

# **Experimental data from the Management Practices Survey 2015**

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Tuesday 25 October 2016

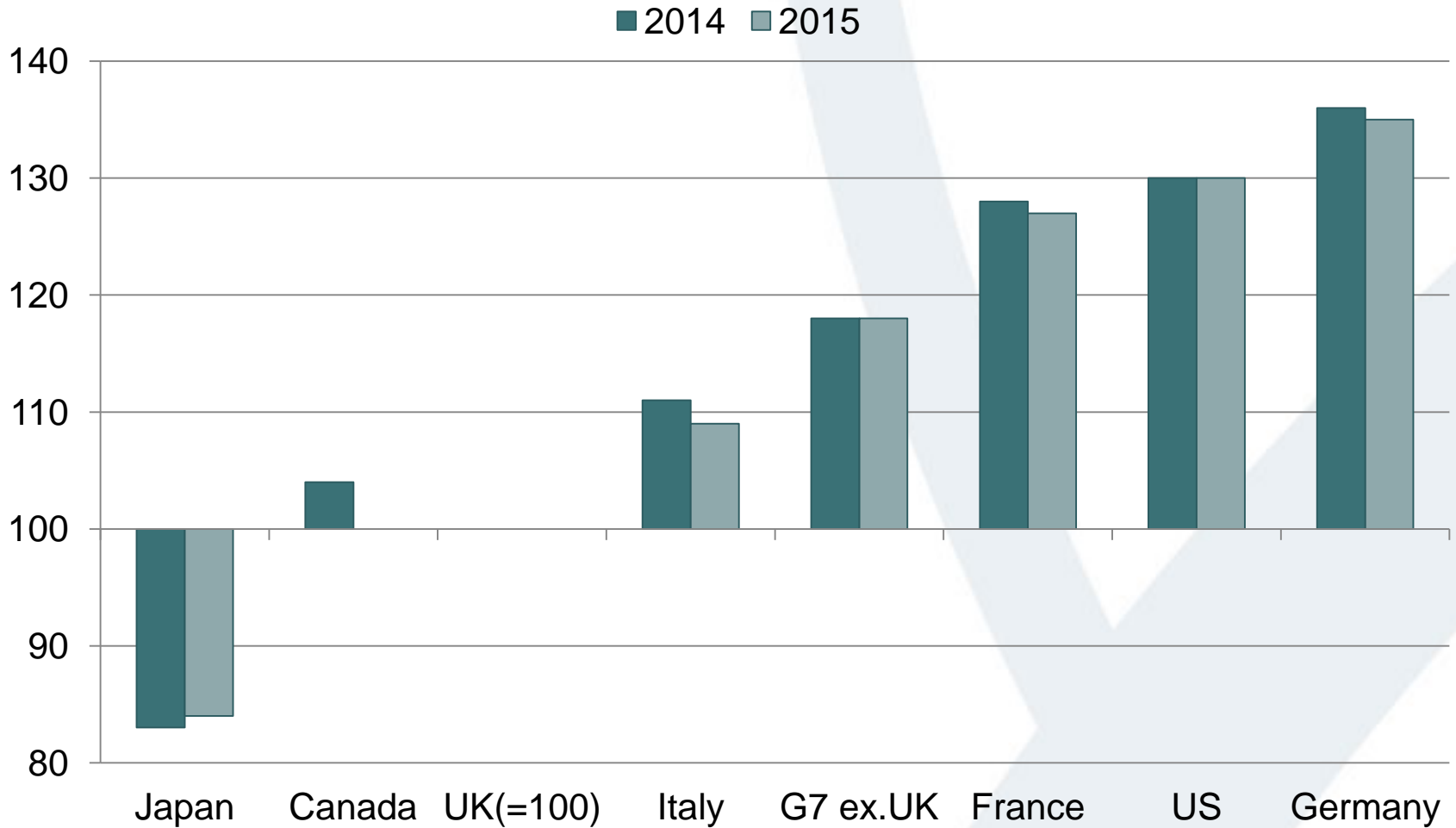
# Overview

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- Motivation
- Manufacturing Pilot Design
  - Purpose
  - Sample design
  - Response rates
- Manufacturing Results
- Next steps
  - Further analysis of manufacturing data
  - Services pilot
  - Long term aims

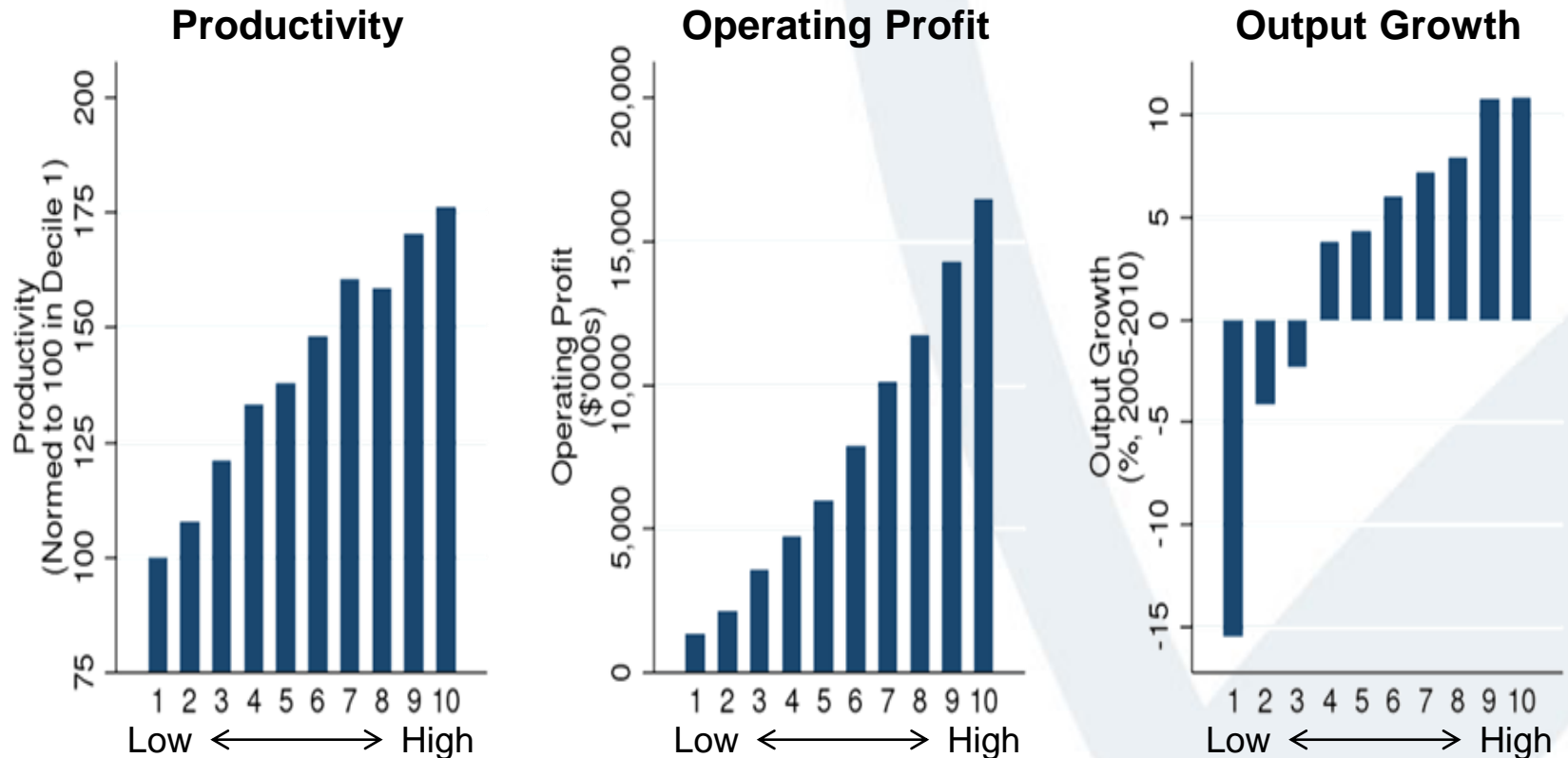
# Motivation

# Current Price GDP per hour worked, G7



Source: ONS

# Management and Performance - USA



**Decile of Management Practice Score**

Source: Bloom et al, 2013, "Management in America", Center for Economic Studies Working Paper, US Census Bureau

# Manufacturing Pilot

# Purpose of MPS pilot

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- **Feasibility**

Are UK businesses willing to answer these questions in a voluntary survey?

Can we find a long term approach for collecting data on management practices?

- **Results**

How much do responses vary?

Do we see an association between management practices and productivity?

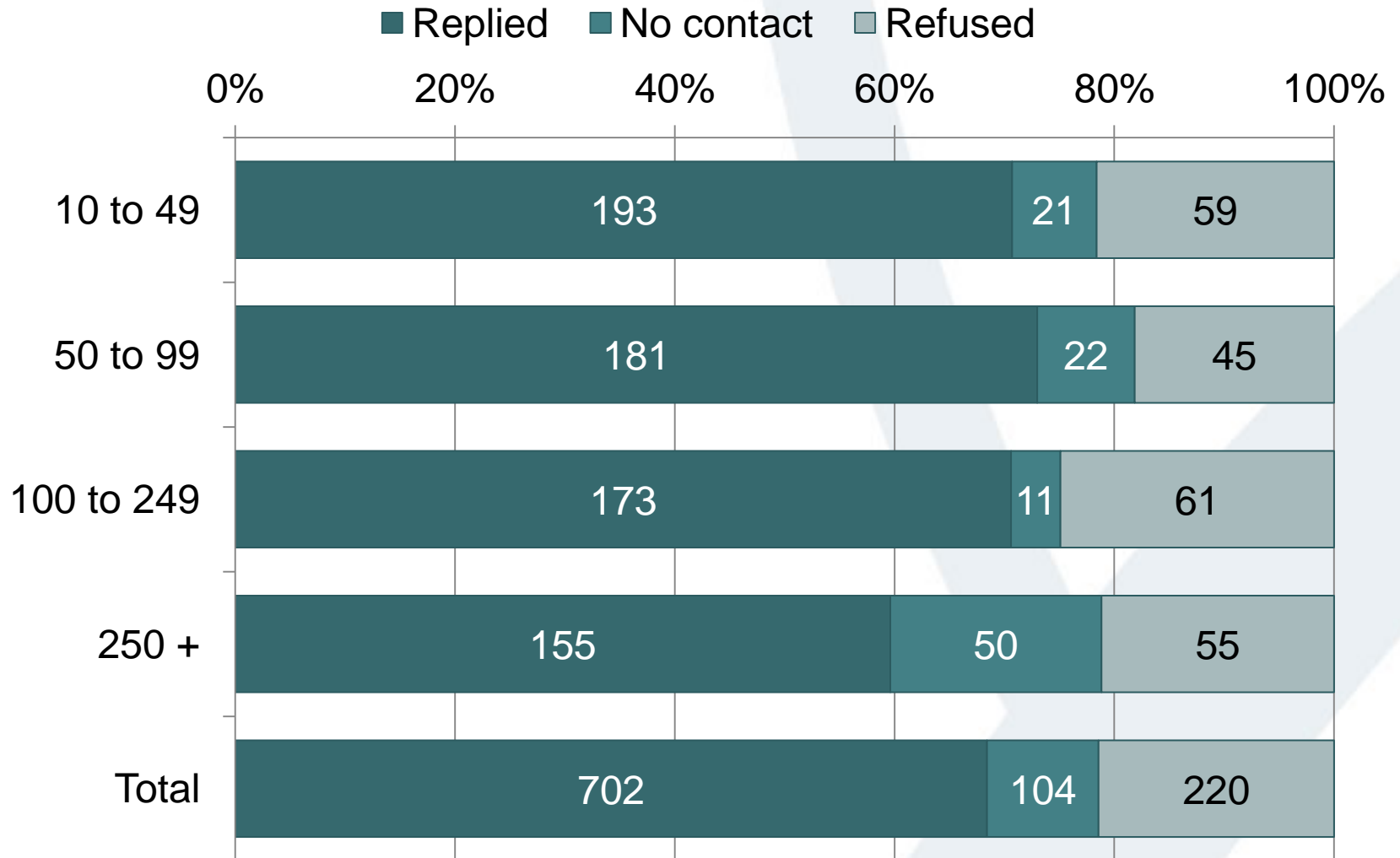
# Survey Design - Sample

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- 1,026 businesses from the Annual Business Survey's sample for 2015.
- Coverage:
  - Great Britain
  - Reporting Units (businesses) with employment of at least 10, where employment is employees plus working proprietors
  - Manufacturing (SIC 2007 section C, divisions 10-33)
- Stratified using employment and industry
  - Employment bands of 10-49, 50-99, 100-249 and 250+
  - Industry at division level (two digit SIC code)
- Final response rate of 68% (702 businesses)



# Response rates by employment size



# Response rate - Linear Probability Model

	MPS Response	MPS Response	MPS Response	MPS Response
Log(employment)	-0.029*		-0.011	-0.013
	(0.012)		(0.024)	(0.025)
Log(turnover)		-0.022*	-0.015	-0.013
		(0.009)	(0.018)	(0.018)
Constant	0.818***	0.891***	0.876***	0.855***
	(0.056)	(0.082)	(0.089)	(0.100)
Industry grouping dummies	No	No	No	Yes
$R^2$	0.006	0.007	0.007	0.015
Industry Joint Significance (p-value)				0.387
Observations	1026	1026	1026	1026

Standard errors in parentheses are robust to heteroskedasticity. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Source: Office for National Statistics

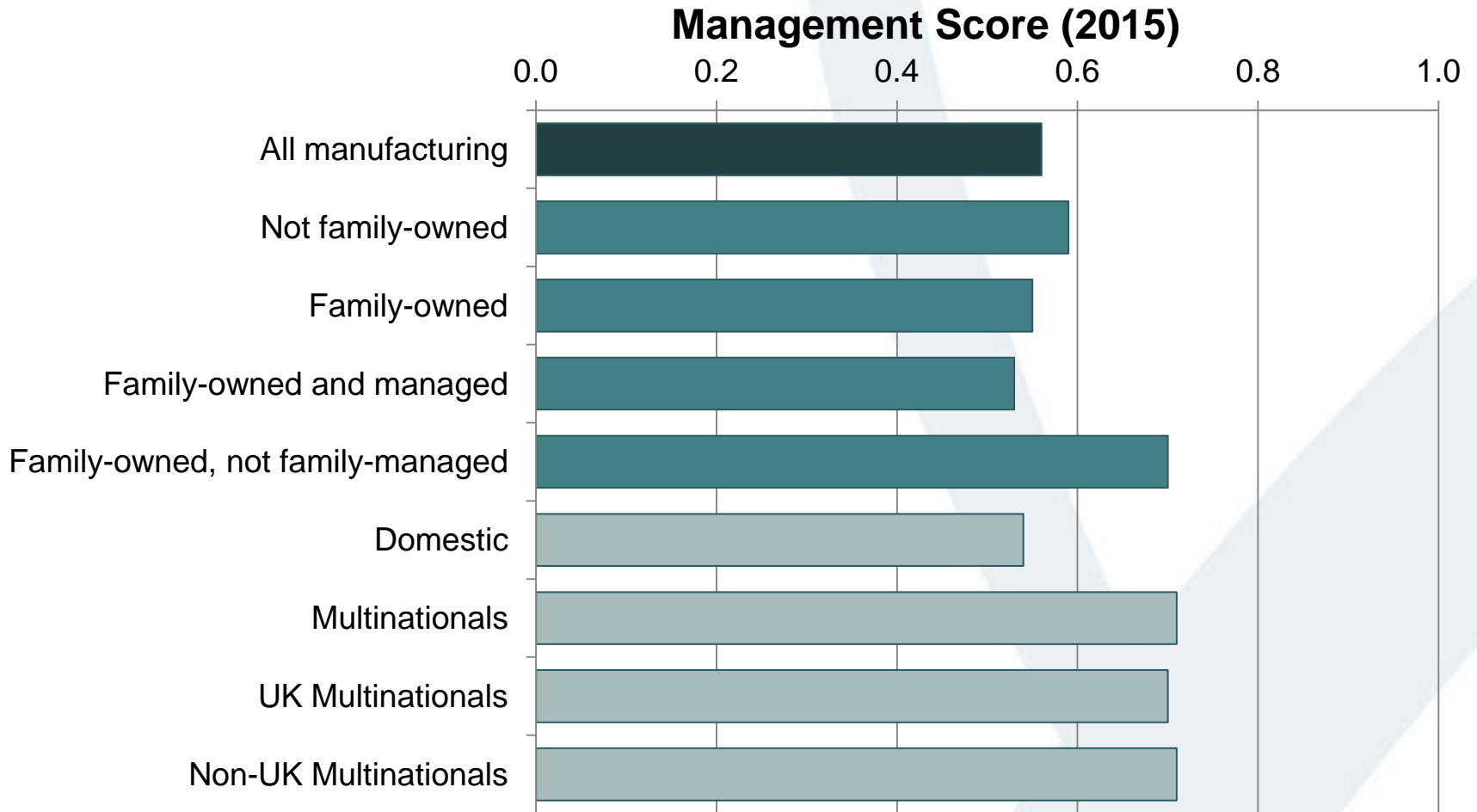
Data on employment and turnover taken from the IDBR at the time of sample selection.

Base group for industry grouping dummies is “Chemicals, pharmaceuticals, rubber, plastics and non-metallic minerals”, which is the grouping with the highest average management score.

Full results are available on request.

# Manufacturing Results

# Average score by business type



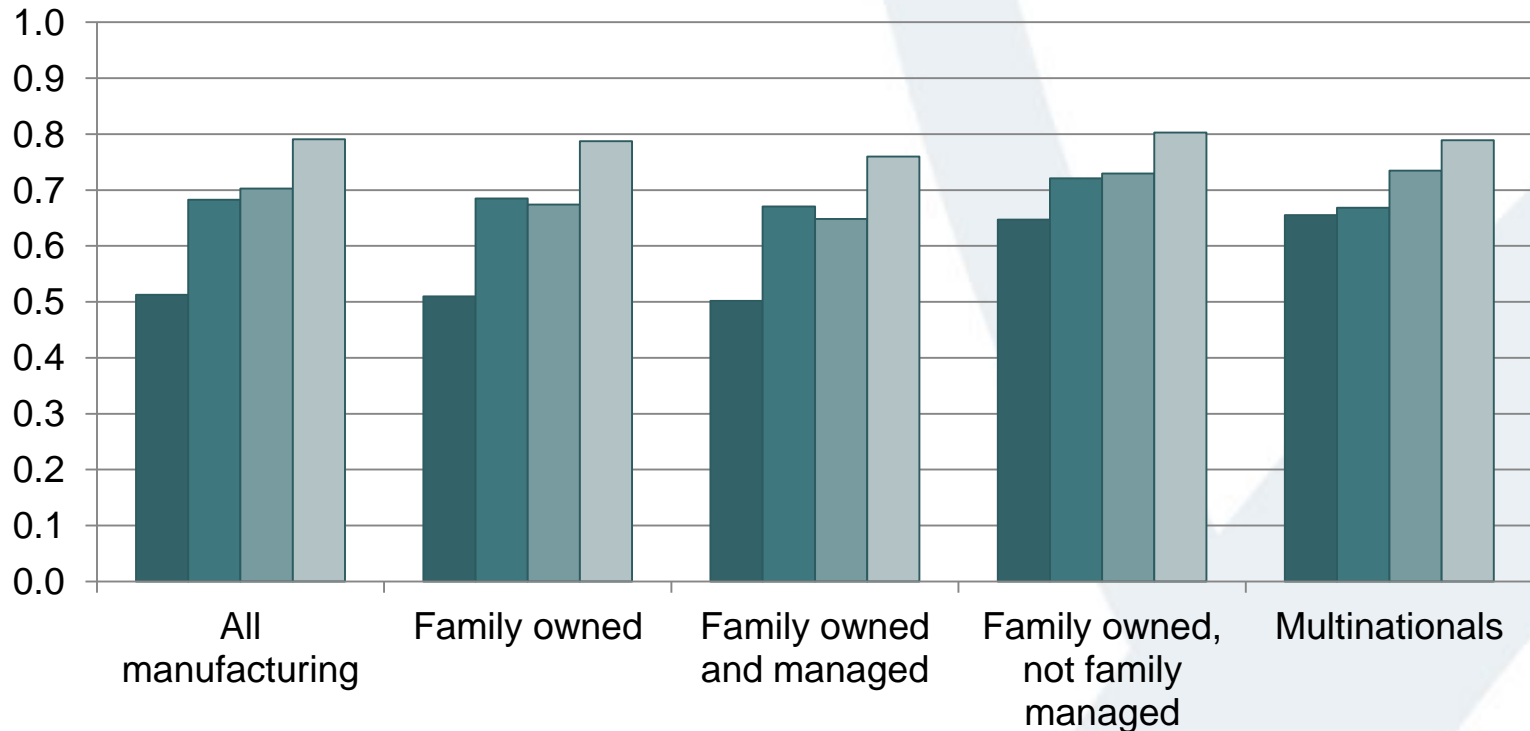
*All manufacturing includes all manufacturing businesses with employment of at least 10 in Great Britain*

Source: ONS

# Average score by employment size band

■ 10 to 49 employment   ■ 50 to 99 employment   ■ 100 to 249 employment   ■ 250+ employment

## Management Score (2015)



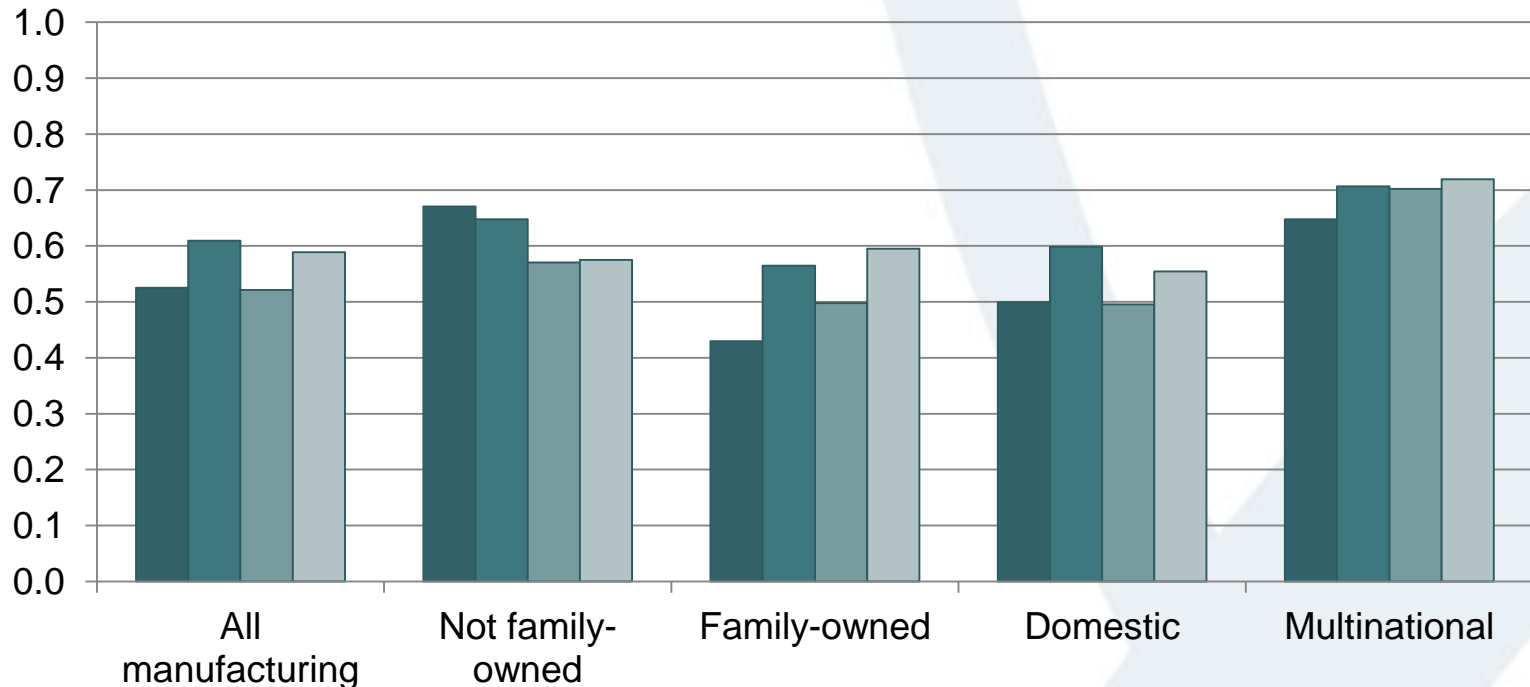
*All manufacturing includes all manufacturing businesses with employment of at least 10 in Great Britain*

Source: ONS

# Average management score by business age

■ Up to 5 years   ■ Over 5 years, up to 10 years   ■ Over 10 years, up to 20 years   ■ Over 20 years

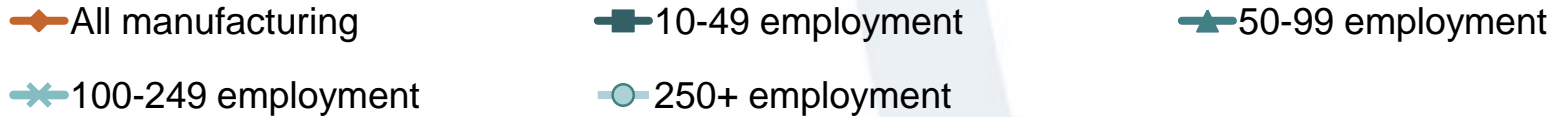
Management Score (2015)



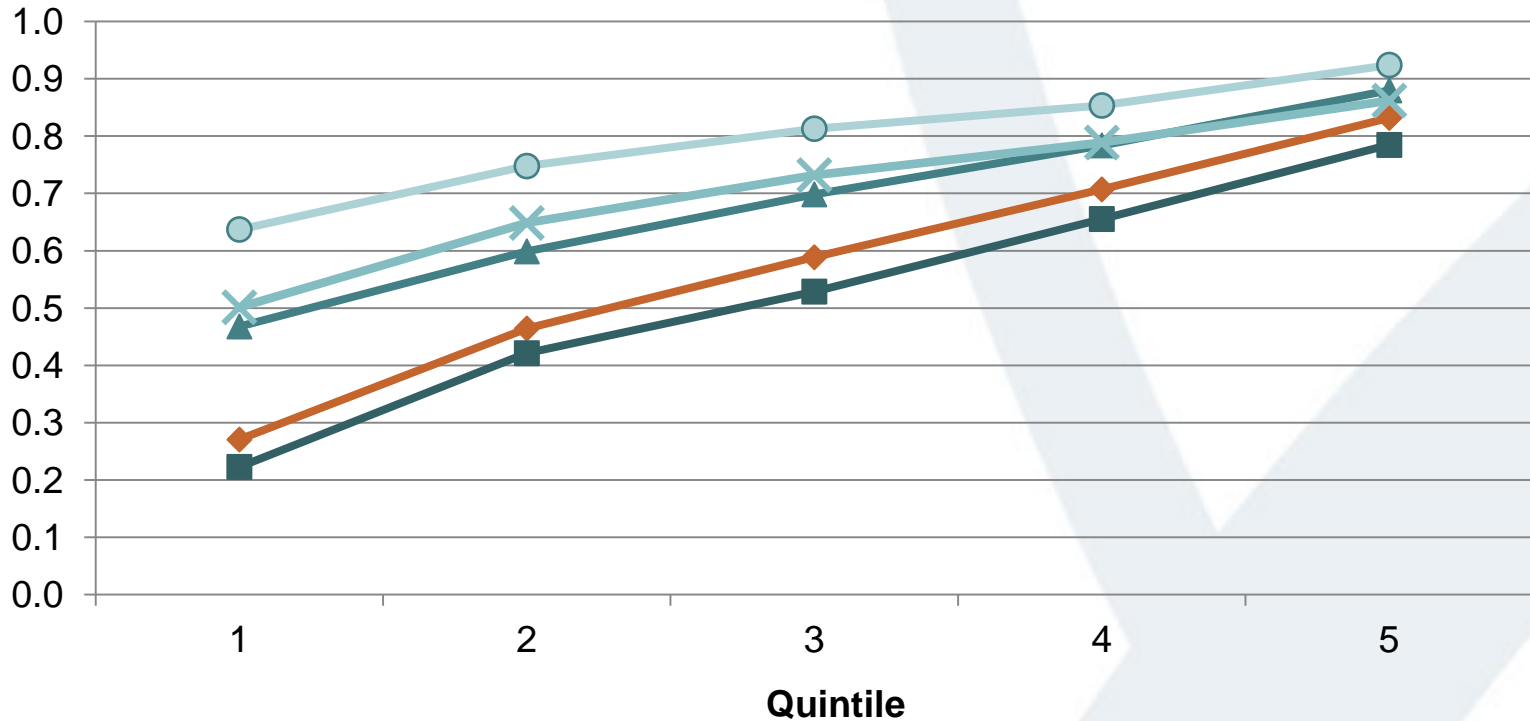
*All manufacturing includes all manufacturing businesses with employment of at least 10 in Great Britain*

Source: ONS

# Average score by quintile and size band



Management Score (2015)



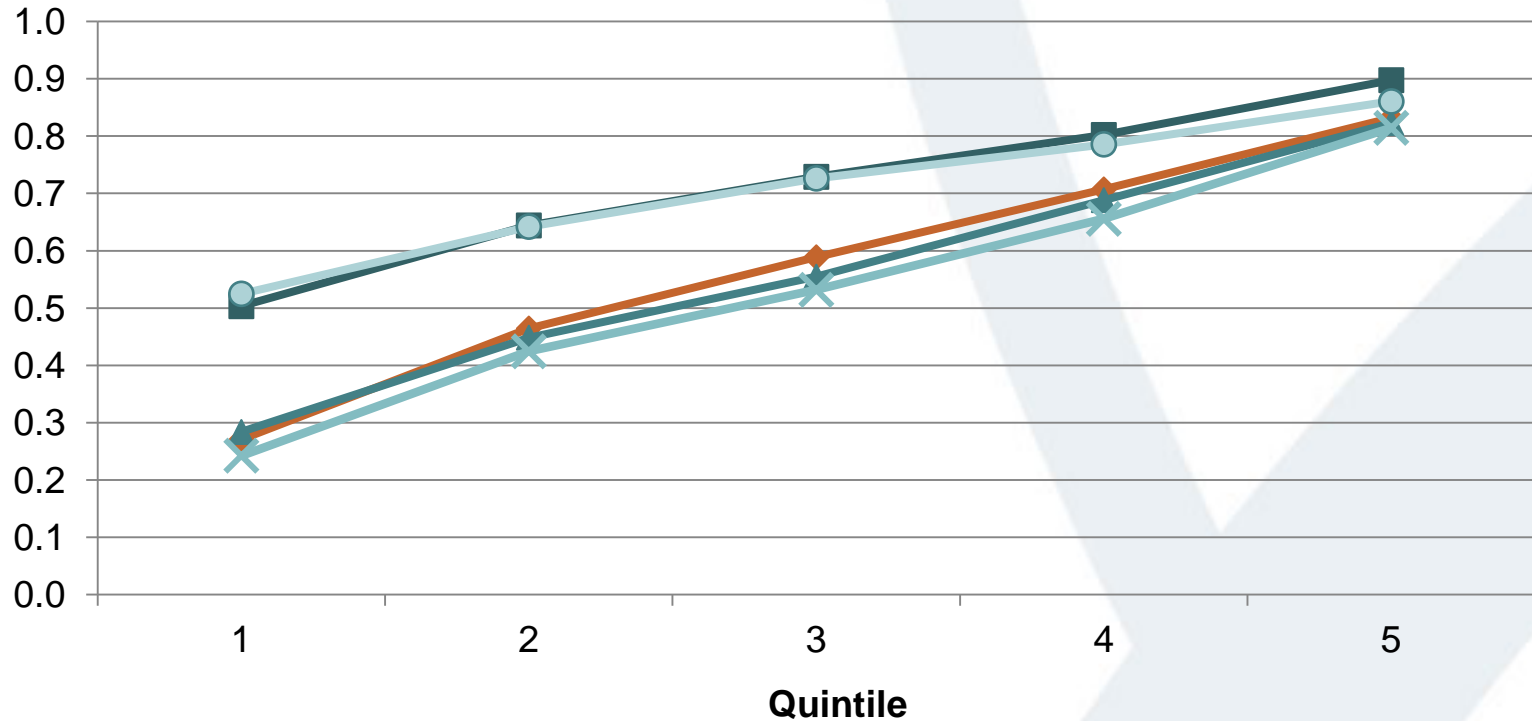
*All manufacturing includes all manufacturing businesses with employment of at least 10 in Great Britain*

Source: ONS

# Average score by quintile and type

- ◆ All manufacturing
- ▲ Family owned
- Family owned and non-family managed
- Multinationals
- ✕ Family owned and managed

## Management Score (2015)



*All manufacturing includes all manufacturing businesses with employment of at least 10 in Great Britain*

Source: ONS



# Correlation between Score and Productivity by industry grouping

Output per hour, 2015, current prices



*All manufacturing includes all manufacturing businesses with employment of at least 10 in Great Britain*

Source: ONS

# Multivariate analysis of management score – Ordinary Least Squares

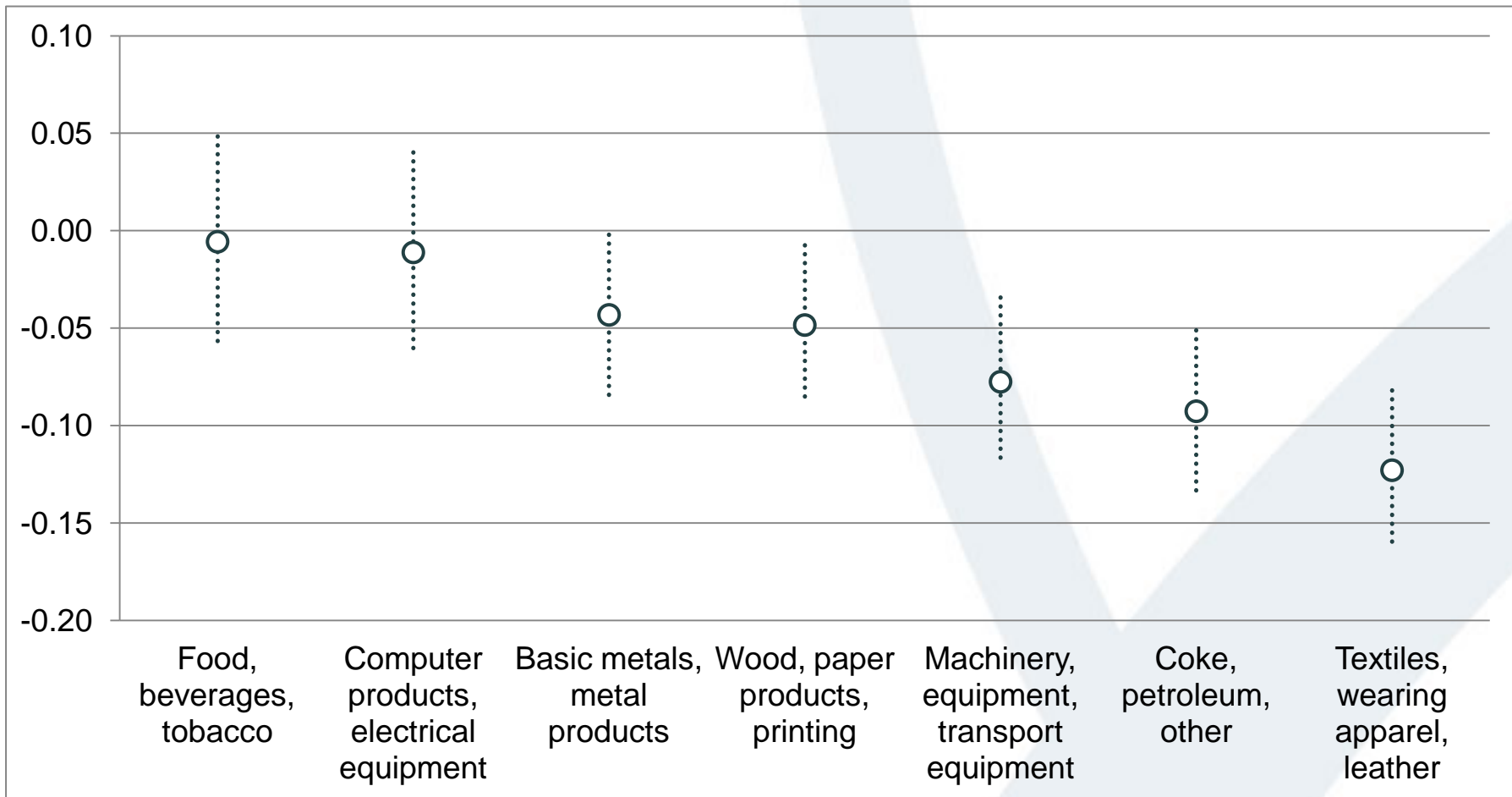
	Management score	Management score	Management score	Management score	Management score
Log(employment)	0.110*** (0.015)	0.107*** (0.014)	0.108*** (0.016)	0.105*** (0.014)	0.108*** (0.014)
Family owned business	0.004 (0.049)	0.001 (0.051)	-0.005 (0.054)	-0.010 (0.056)	-0.006 (0.058)
Family-owned and non-family-run			0.047 (0.032)	0.057 (0.033)	0.053 (0.033)
Multinational	0.016 (0.032)	0.013 (0.032)	0.008 (0.043)	0.003 (0.042)	0.004 (0.043)
UK Multinational			0.002 (0.026)	0.002 (0.026)	0.002 (0.028)
Age (years)					-0.000 (0.012)
Age squared					-0.000 (0.000)
Industry dummies	No	Yes	No	Yes	Yes
$R^2$	0.299	0.328	0.303	0.332	0.337
Observations	694	694	694	694	694

Standard errors in parentheses, clustered by size band and industry. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Source: Office for National Statistics

Full results are available on request.

# Industry effects relative to most productive industry



Results from specification 5 on previous slide.

Reference industry grouping: Chemicals, pharmaceuticals, rubber, plastics and non-metallic minerals

# Multivariate analysis by employment size bands – Ordinary Least Squares

	Small businesses (10-49 employment)	Medium businesses (50-99 employment)	Medium businesses (100-249 employment)	Large businesses (250+ employment)
Log(employment)	0.201*** (0.034)	0.149*** (0.011)	0.117*** (0.015)	0.102*** (0.007)
Family owned business	-0.006 (0.072)	-0.033 (0.039)	-0.082 (0.067)	0.011 (0.038)
Family-owned and non-family-run	0.035 (0.045)	0.058 (0.026)	0.104 (0.069)	0.037 (0.032)
Multinational	0.056 (0.080)	-0.059 (0.068)	0.018 (0.034)	0.020 (0.035)
UK Multinational	-0.001 (0.081)	0.055 (0.059)	0.021 (0.053)	-0.038 (0.025)
Age (years)	0.002 (0.016)	0.014 (0.009)	0.012 (0.014)	0.024* (0.008)
Age squared	-0.000 (0.001)	-0.000 (0.000)	-0.000 (0.001)	-0.001* (0.000)
Industry dummies	Yes	Yes	Yes	Yes
$R^2$	0.902	0.959	0.972	0.982
Observations	190	178	172	154

Standard errors in parentheses, clustered by size band and industry. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Source: Office for National Statistics

Full results are available on request.

# Multivariate analysis of management practices components– Ordinary Least Squares

	Monitoring Score	Employment Score	Promotions (Question 6)	Underperformance (Question 7)	Hiring (Question 8)
Log(employment)	0.090*** (0.015)	0.137*** (0.024)	0.142** (0.042)	0.106** (0.033)	0.162*** (0.021)
Family owned business	-0.009 (0.084)	0.000 (0.031)	0.049 (0.052)	-0.001 (0.115)	-0.052 (0.042)
Family-owned and non-family-run	0.015 (0.046)	0.115*** (0.028)	0.011 (0.045)	0.236* (0.106)	0.104 (0.075)
Multinational	0.049 (0.048)	-0.071 (0.049)	-0.013 (0.074)	-0.149 (0.107)	-0.051 (0.054)
UK Multinational	-0.005 (0.035)	0.017 (0.043)	-0.100 (0.080)	0.024 (0.078)	0.127* (0.059)
Age (years)	0.002 (0.015)	-0.003 (0.014)	0.031 (0.020)	-0.032 (0.025)	-0.010 (0.014)
Age squared	0.000 (0.001)	-0.000 (0.000)	-0.001 (0.001)	0.001 (0.001)	0.000 (0.001)
Industry dummies	Yes	Yes	Yes	Yes	Yes
$R^2$	0.289	0.257	0.181	0.158	0.296
Observations	694	694	691	687	693

Standard errors in parentheses, clustered by size band and industry. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Source: Office for National Statistics

Full results are available on request.

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# Next Steps

# Productivity analysis plans

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- Linking with ABS 2015 microdata
- Correlation between Multi Factor Productivity and management score at industry level
- Correlations between Labour productivity and managements core at firm level for groups of interest
- Multivariate analysis of relationship between Labour Productivity and management score

# Services Pilot - Aims

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- An expanded set of questions on management practices
- Wide coverage of Services
- Sample size of 15,000 respondents
- Response rate of at least 50%
- Data collected at Reporting Unit level, consistent with existing ONS business surveys
- Survey despatch in February 2017, closing data collection in August 2017



# Long term interests

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- Drivers of management practices
  - Business environment
  - Competition
  - Human capital
  - Learning spillovers
  - Any others?
- International comparisons

# Summary

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- MPS manufacturing pilot was designed to be compatible with ONS business and international management practices
- Initial analysis indicates the larger, multinational or family-owned and non-family run businesses have the most structured practices
- When looking at characteristics together, the significant factors are size and industry
- Next steps include firm-level productivity analysis and data collection for service industries.

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- Any questions?

- Contact details

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