
*A firm-level perspective on micro- and macro-level uncertainty:
Initial Findings from the UK Management and Expectations Survey*

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ESCoE Workshop, London
26 November 2018

Overview

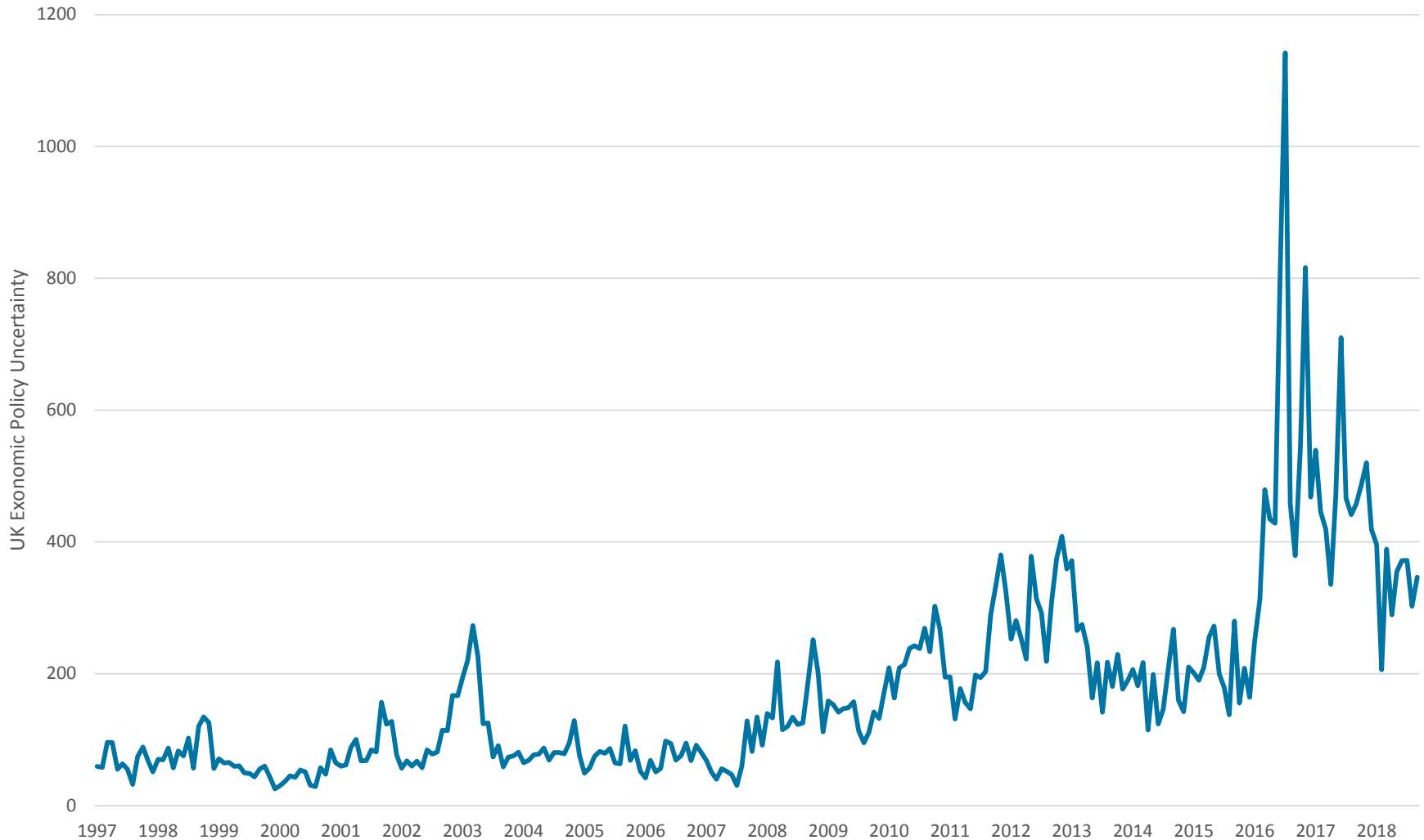
- Motivation
- Survey Design
- Initial Findings
 - What are businesses' expectations for their own performance?
 - What are businesses' expectations about future GDP growth?
 - How are businesses' micro and macro expectations related?
 - How uncertain are businesses in their expectations?
 - How are businesses' micro and macro expectations related?
- Conclusions and next steps

MOTIVATION

Uncertainty is greatly affecting current issues...

BREXIT

UK Economic Policy Uncertainty has reached record highs in recent years...



Source: 'Measuring Economic Policy Uncertainty' by Scott R. Baker, Nicholas Bloom and Steven J. Davis at www.PolicyUncertainty.com.

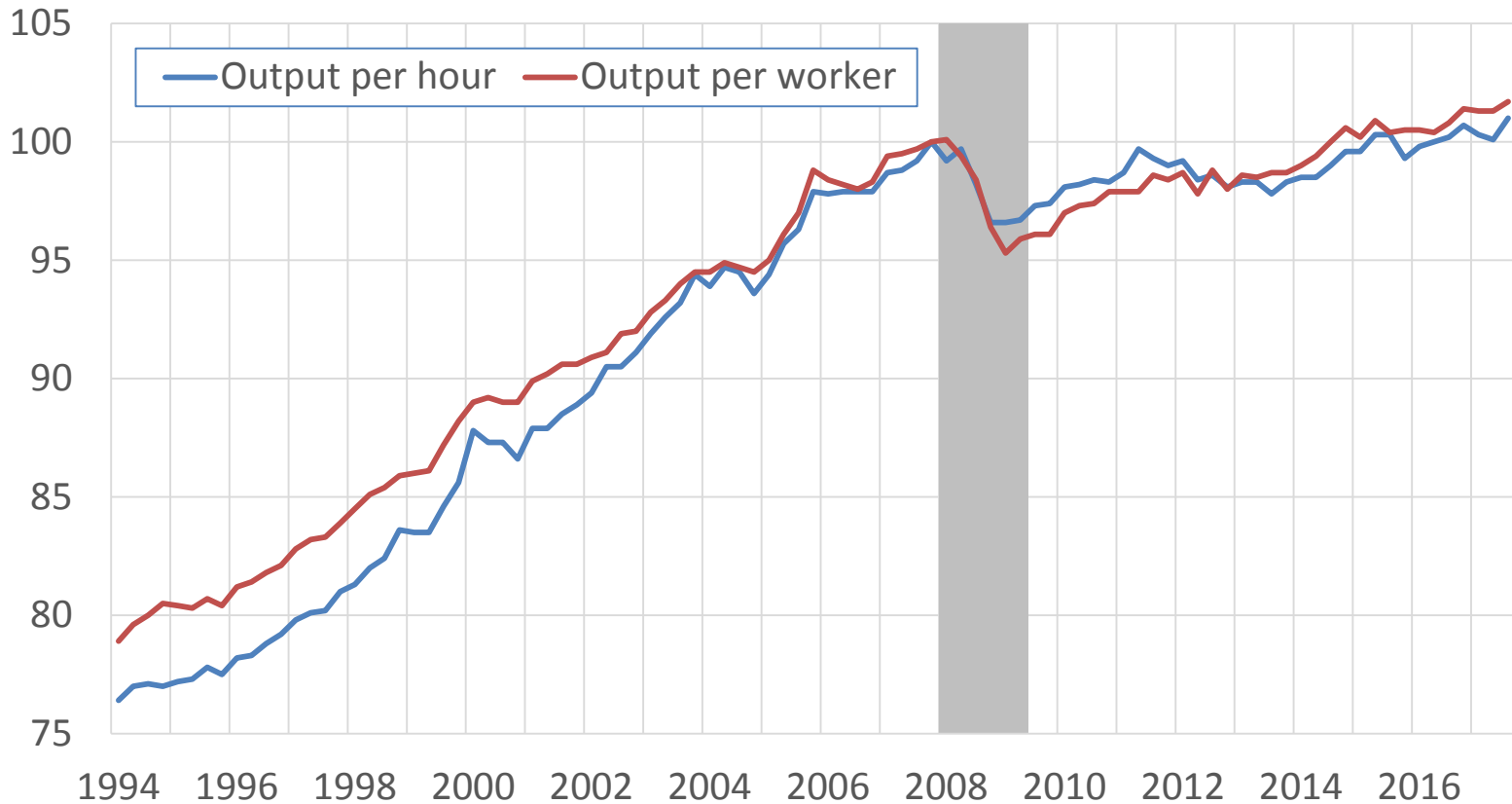
Literature

- Uncertainty depresses economic activity:
 - inducing households to hold back on spending (Romer, 1990)
 - limiting labour mobility (Arellano et al., 2016)
 - reducing and delaying corporate investment (Dixit and Pindyck, 1994)
 - inhibiting risk appetite.

However, there is little firm-level data (in the UK) that allows the analysis of these effects

Motivation

The UK's 'Productivity Puzzle': Q4 2007=100



Source: [ONS Labour Productivity](#)

SURVEY DESIGN

Management and Expectations Survey (MES)



Management and Expectations Survey



00001 00000
TEST PRINT

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

- Survey of 25,000 firms, covering production and services industries
- Excludes finance and agriculture
- Sample stratified by size band, industry and region
- Information on firms' management practices, organisation and future expectations

Questionnaire Example

The example below will help you to complete questions 22, 24, and 26

Example A:

Jane Smith is filling out this survey for Business A. In 2016, Business A had approximately £4,500,000 in turnover, with a forecast of £4,750,000 in 2017.

For calendar years 2016 and 2017, what are the approximate values of turnover, including exports and other receipts within this business? If applicable exclude freight charges, excise taxes and value added tax.

For 2016 calendar year..... £ , ,

Forecast for 2017 calendar year..... £ ,

Questions for:

- Turnover
- Expenditure
- Investment
- Employment

The example below will help you to complete questions 23, 25, 27 and 29

Example B:

Jane also knows that turnover at Business A is forecast to grow approximately an additional 5% in 2018, with predicted annual value of turnover of £5 million. However, Jane knows there is some uncertainty with that forecast and that the value of turnover next year could be more or less than £5 million depending on consumer demand, changes in prices, and other uncertainties in the market. Given this uncertainty, Jane estimates that turnover will be between £2.8 million and £7.5 million, and thinks the likelihood of each scenario is as shown in the table below.

Looking ahead to the 2018 calendar year, what is the approximate value of turnover you would anticipate for this business in the following scenarios, and what likelihood do you assign to each scenario?

2018 scenarios, from lowest to highest	Approximate turnover in 2018	Percentage likelihood (values in this column should sum to 100)
LOWEST	£ <input type="text" value="2"/> <input type="text" value="8"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="5"/> %
LOW	£ <input type="text" value="4"/> <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="1"/> <input type="text" value="0"/> %
MEDIUM	£ <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="6"/> <input type="text" value="0"/> %
HIGH	£ <input type="text" value="6"/> <input type="text" value="3"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="2"/> <input type="text" value="0"/> %
HIGHEST	£ <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="0"/> <input type="text" value="5"/> %
Total		<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/> %

Questionnaire Example: Good Response

The example below will help you to complete questions 22, 24, and 26

Example A:

Jane Smith is filling out this survey for Business A. In 2016, Business A had approximately £4,500,000 in turnover, with a forecast of £4,750,000 in 2017.

For calendar years 2016 and 2017, what are the approximate values of turnover, including exports and other receipts within this business? If applicable exclude freight charges, excise taxes and value added tax.

For 2016 calendar year..... £ , , ,

Forecast for 2017 calendar year..... £ , , ,

The example below will help you to complete questions 23, 25, 27 and 29

Example B:

Jane also knows that turnover at Business A is forecast to grow approximately an additional 5% in 2018, with predicted annual value of turnover of £5 million. However, Jane knows there is some uncertainty with that forecast and that the value of turnover next year could be more or less than £5 million depending on consumer demand, changes in prices, and other uncertainties in the market. Given this uncertainty, Jane estimates that turnover will be between £2.8 million and £7.5 million, and thinks the likelihood of each scenario is as shown in the table below.

Looking ahead to the 2018 calendar year, what is the approximate value of turnover you would anticipate for this business in the following scenarios, and what likelihood do you assign to each scenario?

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LOW	£ <input type="text" value="4"/> <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="4"/> , <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="1"/> <input type="text" value="0"/> %
MEDIUM	£ <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="5"/> , <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="6"/> <input type="text" value="0"/> %
HIGH	£ <input type="text" value="6"/> <input type="text" value="3"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="6"/> , <input type="text" value="6"/> <input type="text" value="3"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="2"/> <input type="text" value="0"/> %
HIGHEST	£ <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="7"/> , <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/> , <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>	<input type="text" value="5"/> <input type="text" value="0"/> %
Total		<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/> %

Response requirement for each indicator:

- Period reported for is 365 days (+/- 31 days)
- Forecasts given for both 2016 and 2017
- For 2018:
 - At least two bins completed
 - Values given must be weakly increasing (from lowest to highest)
 - Sum of percentage likelihoods must be within range 90 – 110

Questionnaire Example (GDP): Good Response

30. Please indicate what likelihood you would attach to the possible 2018 rates of UK economic growth (real growth rate of Gross Domestic Product) below.
 Gross Domestic Product (GDP) is the main measure of the size of the UK economy, based on the value of goods and services produced during a given period.

UK Economic Growth in 2018		Percentage likelihood (values in this column should sum to 100)
Strong decline	-4% or less	<input type="text" value=""/> <input type="text" value=""/> <input type="text" value="2"/> % 1138
Moderate decline	-2% to -3%	<input type="text" value=""/> <input type="text" value=""/> <input type="text" value="5"/> % 1139
Slight decline	-1%	<input type="text" value=""/> <input type="text" value="1"/> <input type="text" value="0"/> % 1140
No change	0%	<input type="text" value=""/> <input type="text" value="3"/> <input type="text" value="0"/> % 1141
Slight increase	1%	<input type="text" value=""/> <input type="text" value="4"/> <input type="text" value="0"/> % 1142
Moderate increase	2% to 3%	<input type="text" value=""/> <input type="text" value="1"/> <input type="text" value="0"/> % 1143
Strong increase	4% or more	<input type="text" value=""/> <input type="text" value=""/> <input type="text" value="3"/> % 1144
Total		<input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/> %

Response Requirement:

- Sum of percentage likelihoods must be within range 90 – 110

Response rates

	Count	Share of Total	Share of Responses
Responded to ABS	8222	33%	100%
Met expectations response quality threshold:			
Quality Check and Full Period Given	8147	33%	99%
<i>Turnover</i>	7161	29%	87%
<i>Goods and Services Expenditure</i>	7056	28%	86%
<i>Capital Expenditure</i>	6253	25%	76%
<i>Employment</i>	6839	27%	83%
<i>GDP</i>	7418	30%	90%

INITIAL FINDINGS

What are businesses' expectations for their own performance?

INITIAL FINDINGS

Expectations Measure

The example below will help you to complete questions 22, 24, and 26

Example A:

Jane Smith is filling out this survey for Business A. In 2016, Business A had approximately £4,500,000 in turnover, with a forecast of £4,750,000 in 2017.

For calendar years 2016 and 2017, what are the approximate values of turnover, including exports and other receipts within this business? If applicable exclude freight charges, excise taxes and value added tax.

For 2016 calendar year..... £ , 4 , 5 0 0 , 0 0

Forecast for 2017 calendar year..... £ , 4 , 7 5 0 , 0 0

The example below will help you to complete questions 23, 25, 27 and 29

Example B:

Jane also knows that turnover at Business A is forecast to grow approximately an additional 5% in 2018, with predicted annual value of turnover of £5 million. However, Jane knows there is some uncertainty with that forecast and that the value of turnover next year could be more or less than £5 million depending on consumer demand, changes in prices, and other uncertainties in the market. Given this uncertainty, Jane estimates that turnover will be between £2.8 million and £7.5 million, and thinks the likelihood of each scenario is as shown in the table below.

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LOWEST	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 2 , 8 0 0 , <input type="text"/> <input type="text"/> 0 0	<input type="text"/> <input type="text"/> 5 %
LOW	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 4 , 2 0 0 , <input type="text"/> <input type="text"/> 0 0	<input type="text"/> <input type="text"/> 1 0 %
MEDIUM	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 5 , 0 0 0 , <input type="text"/> <input type="text"/> 0 0	<input type="text"/> <input type="text"/> 6 0 %
HIGH	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 6 , 3 0 0 , <input type="text"/> <input type="text"/> 0 0	<input type="text"/> <input type="text"/> 2 0 %
HIGHEST	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 7 , 5 0 0 , <input type="text"/> <input type="text"/> 0 0	<input type="text"/> <input type="text"/> 5 %
	Total	<input type="text"/> <input type="text"/> 1 0 0 %

Calculate:

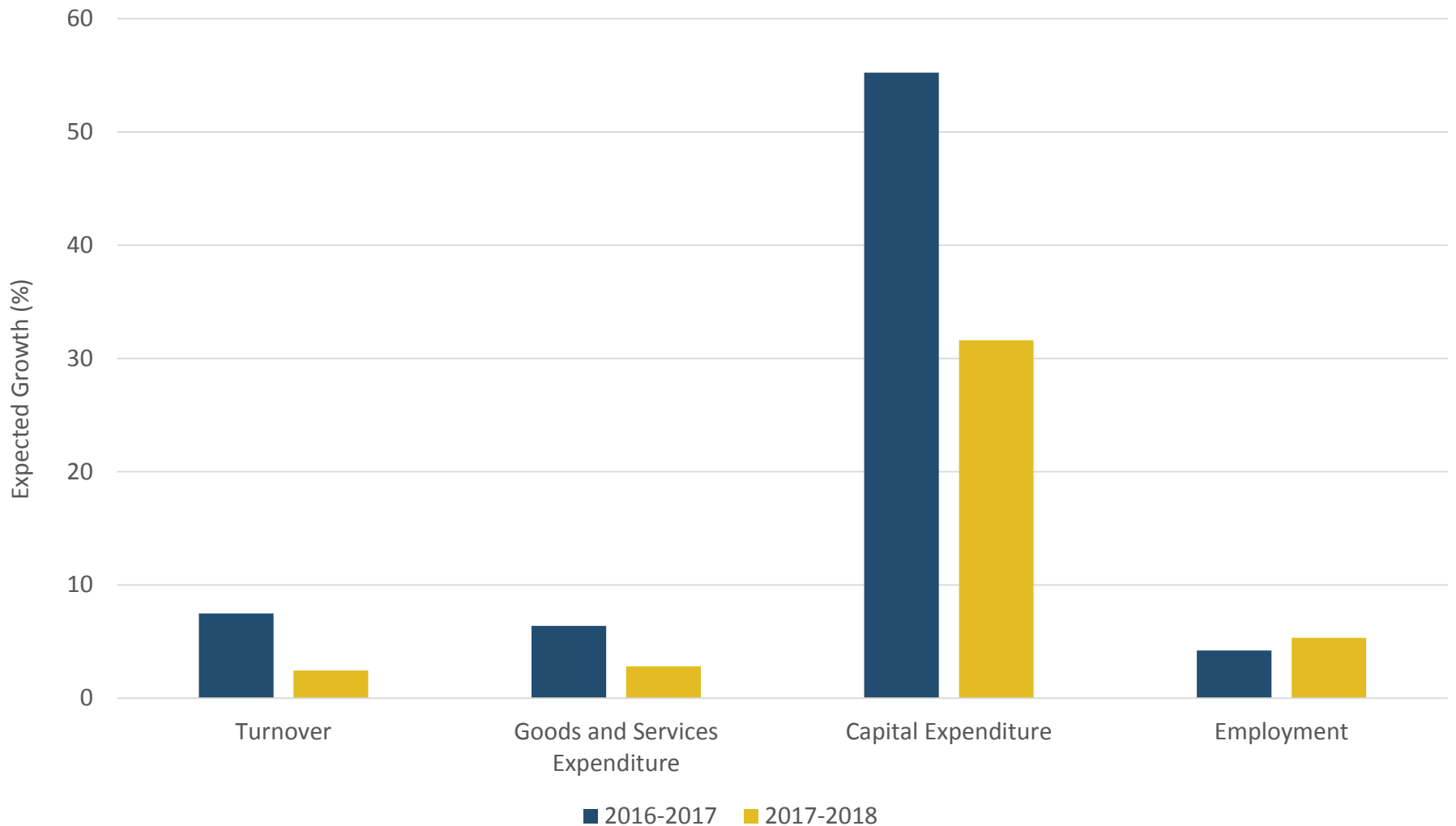
- Expected growth to 2017 using point forecast: **5.6%**

$$\frac{(Level_{2017} - Level_{2016})}{Level_{2016}}$$

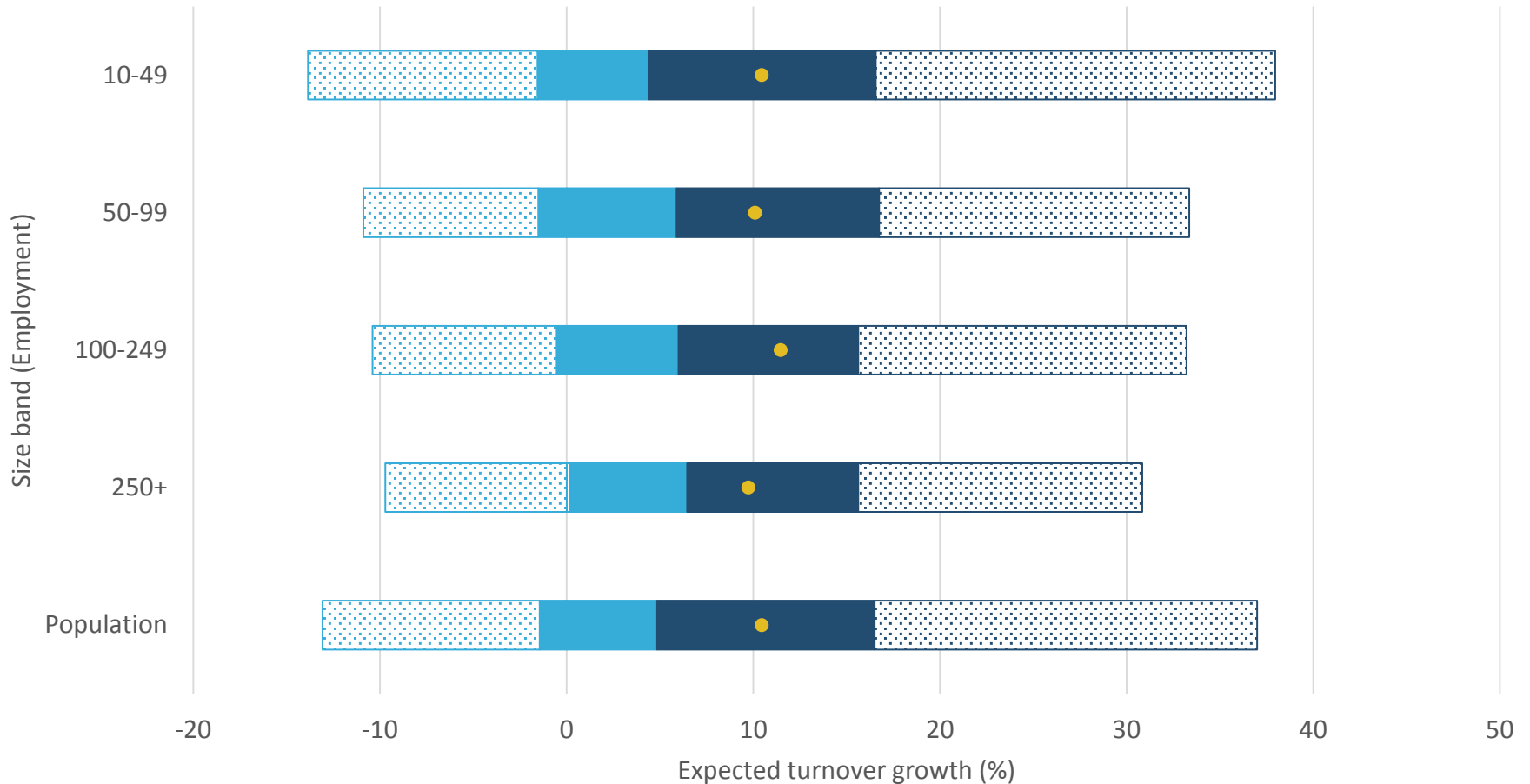
- Expected growth to 2018 using a weighted average of the 5 bins
Weighted average: **£5,195,000**
Exp. Growth: **9.4%**

$$\frac{(Wgt_Avg_{2018} - Level_{2016})}{Level_{2016}}$$

- Mean expected growth for investment much higher than other indicators
 - Expected growth generally lower for 2017/18 than 2016/17
-



- The dispersion in expected turnover growth is generally lower in larger than smaller firms (2016 to 2018)



- Higher expectations: Younger and Higher management practices
- Lower expectations: Foreign owned and 'Family-owned but not family-managed'

	Dependent variable: Expected turnover growth, 2016-2018						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log Employment	-0.360 (0.57)						-1.631 (1.07)
Management Score		16.338*** (3.36)					14.626*** (3.68)
Age			-0.647*** (0.10)				-0.565*** (0.10)
Foreign Owned				-1.477 (1.88)			-3.813** (1.89)
Family-owned and non-family-managed					-2.745 (2.56)		-4.594** (2.14)
Family-owned and family-managed					-0.645 (1.61)		-0.981 (1.83)
Log GVA/Worker						0.445 (1.06)	
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7170	6926	7170	7170	7141	6826	6567
R ²	0.051	0.062	0.075	0.051	0.052	0.055	0.088

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

- No relationship between businesses' expected growth and their industry's past growth

	Expected Turnover Growth 2016-2018	Expected Expenditure Growth 2016-2018	Expected Investment Growth 2016-2018	Expected Employment Growth 2016-2018
Industry Turnover Growth 2015-2016	-0.017 (0.07)			
Industry Expenditure Growth 2015-2016		-0.047 (0.07)		
Industry Investment Growth 2015-2016			-0.042 (0.03)	
Industry Employment Growth 2015-2016				-0.033 (0.16)
Observations	6535	6448	5574	6271
R^2	0.046	0.053	0.008	0.081
Controls: Log Employment, Age, Family Ownership, Foreign Ownership, Management Score, Log GVA, Location				

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

What are businesses' expectations about future GDP growth?

INITIAL FINDINGS

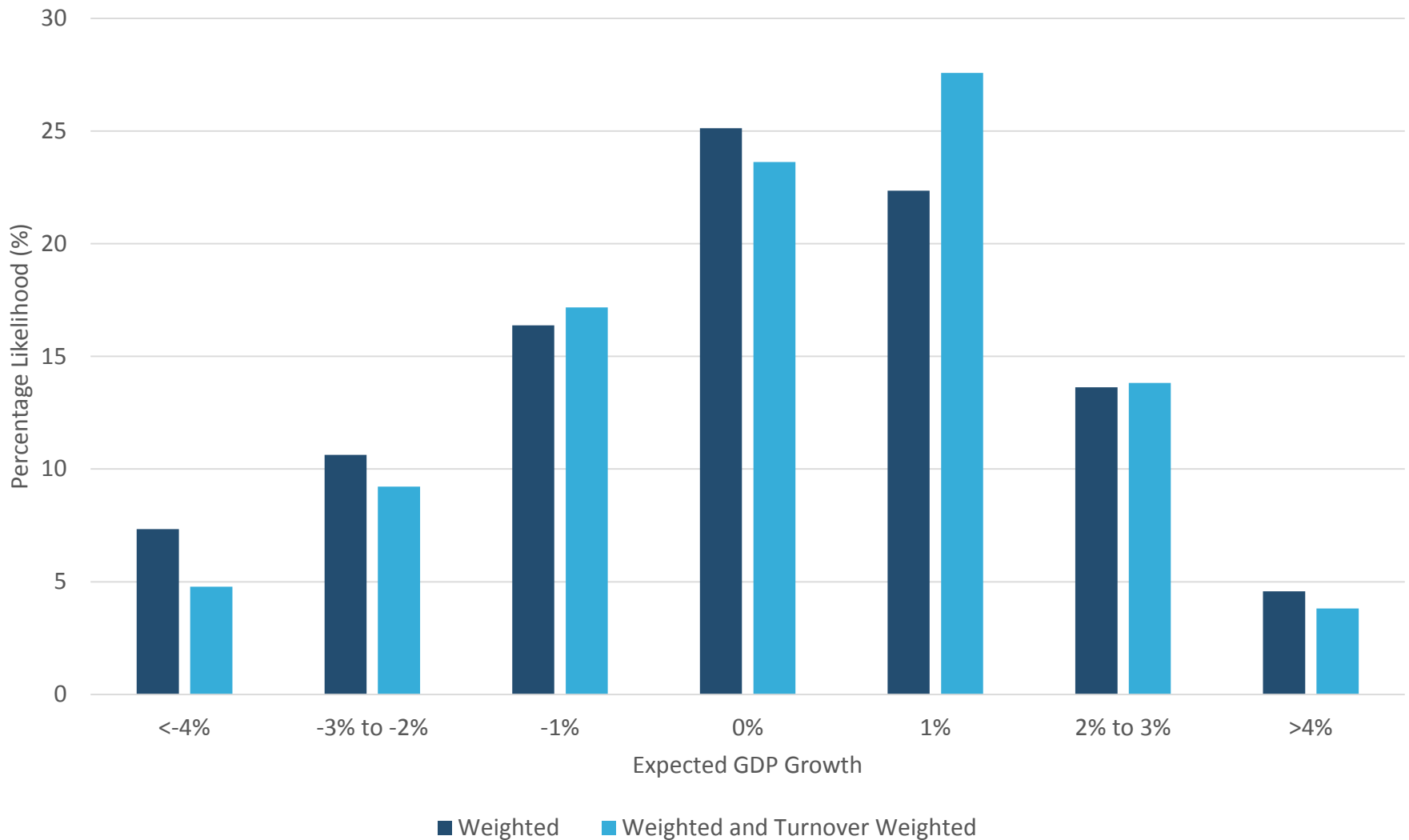
GDP Expectations Measures

30. Please indicate what likelihood you would attach to the possible 2018 rates of UK economic growth (real growth rate of Gross Domestic Product) below.

Gross Domestic Product (GDP) is the main measure of the size of the UK economy, based on the value of goods and services produced during a given period.

UK Economic Growth in 2018		Percentage likelihood (values in this column should sum to 100)	
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Strong increase	4% or more	<input type="text" value=""/> <input type="text" value=""/> <input type="text" value="3"/>	% 1144
Total		<input type="text" value=""/> <input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/>	%

- Businesses expectations of GDP are pessimistic compared to recent trends
- Larger businesses are more optimistic/correct



GDP Expectations Measures

30. Please indicate what likelihood you would attach to the possible 2018 rates of UK economic growth (real growth rate of Gross Domestic Product) below.
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Calculate:

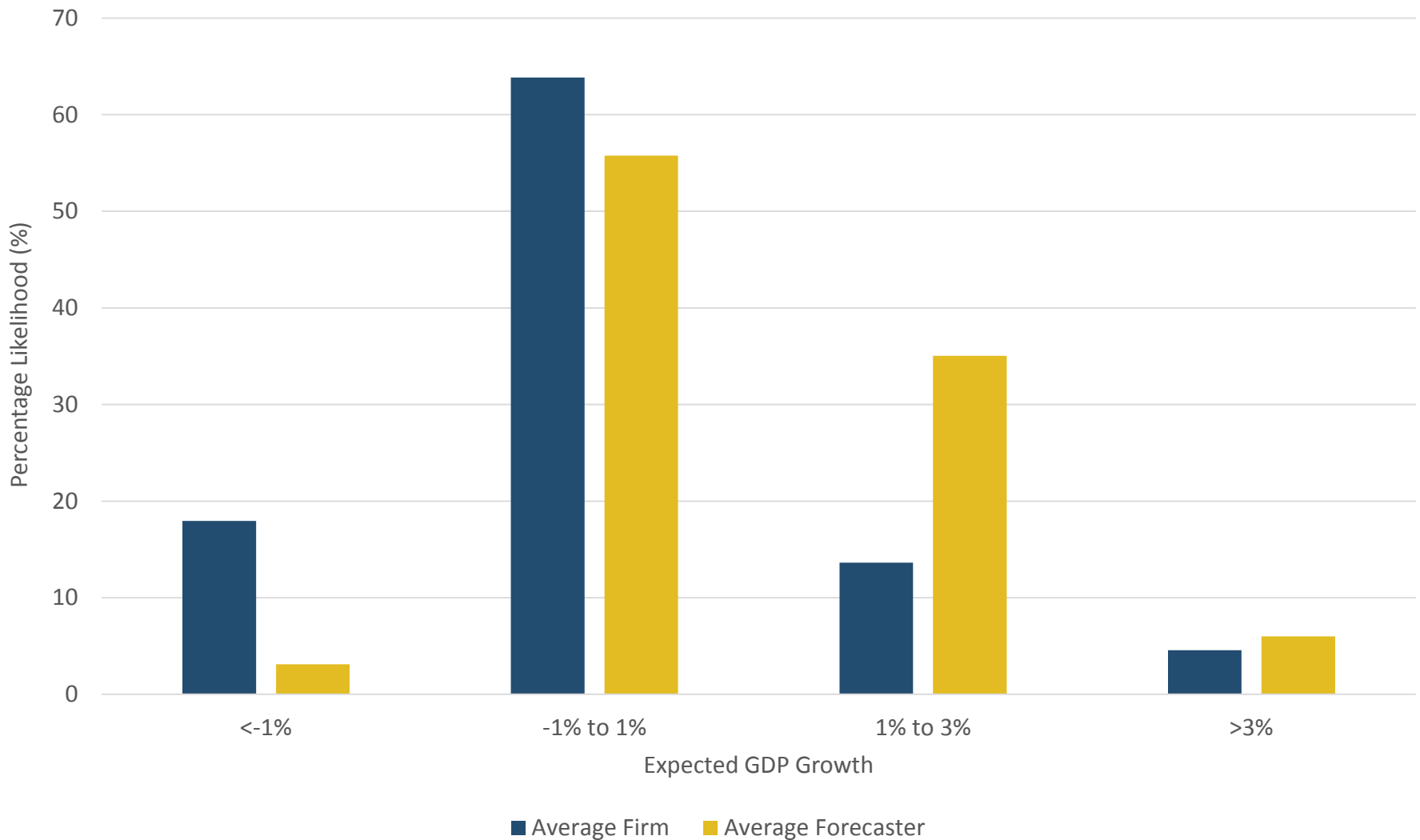
- Expected GDP growth in 2018 using a weighted average of the 5 bins
 Exp. GDP Growth:
0.5%

- Larger businesses and those with more structured management practices are more optimistic/closer to recent trends

	Dependent variable: Expected UK real GDP growth, 2018							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log Employment	0.078*** (0.03)							0.146* (0.08)
Management Score		0.531*** (0.17)						0.494** (0.23)
Age			-0.009** (0.00)					-0.007 (0.00)
Foreign Owned				0.139* (0.08)				0.054 (0.09)
Family owned but not family run					0.024 (0.11)			0.023 (0.11)
Family owned and family run					-0.011 (0.08)			0.073 (0.09)
Log GVA/Worker							-0.060 (0.06)	
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7424	7155	7424	7424	7387	7044	7044	6755
R ²	0.044	0.052	0.044	0.042	0.042	0.043	0.044	0.060

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

- Businesses are generally more pessimistic than Bank of England external forecasters

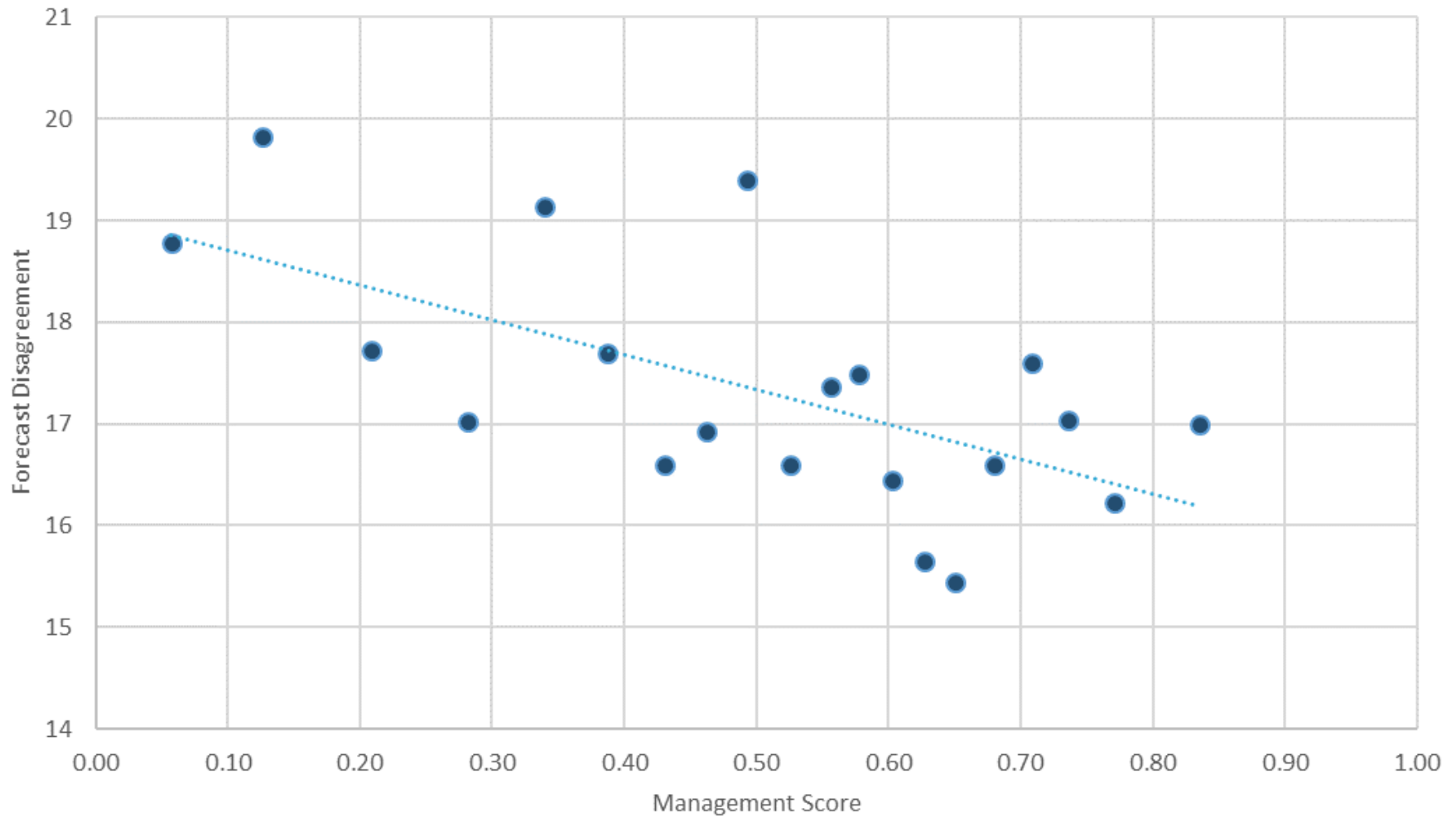


GDP Forecast Disagreement

- One can assume that Bank of England's external forecasters will give a more accurate GDP forecast than business
- We can analyse which firms more closely align with the external forecasters

$$\text{Forecaster Disagreement} = \frac{\sum_i |\text{Firm Likelihood}_i - \text{Forecaster Likelihood}_i|}{4}$$

- Businesses whose GDP expectations most align with forecasters had higher management scores, even with controls



- Businesses whose GDP expectations most align with forecasters were larger and had higher management scores

	Dependent variable: GDP forecast disagreement, 2018						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log Employment	-0.781*** (0.18)						-1.040** (0.45)
Management Score		-4.010*** (1.07)					-3.451** (1.39)
Age			0.027 (0.03)				0.022 (0.03)
Foreign Owned				-0.519 (0.53)			0.309 (0.68)
Family owned but not family run					0.617 (0.74)		0.429 (0.75)
Family owned and family run					0.113 (0.50)		-0.244 (0.53)
Log GVA/Worker						0.195 (0.34)	
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7424	7155	7424	7424	7387	7044	6755
R ²	0.046	0.051	0.040	0.040	0.041	0.042	0.058

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

How are businesses' micro and macro expectations related?

INITIAL FINDINGS

- Businesses' expectations of their own performance is positively correlated to their expectations of GDP growth

	Expected Turnover Growth 2016-2018	Expected Expenditure Growth 2016-2018	Expected Investment Growth 2016-2018	Expected Employment Growth 2016-2018
Expected UK Real GDP Growth 2018	2.028*** (0.51)	1.103* (0.59)	0.083 (4.37)	1.109* (0.64)
Observations	6345	6281	5452	6110
R^2	0.097	0.088	0.034	0.110

Controls: Log Employment, Age, Family Ownership, Foreign Ownership, Management Score, Log GVA, Industry, Location

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

How uncertain are businesses in their expectations?

INITIAL FINDINGS

Uncertainty Measure

The example below will help you to complete questions 22, 24, and 26

Example A:

Jane Smith is filling out this survey for Business A. In 2016, Business A had approximately £4,500,000 in turnover, with a forecast of £4,750,000 in 2017.

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For 2016 calendar year..... £ , 4 , 5 0 0 , 0 0 0

Forecast for 2017 calendar year..... £ , 4 , 7 5 0 , 0 0 0

The example below will help you to complete questions 23, 25, 27 and 29

Example B:

Jane also knows that turnover at Business A is forecast to grow approximately an additional 5% in 2018, with predicted annual value of turnover of £5 million. However, Jane knows there is some uncertainty with that forecast and that the value of turnover next year could be more or less than £5 million depending on consumer demand, changes in prices, and other uncertainties in the market. Given this uncertainty, Jane estimates that turnover will be between £2.8 million and £7.5 million, and thinks the likelihood of each scenario is as shown in the table below.

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2018 scenarios, from lowest to highest	Approximate turnover in 2018	Percentage likelihood (values in this column should sum to 100)
LOWEST	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 2 , 8 0 0 , 0 0 0	<input type="text"/> <input type="text"/> 5 %
LOW	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 4 , 2 0 0 , 0 0 0	<input type="text"/> <input type="text"/> 1 0 %
MEDIUM	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 5 , 0 0 0 , 0 0 0	<input type="text"/> <input type="text"/> 6 0 %
HIGH	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 6 , 3 0 0 , 0 0 0	<input type="text"/> <input type="text"/> 2 0 %
HIGHEST	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 7 , 5 0 0 , 0 0 0	<input type="text"/> <input type="text"/> 5 %
Total		<input type="text"/> <input type="text"/> 1 0 0 %

Calculate:

- Uncertainty using the log standard deviation of expected growth rates: **3.0**

Uncertainty

$$= \ln \left(\sqrt{\sum_i (Growth_i - Growth_{wavg})^2 * Likelihood_i} \right)$$

The example below will help you to complete questions 22, 24, and 26

Example A:

Jane Smith is filling out this survey for Business A. In 2016, Business A had approximately £4,500,000 in turnover, with a forecast of £4,750,000 in 2017.

For calendar years 2016 and 2017, what are the approximate values of turnover, including exports and other receipts within this business? If applicable exclude freight charges, excise taxes and value added tax.

For 2016 calendar year..... £ , 4 , 5 0 0 , 0

Forecast for 2017 calendar year..... £ , 4 , 7 5 0 , 0

The example below will help you to complete questions 23, 25, 27 and 29

Example B:

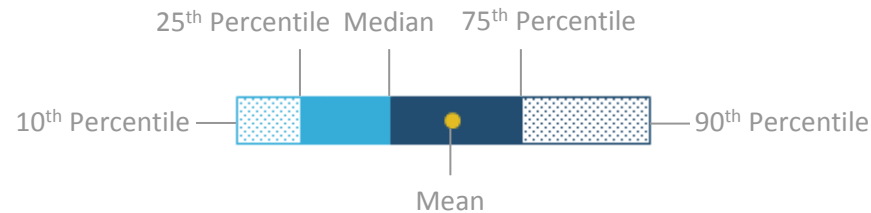
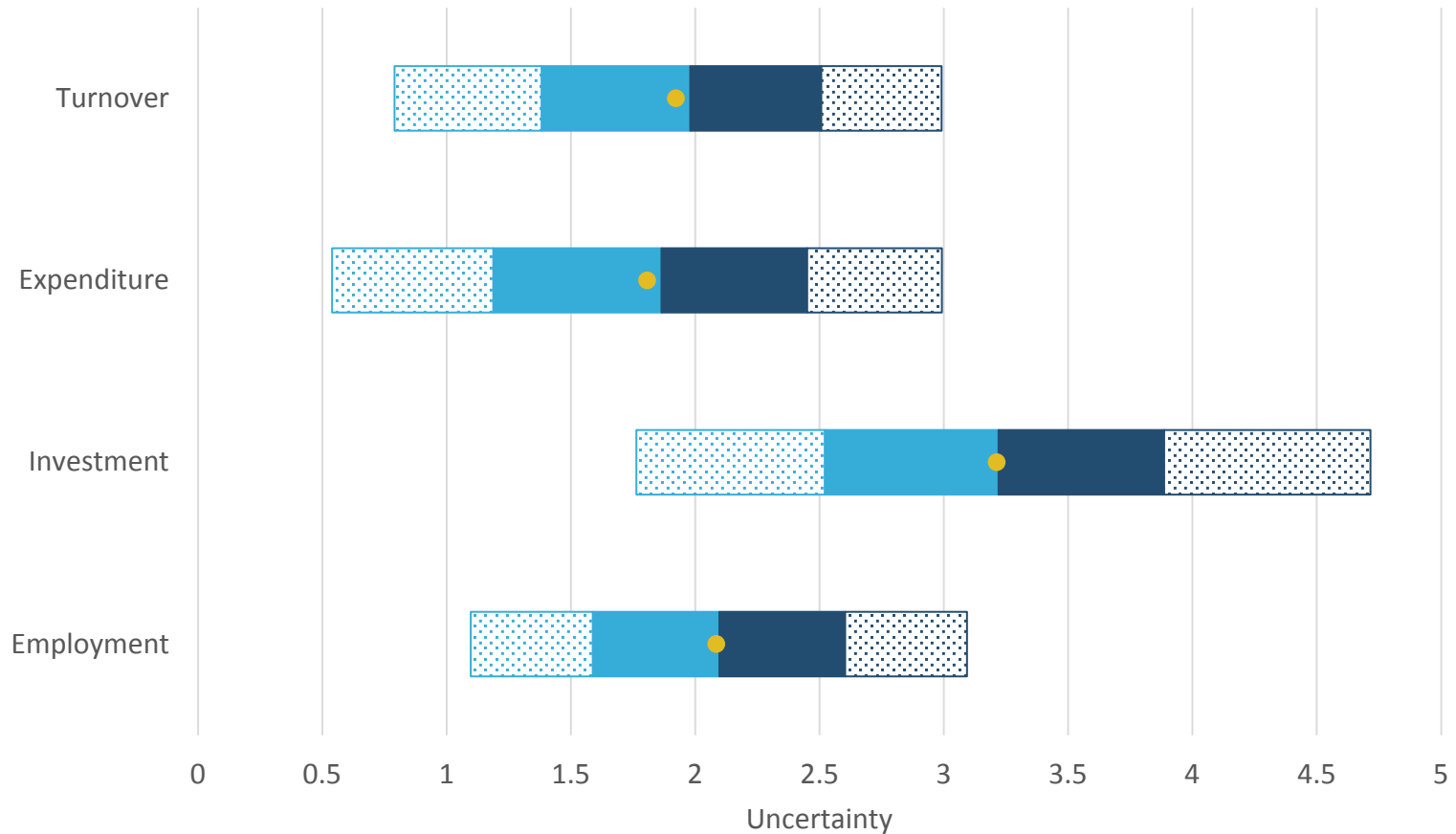
Jane also knows that turnover at Business A is forecast to grow approximately an additional 5% in 2018, with predicted annual value of turnover of £5 million. However, Jane knows there is some uncertainty with that forecast and that the value of turnover next year could be more or less than £5 million depending on consumer demand, changes in prices, and other uncertainties in the market. Given this uncertainty, Jane estimates that turnover will be between £2.8 million and £7.5 million, and thinks the likelihood of each scenario is as shown in the table below.

Looking ahead to the 2018 calendar year, what is the approximate value of turnover you would anticipate for this business in the following scenarios, and what likelihood do you assign to each scenario?

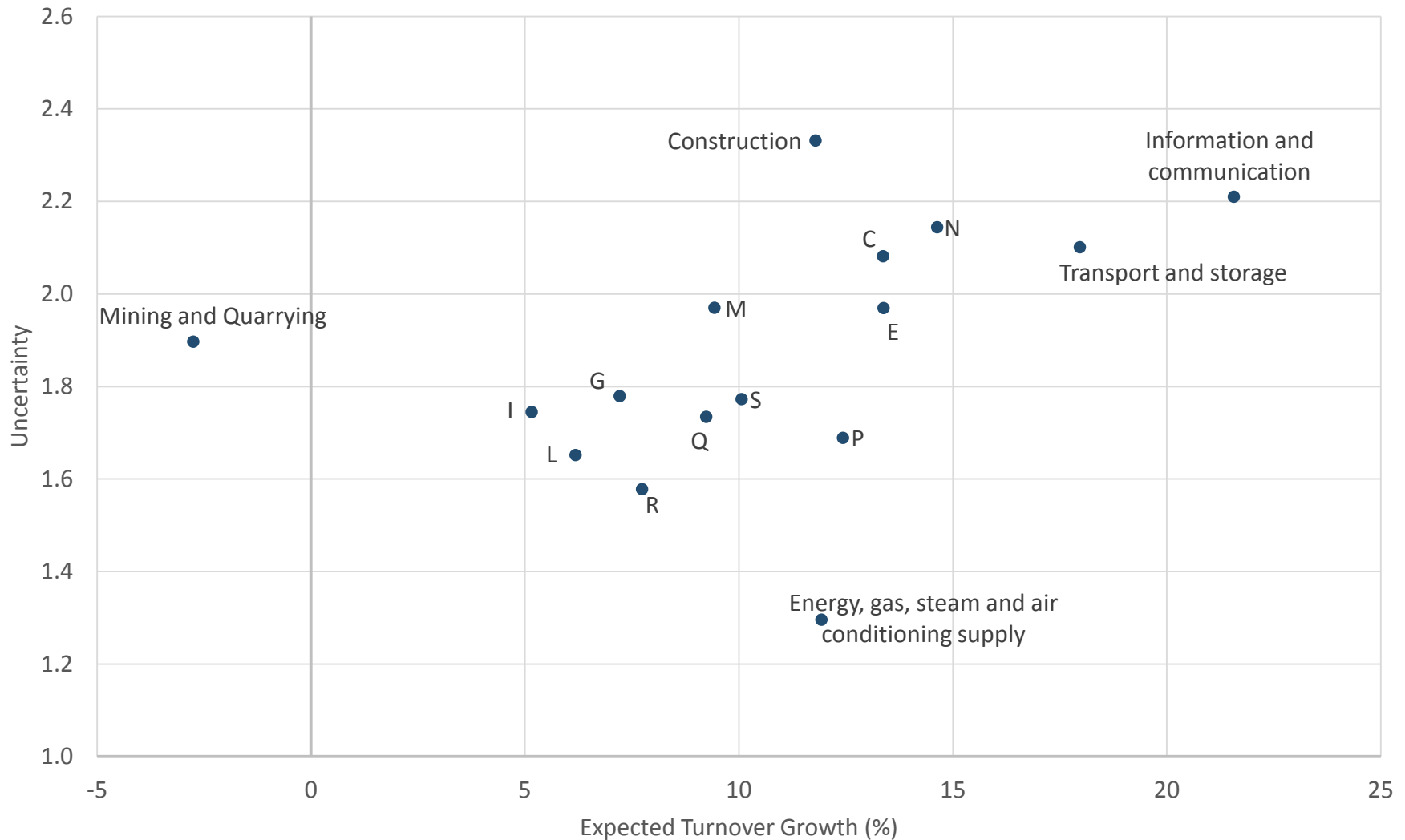
2018 scenarios, from lowest to highest	Approximate turnover in 2018	Percentage likelihood (values in this column should sum to 100)
LOWEST	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 2 , 8 0 0 , <input type="text"/> <input type="text"/> <input type="text"/> 0	<input type="text"/> <input type="text"/> 5 %
LOW	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 4 , 2 0 0 , <input type="text"/> <input type="text"/> <input type="text"/> 0	<input type="text"/> <input type="text"/> 1 0 %
MEDIUM	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 5 , 0 0 0 , <input type="text"/> <input type="text"/> <input type="text"/> 0	<input type="text"/> <input type="text"/> 6 0 %
HIGH	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 6 , 3 0 0 , <input type="text"/> <input type="text"/> <input type="text"/> 0	<input type="text"/> <input type="text"/> 2 0 %
HIGHEST	£ <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> 7 , 5 0 0 , <input type="text"/> <input type="text"/> <input type="text"/> 0	<input type="text"/> <input type="text"/> 5 %
	Total	<input type="text"/> <input type="text"/> 1 0 0 %

$$Uncertainty = \ln \left(\sqrt{\sum_i (Growth_i - Growth_{wavg})^2 * Likelihood_i} \right)$$

- Businesses are most uncertain about future investment, while most certain about future expenditure



- Businesses are most uncertain about future investment, while most certain about future expenditure



- More uncertain: businesses that are smaller, younger, less productive, domestically-owned and ‘family-owned and family-managed’

	Dependent variable: Expected turnover growth, 2016-2018						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log Employment	-0.164*** (0.02)						-0.135*** (0.02)
Management Score		-0.040 (0.12)					0.207 (0.13)
Age			-0.024*** (0.00)				-0.020*** (0.00)
Foreign-owned				-0.279*** (0.06)			-0.105* (0.06)
Family-owned and non-family-managed					0.060 (0.08)		-0.033 (0.07)
Family-owned and family-managed					0.196*** (0.05)		0.106* (0.06)
Log GVA/Worker						-0.086*** (0.03)	-0.064** (0.03)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7170	6926	7170	7170	7141	6826	6567
R ²	0.137	0.109	0.147	0.114	0.119	0.117	0.174

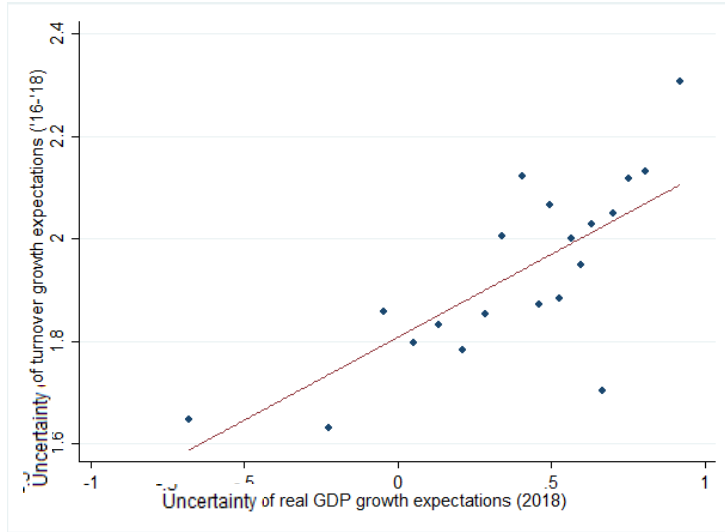
Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

How are businesses' micro and macro uncertainty related?

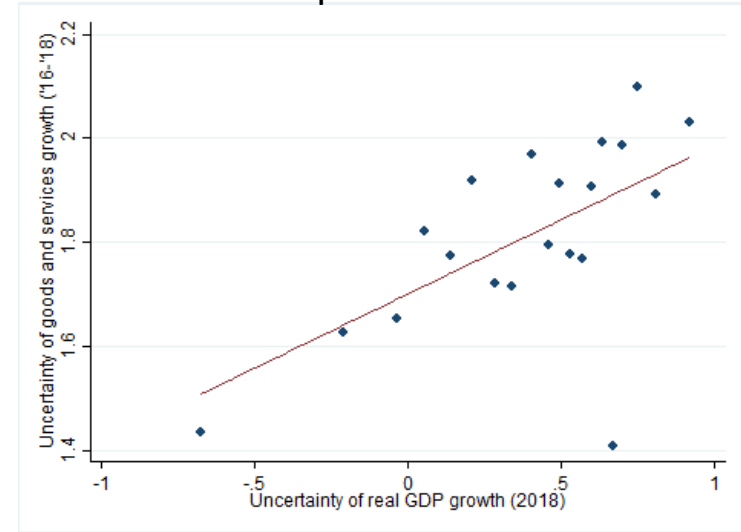
INITIAL FINDINGS

- Businesses' uncertainty of their own future performance is positively correlated to their uncertainty of GDP growth

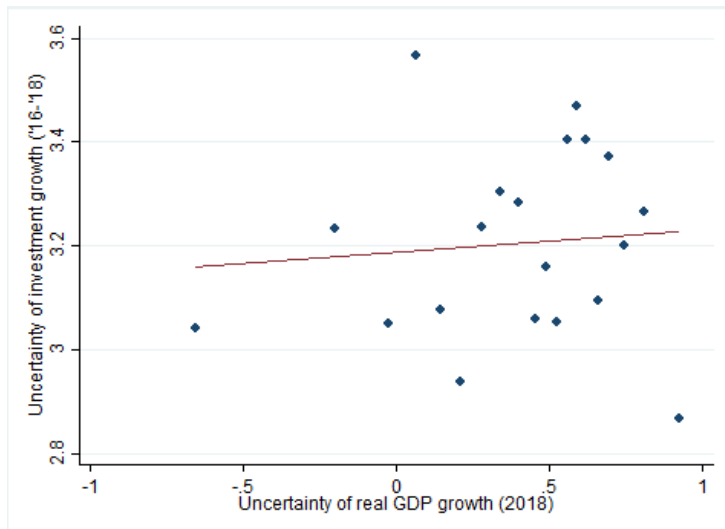
Turnover



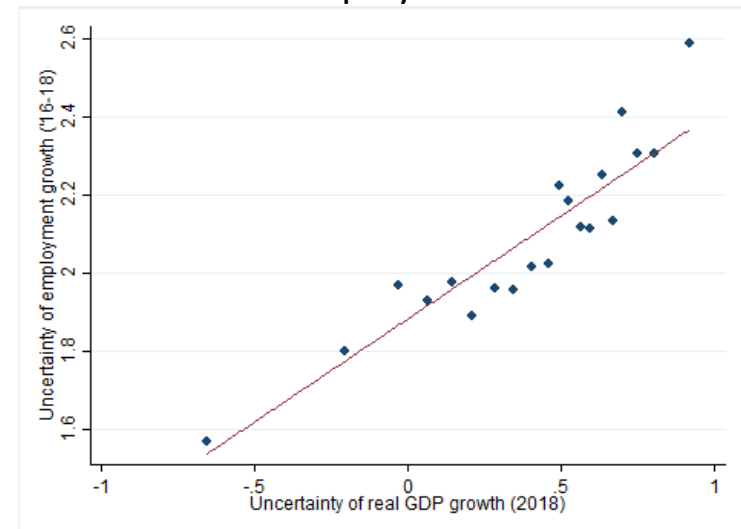
Expenditure



Investment



Employment



- Businesses' uncertainty of their own future performance is positively correlated to their uncertainty of GDP growth

	Uncertainty of Turnover Growth	Uncertainty of Expenditure Growth	Uncertainty of Investment Growth	Uncertainty of Employment Growth
Uncertainty of UK Real GDP Growth	0.275*** (0.05)	0.248*** (0.05)	-0.023 (0.08)	0.383*** (0.04)
Observations	6087	6030	5277	5910
R^2	0.197	0.152	0.071	0.333
Controls: Log Employment, Age, Family Ownership, Foreign Ownership, Management Score, Log GVA, Industry, Location				

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

KEY FINDINGS & NEXT STEPS

Key findings

- Higher turnover expectations: Younger and more structured management practices
- Lower turnover expectations: Foreign-owned and 'Family-owned but not family-managed'
- Firms' GDP expectations are more pessimistic than professional forecasters and recent trends.
- Correlation between firms' own growth expectations and GDP expectations at both first and second moment
- Firms that are smaller, younger, less productive, domestically-owned and 'family-owned-and family-managed' display higher levels of uncertainty.
- Firms in industries with past volatile growth are more uncertain of their future growth

Next steps

- Measure and analyse businesses' forecast error
- Combine with administrative trade data to explore the relationship between trade and uncertainty
- Explore variations in expectations and uncertainty by UK region