwneud cais am ffurflen Gymraeg (To request a questionnaire in Welsh)	0300 1234 921
If you would like to use our Minicom service for the Deaf	01633 815 044

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Response rates

	Count	Percentage
Total sample	25,006	100.0%
No response	15,324	61.3%
of which no reply	14,431	57.7%
of which opt out	893	3.6%
Responds to MES but not ABS	1,464	5.9%
of which management score is usable	1,343	5.4%
of which not usable	121	0.5%
Responded to MES and ABS	8,218	32.9%
of which management score is usable	7,838	31.3%
of which not usable	380	1.5%

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Response rates

Legend: No reply ■ Refused ■ Replied

Size	No reply	Refused	Replied
10-49	53%	4%	43%
50-99	52%	3%	45%
100-249	55%	4%	41%
250+	64%	7%	29%

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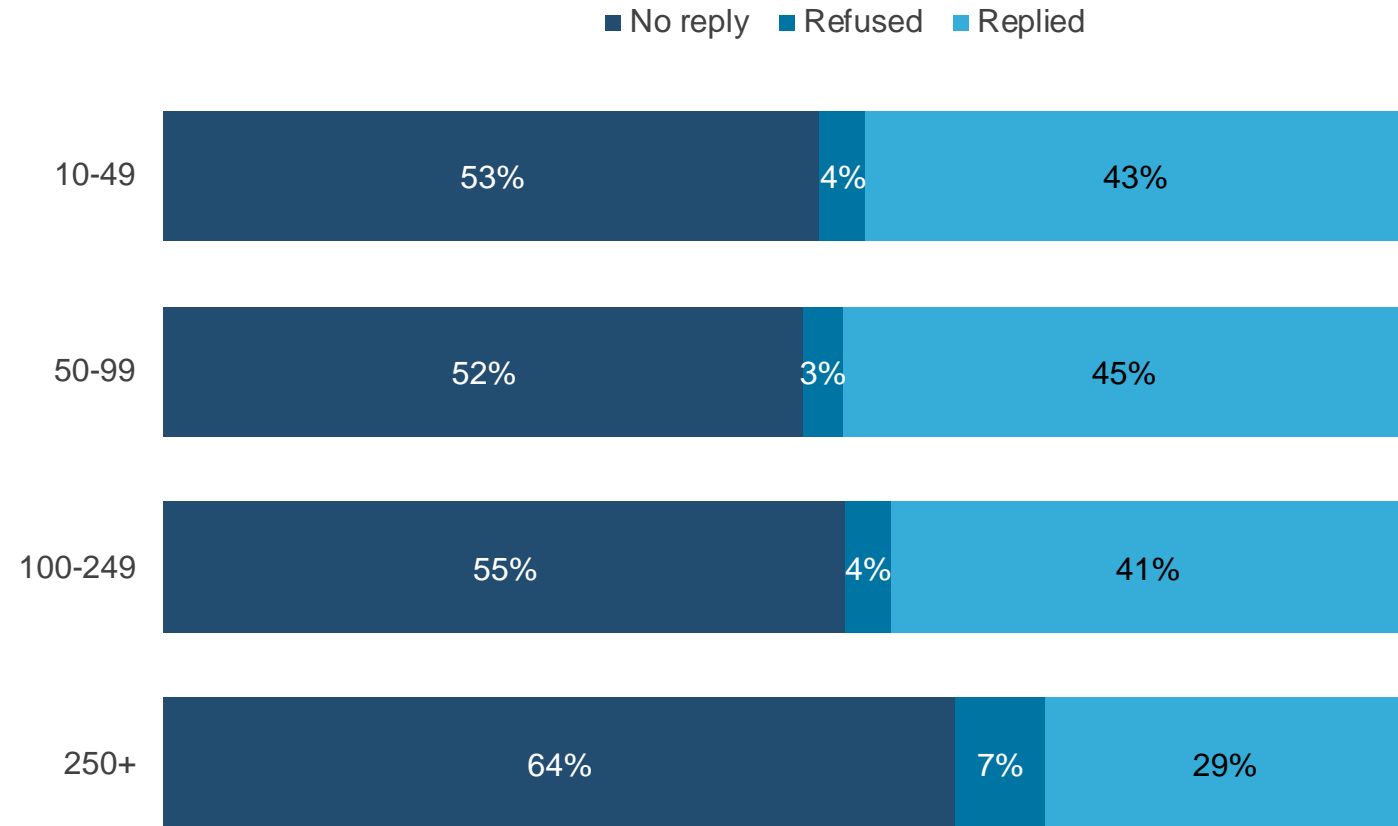
Management questions

Management practices

- Continuous improvement

- Key performance indicators

- Target setting

- Employment practices

Business characteristics

- Ownership

- Education levels of managers and non-managers

- Degree of decentralisation in multi-site firms

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Continuous improvement

Section B: Service delivery

5. **In 2016, which one of the following comes closest to the approach your business generally took when problems with your service provision arose?**

   Examples: Slow or late delivery of service, a piece of technology breaking down.

   Please **X** one box only

   a. We resolved them but did not take further action... **X**

   b. We resolved them and took action to try to ensure they did not happen again........................ **X**

   c. We resolved them and took action to make sure that they did not happen again, and had a continuous improvement process to anticipate problems like these in advance............. **X**

   d. No action was taken... **X** 1001   MRW

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Continuous improvement

Section B: Service delivery

5. **In 2016, which one of the following comes closest to the approach your business generally took when problems with your service provision arose?**

   Examples: Slow or late delivery of service, a piece of technology breaking down.

   Please **X** one box only

   a. We resolved them but did not take further action... **X** = 1/3

   b. We resolved them and took action to try to ensure they did not happen again........................ **X** = 2/3

   c. We resolved them and took action to make sure that they did not happen again, and had a continuous improvement process to anticipate problems like these in advance............. **X** = 1

   d. No action was taken.. **X** = 0   MRW

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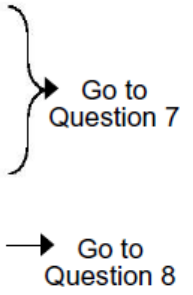ESCO ECONOMIC STATISTICS CENTRE OF EXCELLENCE

Key performance indicators

6. **In 2016, how many key performance indicators were monitored within this business?**

Examples: Sales, cost, quality, customer satisfaction, timely service delivery, waste.

Please **X** one box only

a. 1-2 key performance indicators.. [X]

b. 3-9 key performance indicators.. [X]

c. 10 or more key performance indicators... [X]

} Go to Question 7

d. No key performance indicators... [X] → Go to Question 8

1005

MRW

7. **In 2016, how frequently was progress against the key performance indicators reviewed by managers and non-managers within this business?**

A **manager** is someone who manages people and has employees directly reporting to them, with whom they meet regularly. Please include supervisors if they are responsible for managing staff and assessing their performance.
Non-managers are all other employees.

Please **X** all that apply for each column

	Managers	Non-managers
a. Annually..	[X]	[X] 1009
b. Quarterly..	[X]	[X] 1010
c. Monthly..	[X]	[X] 1011
d. Weekly...	[X]	[X] 1012
e. Daily..	[X]	[X] 1013
f. Hourly or more frequently..............................	[X]	[X] 1014
g. Never...	[X]	[X] 1015

MFU

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Key performance indicators

Section C - Key performance indicators

6. **In 2016, how many key performance indicators were monitored within this business?**

Examples: Sales, cost, quality, customer satisfaction, timely service delivery, waste.

Please **X** one box only

a. 1-2 key performance indicators.. X = 1/3

b. 3-9 key performance indicators.. X = 2/3 to Question 7

c. 10 or more key performance indicators.. X = 1

d. No key performance indicators... X = 0 Go to Question 8

1005

MRW

7. **In 2016, how frequently was progress against the key performance indicators reviewed by managers and non-managers within this business?**

A **manager** is someone who manages people and has employees directly reporting to them, with whom they meet regularly. Please include supervisors if they are responsible for managing staff and assessing their performance.
Non-managers are all other employees.

Please **X** <u>all</u> that apply for each column

	Managers	Non-managers	
a. Annually	X	X	1009
b. Quarterly	X	X	1010
c. Monthly	X	X	1011
d. Weekly	X	X	1012
e. Daily	X	X	1013
f. Hourly or more frequently	X	X	1014
g. Never	X	X	1015

MFU

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Target setting

9. **In 2016, how easy or difficult was it for this business to achieve its targets?**

Please **X** one box only

a. Possible to achieve without much effort.. X

b. Possible to achieve with some effort... X

c. Possible to achieve with normal amount of effort.. X

d. Possible to achieve with more than normal effort.. X

e. Possible to achieve with extraordinary effort... X 1020   MRX

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Target setting

9. **In 2016, how easy or difficult was it for this business to achieve its targets?**

Please **X** one box only

a. Possible to achieve without much effort... **X** = 0

b. Possible to achieve with some effort.. **X** = 1/2

c. Possible to achieve with normal amount of effort... **X** = 3/4

d. Possible to achieve with more than normal effort... **X** = 1

e. Possible to achieve with extraordinary effort... **X** = 1/4

MRX

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Employment practices

12. **In 2016, how were managers and non-managers usually promoted within this business?**

A **manager** is someone who manages people and has employees directly reporting to them, with whom they meet regularly. Please include supervisors if they are responsible for managing staff and assessing their performance. **Non-managers** are all other employees.

Please **X** one box for each column

	Managers	Non-managers	
a. Based solely on performance and ability...	X	X	1035
b. Based partly on performance and ability and partly on other factors, such as length of service, restructuring...	X	X	1036
c. Based mainly on factors other than performance and ability, such as length of service, restructuring...	X	X	1037
d. None were promoted...	X	X	1038 MFV

13. **In 2016, approximately what proportion of managers and non-managers within this business had a performance review?**

Please **X** one box for each column

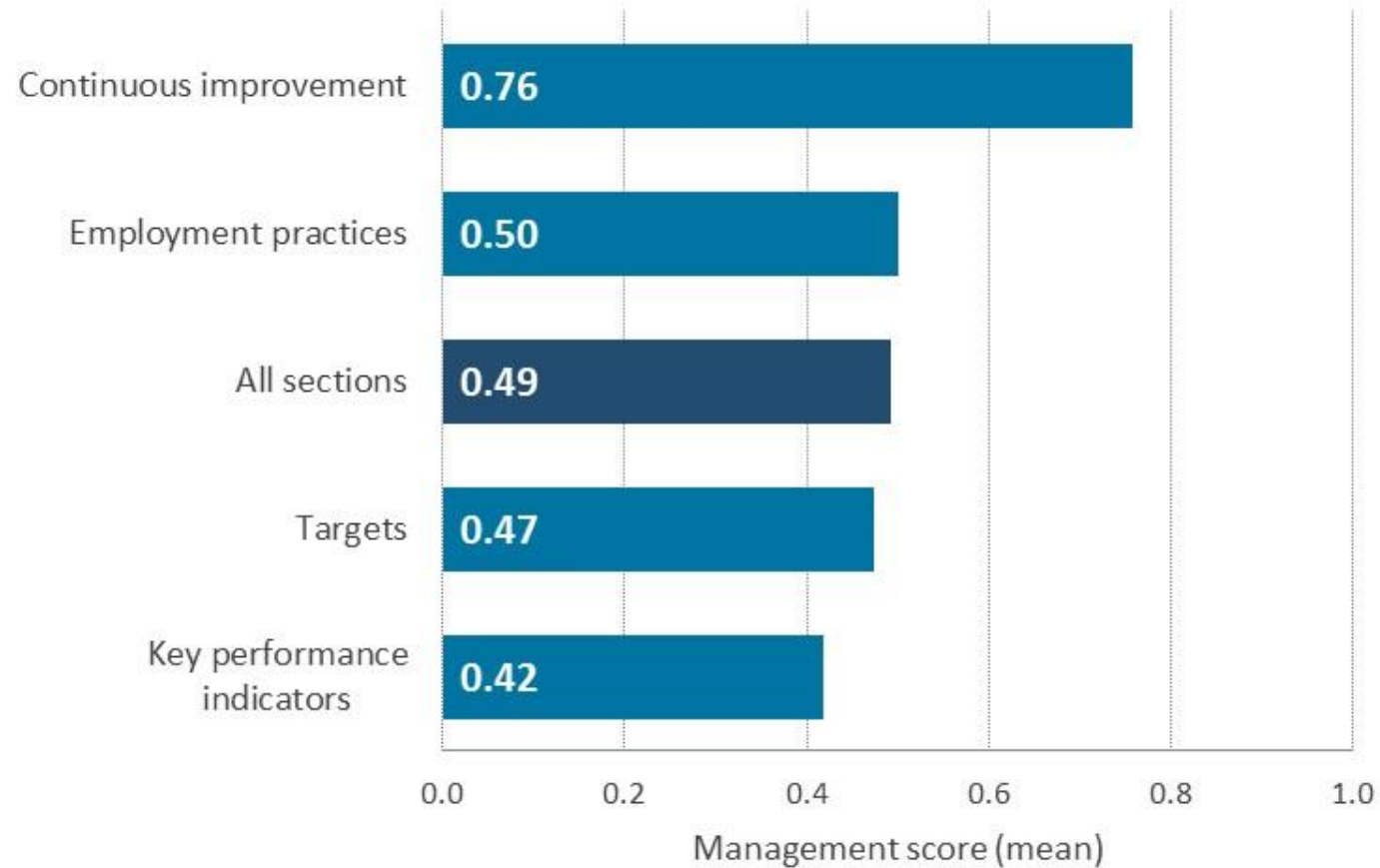|	Managers	Non-managers	
a. All...	X	X	1039
b. More than half but not all...	X	X	1040
c. Around half..	X	X	1041
d. Some but fewer than half...	X	X	1042
e. None..	X	X	1043 MFW

Results - Summary Statistics

Mean management scores

Mean management scores
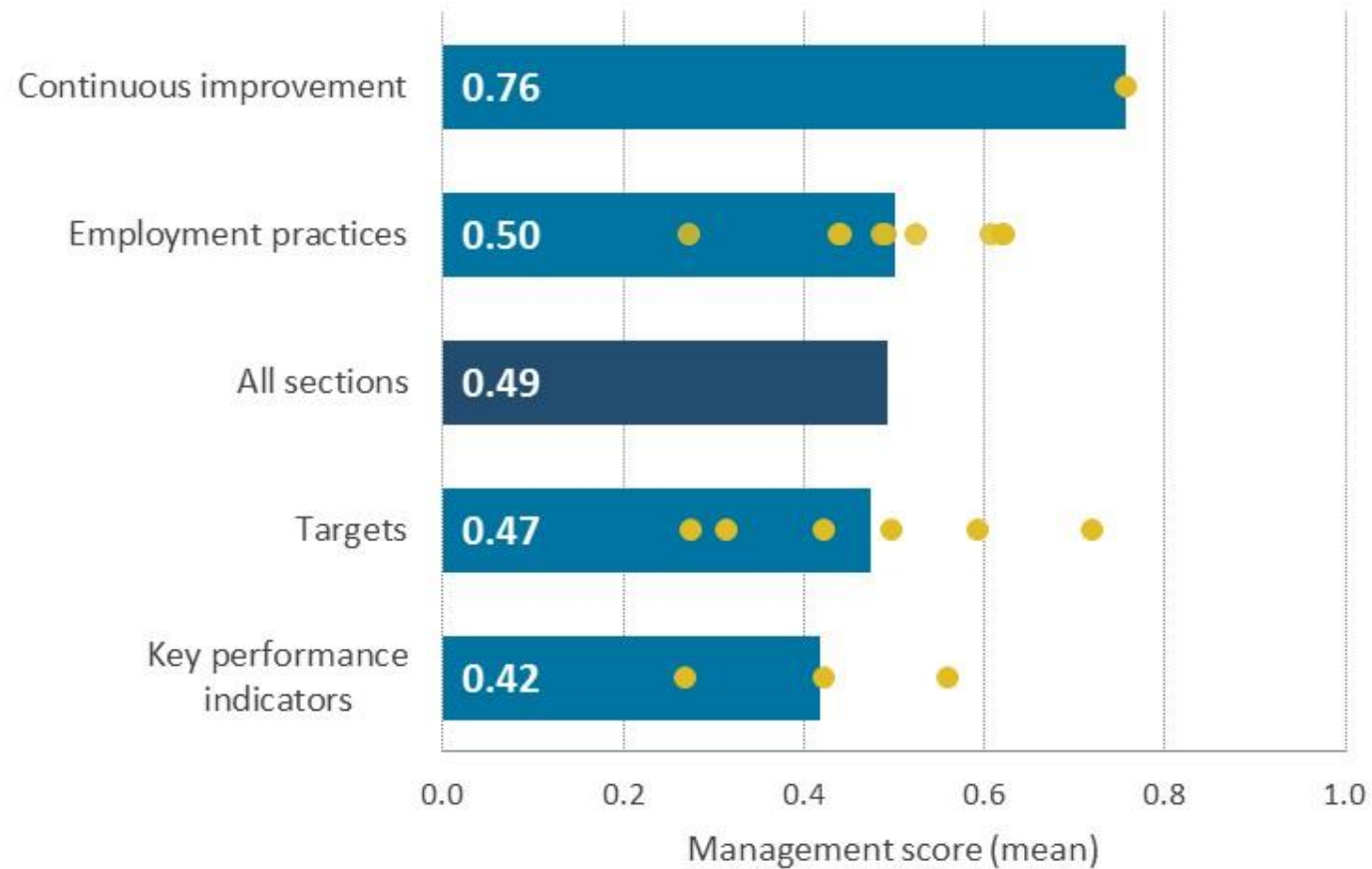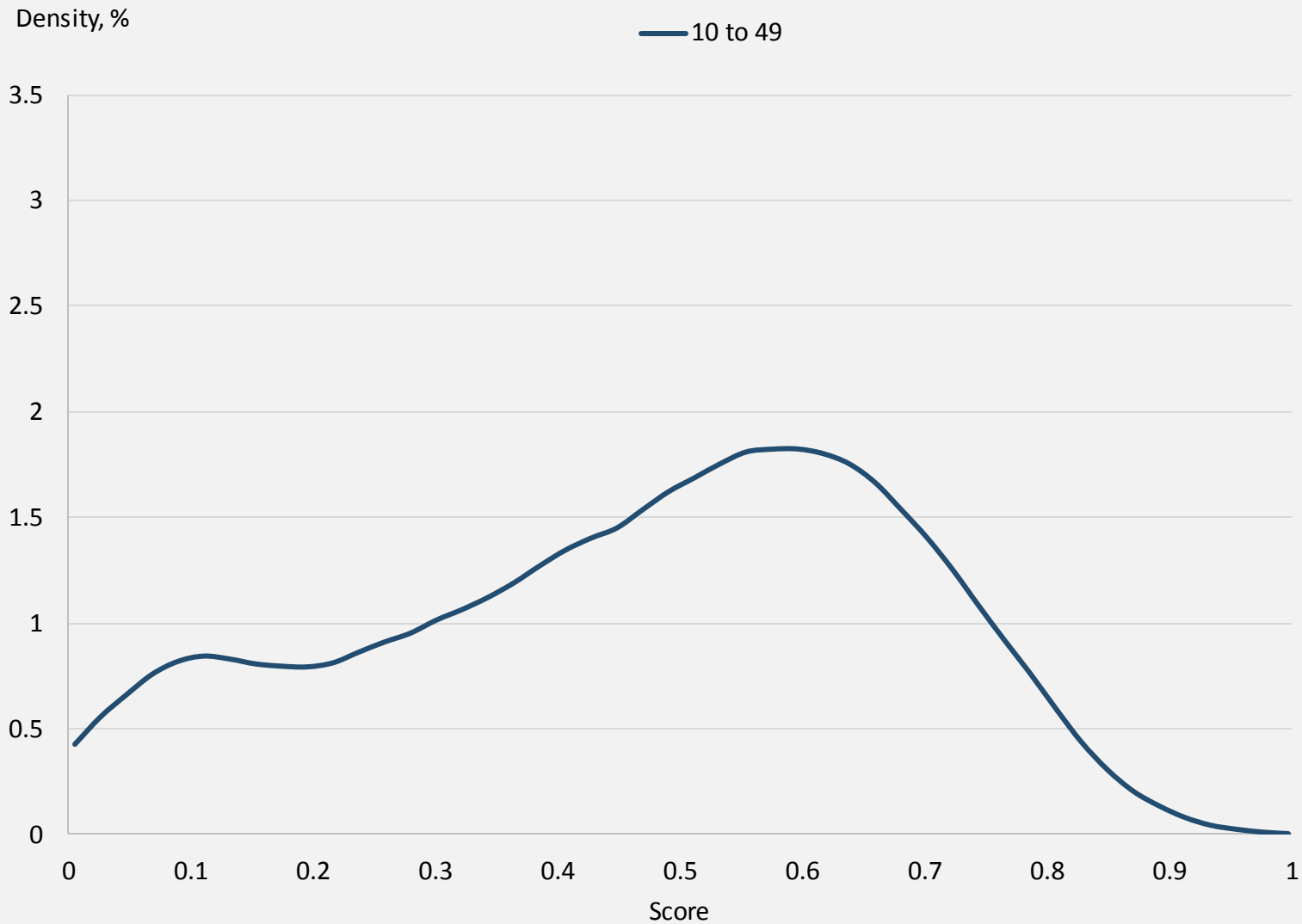
A horizontal bar chart titled with x-axis "Management score (mean)" ranging from 0.0 to 1.0.

- Continuous improvement: 0.76
- Employment practices: 0.50
- All sections: 0.49
- Targets: 0.47
- Key performance indicators: 0.42

Mean management scores

Management score (mean)	
Continuous improvement	0.76
Employment practices	0.50
All sections	0.49
Targets	0.47
Key performance indicators	0.42

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Distribution of management scores by firm size

Density, %

—— 10 to 49

3.5

3

2.5

2

1.5

1

0.5

0

0   0.1   0.2   0.3   0.4   0.5   0.6   0.7   0.8   0.9   1
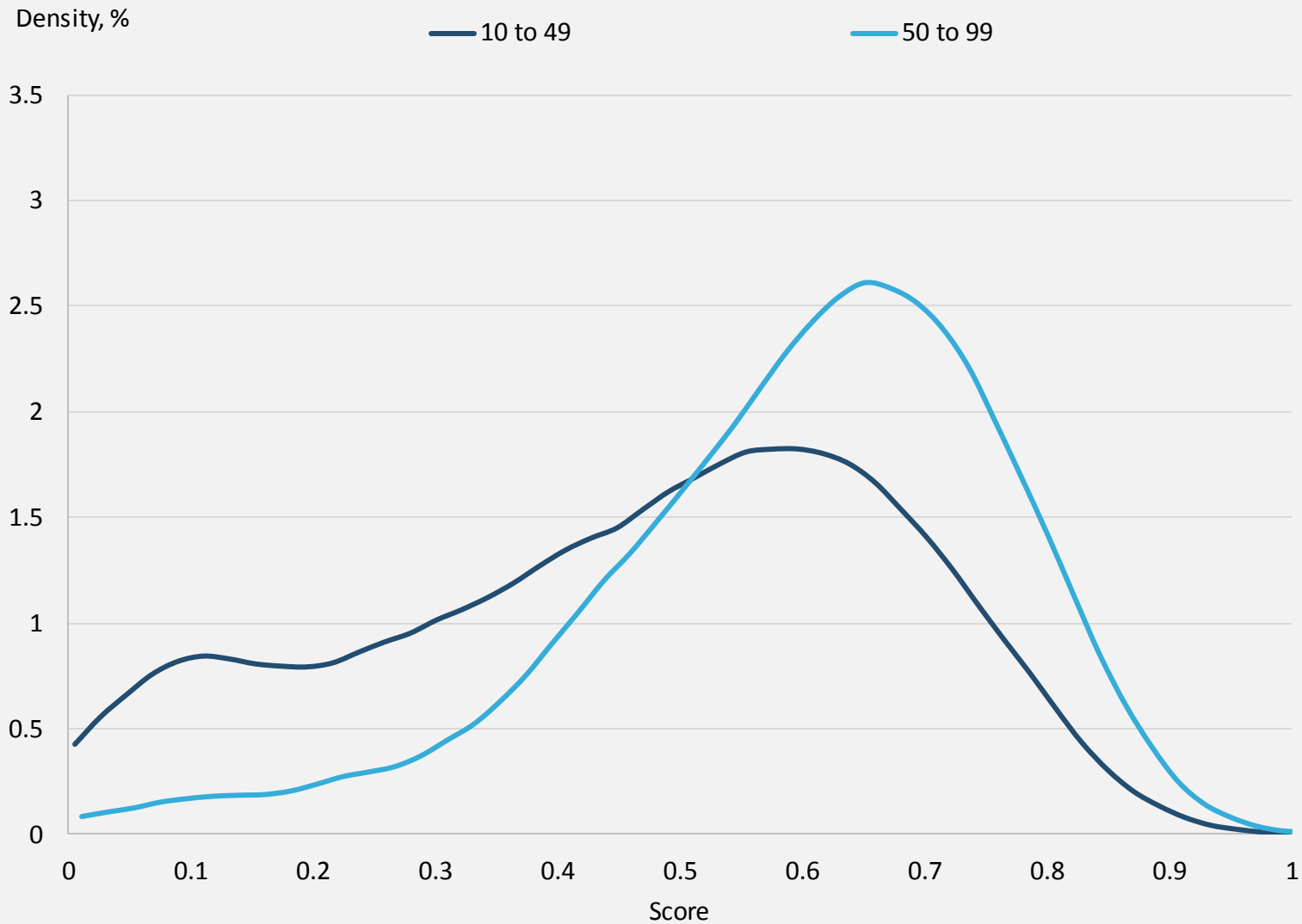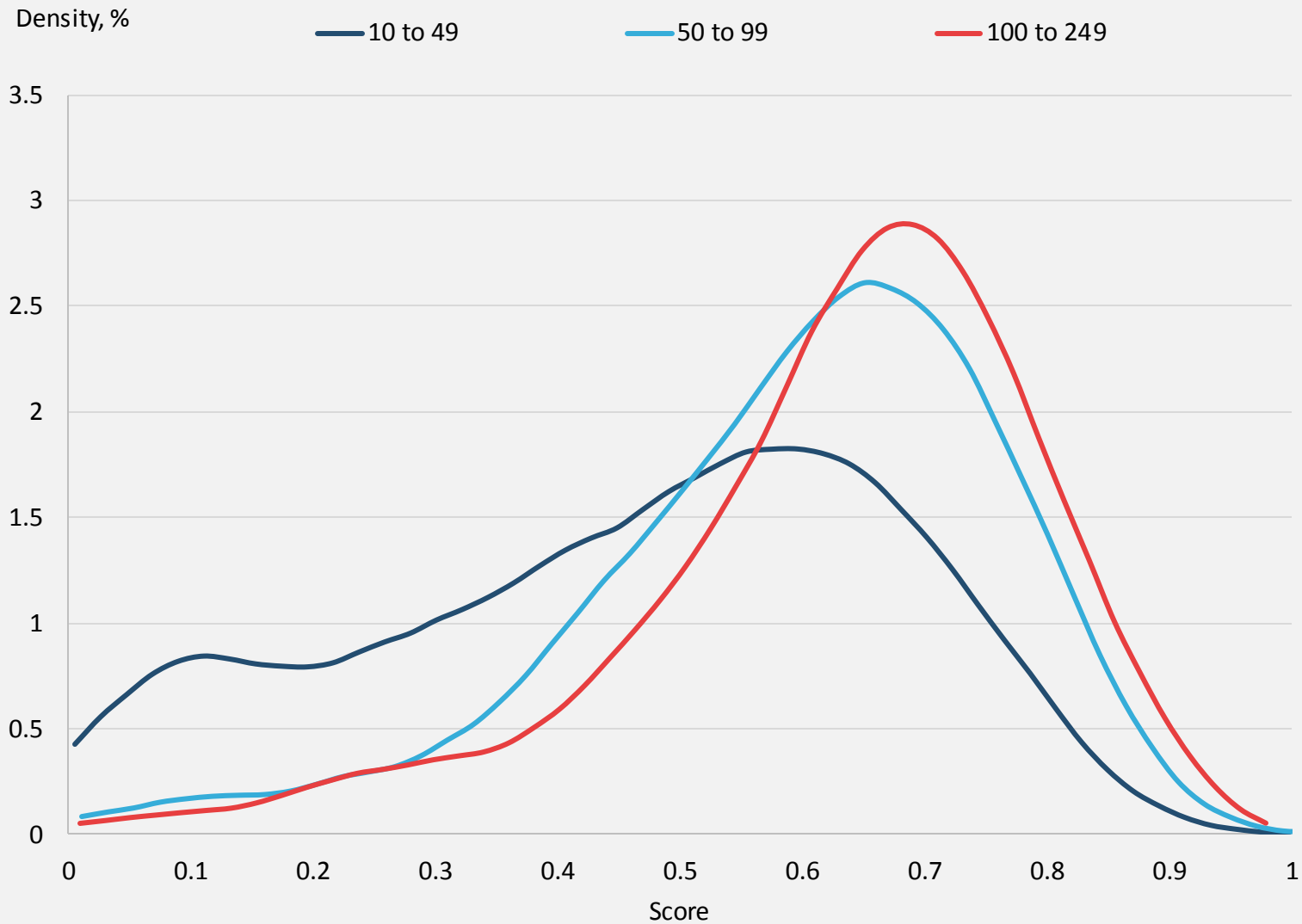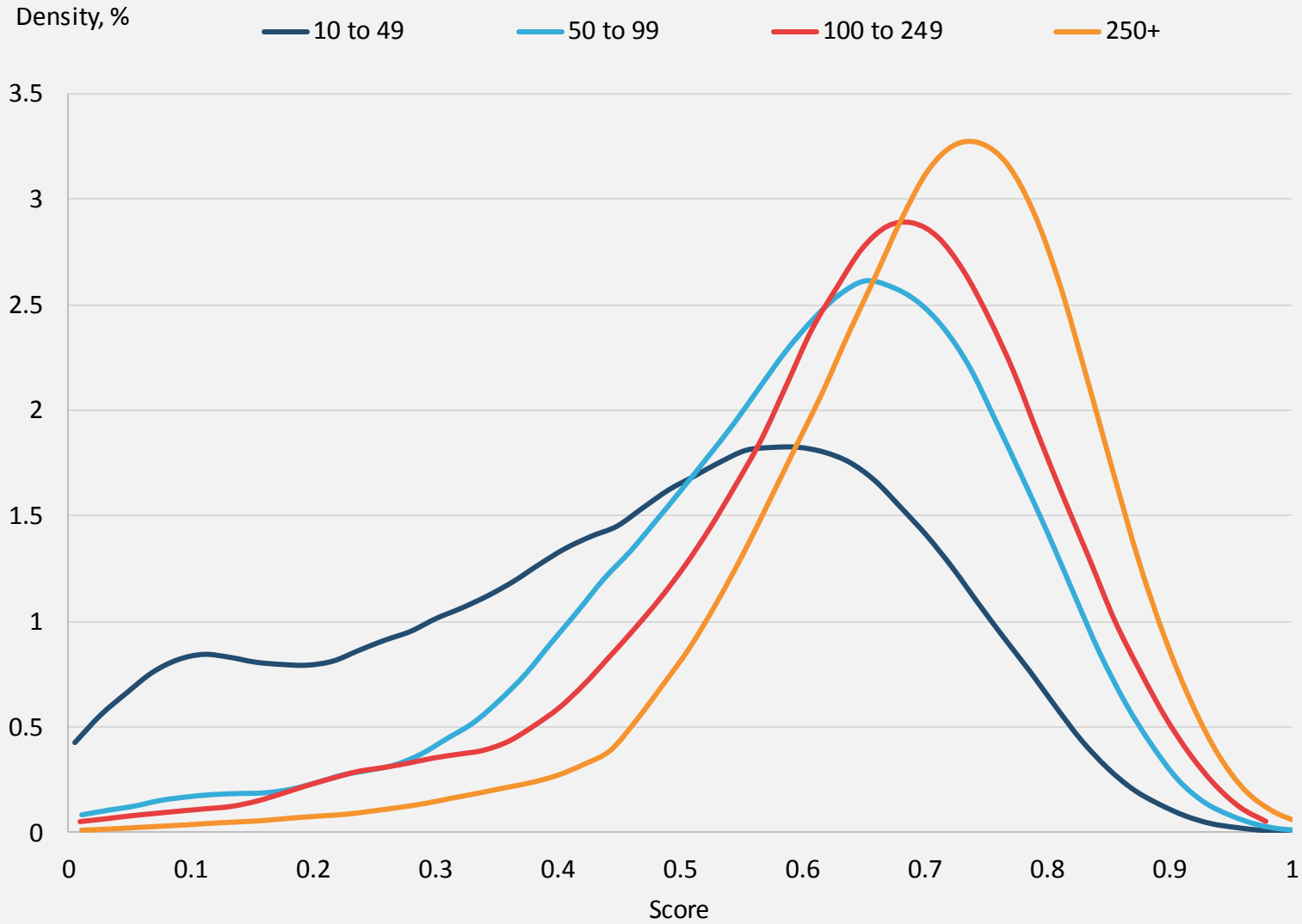
Score

Distribution of management scores by firm size

Distribution of management scores by firm size

Distribution of management scores by firm size

Distribution of management scores by firm size
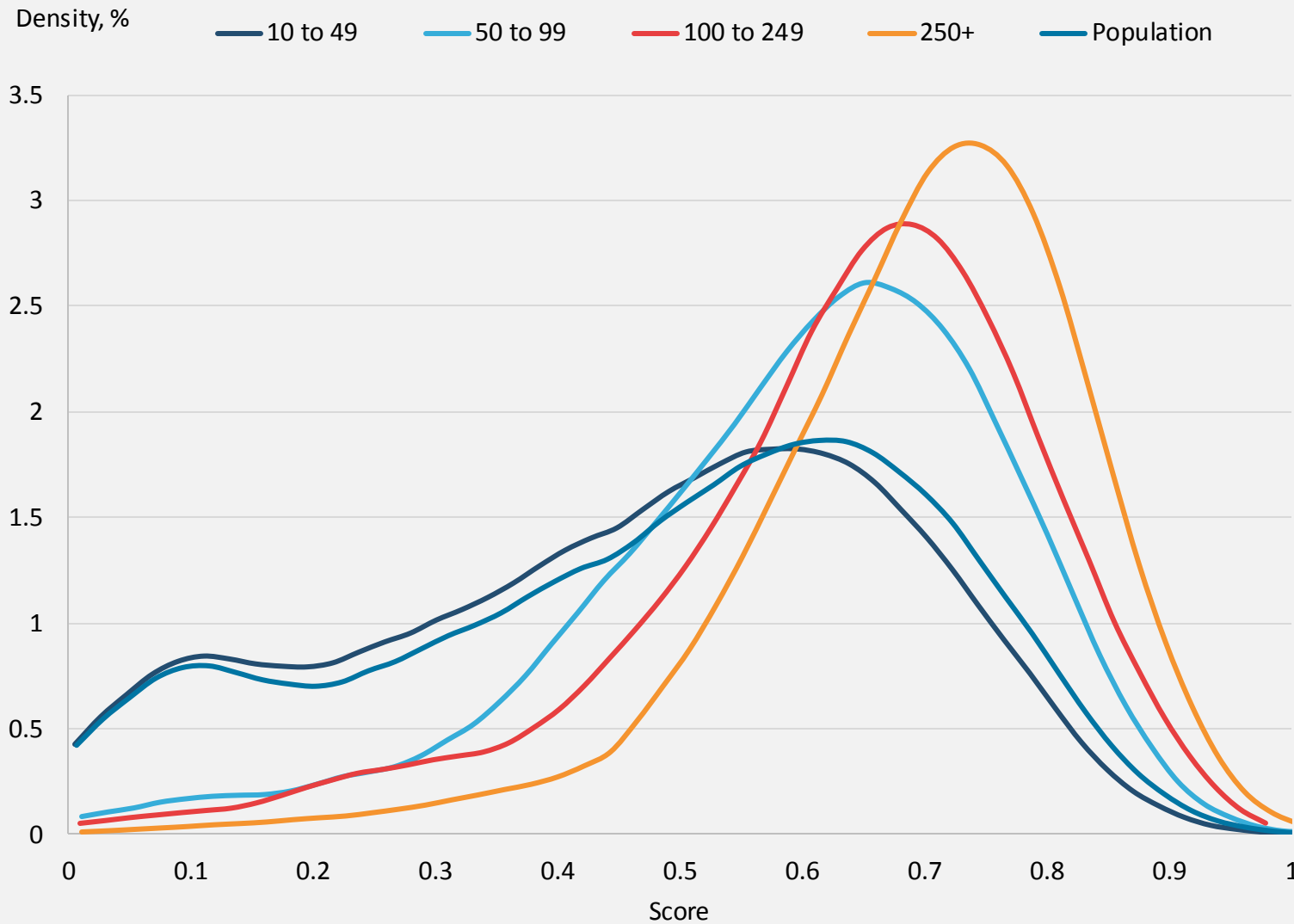
Distribution of management score by industry

Management practice score

	Share of population
Construction	7%
Services: Distribution, hotels & restaurants	30%
Manufacturing	12%
Non-manufacturing production	1%
Services: Transport, storage, & communication	9%
Services: Real estate	2%
Services: Business	20%
Services: Other	19%
Production	20%
Services	80%
Population	100%

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Distribution of management score by ownership status
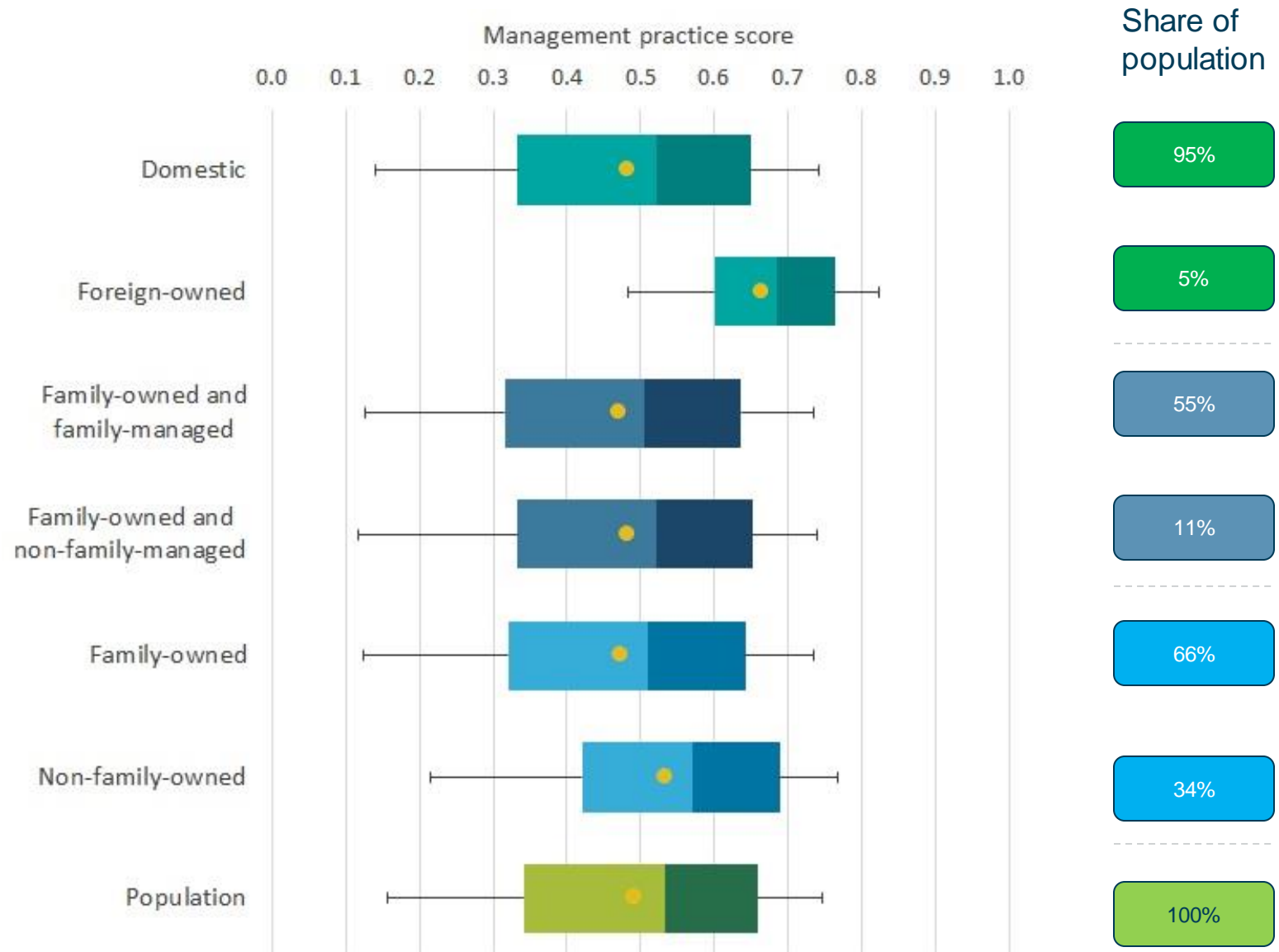
Labour productivity by management score decile

Decile 1 = 100

Management score decile
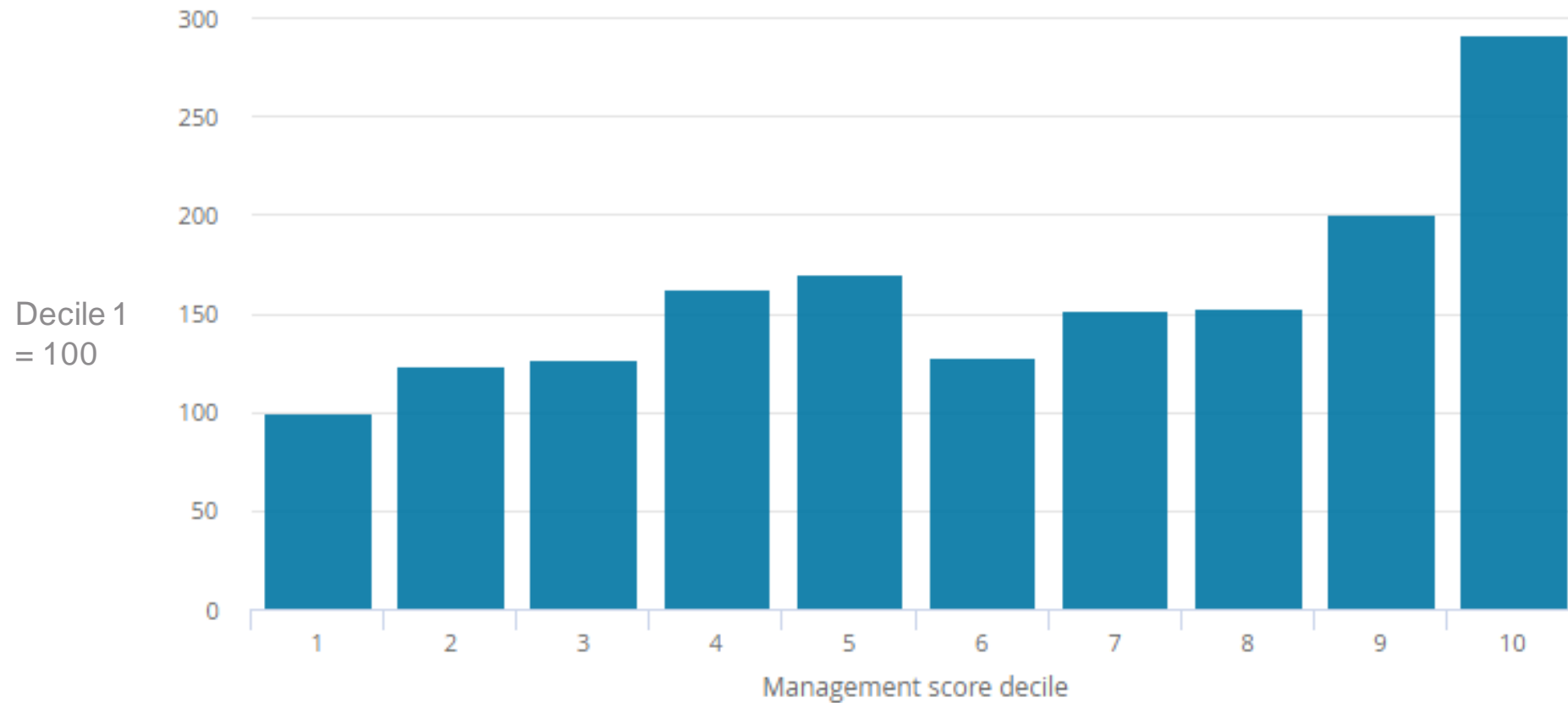
Results - OLS

Explanatory factors for management practices

	(1)	(2)	(3)	(4)	(5)	(6)
		Dependent variable is management score				
Ln(employment)	0.081***	0.077***	0.082***	0.064***	0.064***	0.061***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Family-owned		0.000	-0.005	-0.005	-0.004	
		(0.01)	(0.01)	(0.01)	(0.01)	
Family-owned and non-family-managed						-0.026
						(0.02)
Family-owned and family-managed						0.002
						(0.01)
Foreign owned		0.083***	0.078***	0.065***	0.063***	0.065***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age			0.007*	0.006	0.007*	0.004
			(0.00)	(0.00)	(0.00)	(0.00)
Age squared			-0.000***	-0.000**	-0.000***	-0.000**
			(0.00)	(0.00)	(0.00)	(0.00)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Education controls	No	No	No	Yes	Yes	Yes
Location dummies	No	No	No	No	Yes	Yes
R^2	0.238	0.244	0.263	0.343	0.356	0.359
Observations	7,841	7,810	7,810	7,115	7,115	7,107

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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	Dependent variable is management score				
	1: All	2: 10-49	3: 50-99	4: 100-249	5: 250+
Ln(employment)	0.061***	0.096***	-0.042	0.066***	0.014***
	(0.00)	(0.01)	(0.03)	(0.02)	(0.00)
Family-owned and non-family-managed	-0.026	-0.039	0.011	0.006	-0.007
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
Family-owned and family-managed	0.002	-0.000	0.007	-0.011	-0.047***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Foreign owned	0.065***	0.081***	0.061***	0.047**	0.032***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
Age	0.004	0.004	0.003	0.010*	0.006***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Age squared	-0.000**	-0.000*	-0.000	-0.000*	-0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Industry controls	Yes	Yes	Yes	Yes	Yes
Education controls	Yes	Yes	Yes	Yes	Yes
Location controls	Yes	Yes	Yes	Yes	Yes
R^2	0.359	0.334	0.279	0.268	0.255
Observations	7,107	2,902	1,208	1,027	1,970

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Explanatory factors for productivity

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	Dependent variable is Ln(GVA/worker)					
	(1)	(2)	(3)	(4)	(5)	(6)
Management score	1.454***	1.136***	1.101***	0.981***	0.977***	0.961***
	(0.16)	(0.14)	(0.14)	(0.15)	(0.15)	(0.16)
Log(employment)		0.001	-0.023	-0.077***	-0.077***	-0.081***
		(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Family-owned			-0.080	-0.049	-0.041	
			(0.06)	(0.06)	(0.06)	
Family-owned and non-family-managed						-0.144
						(0.08)
Family-owned and family-managed						-0.017
						(0.06)
Foreign owned			0.366***	0.328***	0.317***	0.357***
			(0.06)	(0.07)	(0.07)	(0.07)
Age				0.061**	0.063***	0.057**
				(0.02)	(0.02)	(0.02)
Age^2				-0.002**	-0.002**	-0.002**
				(0.00)	(0.00)	(0.00)
Industry controls	No	Yes	Yes	Yes	Yes	Yes
Education controls	No	No	No	No	No	Yes
Location controls	No	No	No	No	Yes	Yes
R^2	0.075	0.368	0.374	0.403	0.411	0.412
Observations	7,416	7,416	7,388	6,731	6,731	6,723

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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	(1)		(2)
	Dependent variable is Ln(GVA/worker)	
Continuous improvement	0.378*	Continuous improvement x Log(employment)	0.101*
	(0.16)		(0.04)
KPI practices	0.063	KPI practices x Log(employment)	0.015
	(0.12)		(0.03)
Target practices	0.168	Target practices x Log(employment)	0.057
	(0.11)		(0.03)
Employment practices	0.497***	Employment practices x Log(employment)	0.147***
	(0.13)		(0.04)
Log(employment)	-0.083***		-0.293***
	(0.02)		(0.05)
Family-owned and non-family-managed	-0.132		-0.137
	(0.08)		(0.08)
Family-owned and family-managed	-0.016		-0.01
	(0.06)		(0.06)
Foreign owned	0.368***		0.342***
	(0.07)		(0.07)
Age	0.059**		0.059**
	(0.02)		(0.02)
Age^2	-0.002**		-0.002**
	0.00		0.00
Industry controls	Yes		Yes
Education controls	Yes		Yes
Location controls	Yes		Yes
R^2	0.416		0.413
Observations	6,714		6,714

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Conclusion

- Substantial variation in management scores amongst GB businesses

- Management scores are highest among:
  - ✓ Larger than smaller firms
  - ✓ Not family owned than family owned
  - ✓ Multinationals than domestic
  - ✓ Services than production

- Management practice score is strongly correlated with productivity

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Next steps

- Longitudinal component

- Multi-factor productivity