The impact of Brexit on UK businesses: evidence from the Decision Maker Panel

BANK OF ENGLAND

27 March 2018

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Measuring Economic Uncertainty


Professor Nick Bloom

The Bank of England

HM Treasury

Measuring Economic Uncertainty
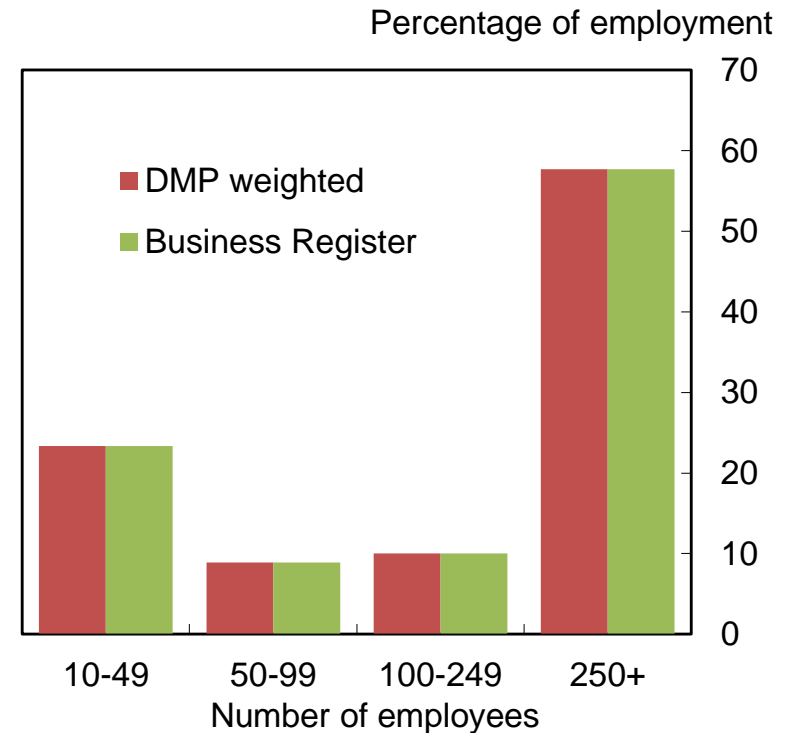
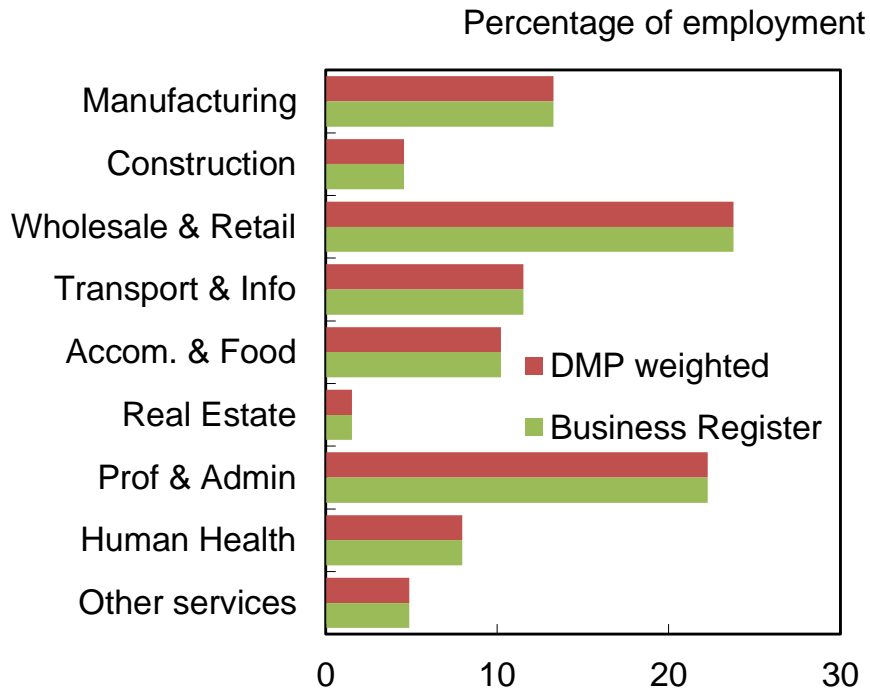The Decision Maker Panel project is:

- Timely

- Well resourced: **£1.3m** from ESRC, Bank of England, Nottingham and Stanford Universities

- Supported by global expertise

- Informed by senior executives in about **3500** businesses across the UK

- Engaged with policymakers – MPC, HM Treasury, BEIS, DExEU

The panel comprises around 3500 firms
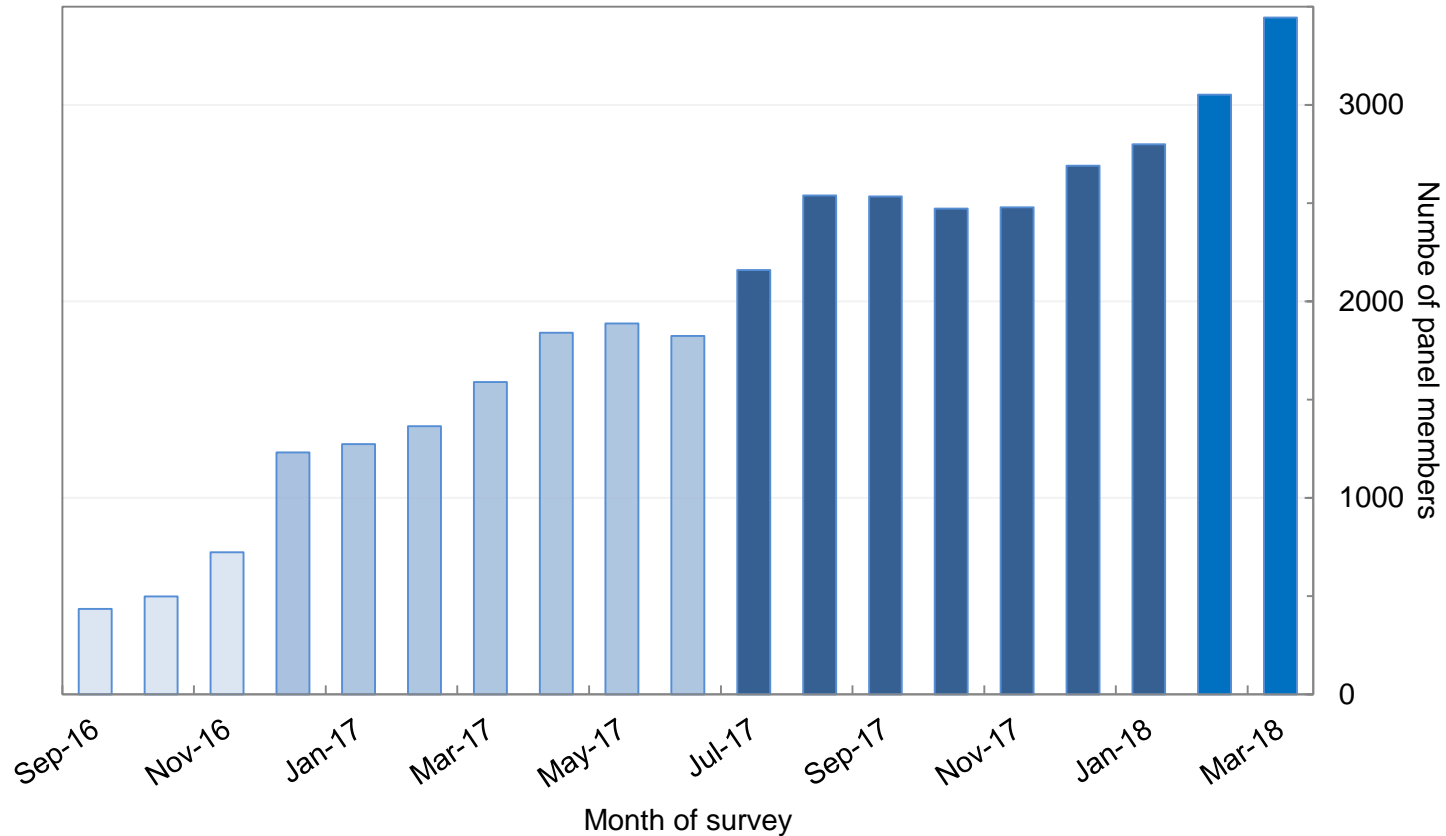
Response rate is around 50% in any given month

It matches the pattern in the UK Business Register

Percentage of employment

Percentage of employment

DMP weighted
Business Register

Left chart sectors: Manufacturing, Construction, Wholesale & Retail, Transport & Info, Accom. & Food, Real Estate, Prof & Admin, Human Health, Other services. Axis 0, 10, 20, 30.

Right chart categories: 10-49, 50-99, 100-249, 250+. Number of employees. Axis 0 to 70.

The panel covers nine sectors, and since Jan 2018 include financial firms. It covers large firms and SMEs.

We can match firms to a financial database giving their characteristics e.g. size, leverage, profitability, cash flow, etc.

DMP members are spread across the UK

The concentration in London reflects the fact that many large firms that operate throughout the UK nevertheless have their HQ in London.

(500,1000]
(400,500]
(350,400]
(300,350]
(250,300]
(200,250]
(150,200]
(100,150]
[50,100]
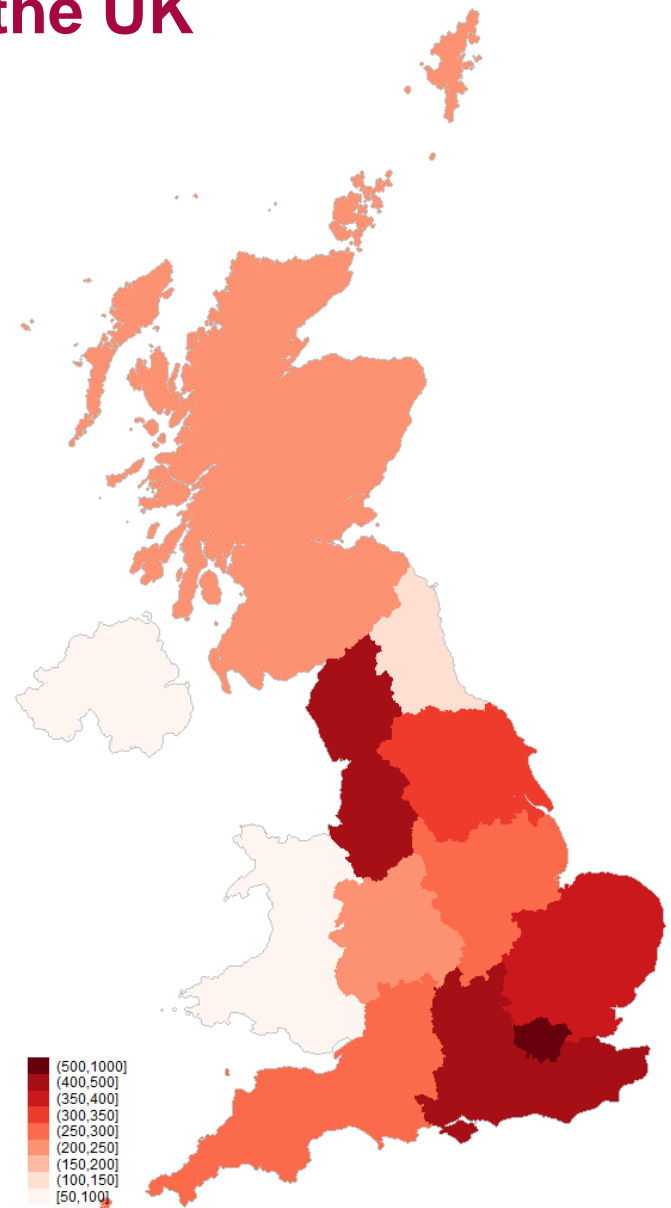
Note: This map shows the number of DMP members' registered offices in each region.

A short online survey asks about expected outcomes e.g. sales revenue

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Decision Maker Panel (August 2017)

3. Looking a year ahead from the second quarter of 2017 to the second quarter of 2018, by what % amount do you expect your SALES REVENUE to have _changed_ in each of the following scenarios?

The LOWEST % change in sales revenue would be about:	-1.0 %
A LOW % change in sales revenue would be about:	0.0 %
A MIDDLE % change in sales revenue would be about:	2.0 %
A HIGH % change in sales revenue would be about:	3.0 %
The HIGHEST % change in sales revenue would be about:	4.0 %

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August 2017 – SALES AND PRICES

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You are asked to give chances out of 100 to each outcome

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Decision Maker Panel (August 2017)

4. Please assign a percentage likelihood (probability) to the % changes in SALES REVENUE you entered (values should sum to 100%).

LOWEST: The likelihood of realising about -1.0 % would be:	10
LOW: The likelihood of realising about 0.0 % would be:	20
MIDDLE: The likelihood of realising about 2.0 % would be:	50
HIGH: The likelihood of realising about 3.0 % would be:	10
HIGHEST: The likelihood of realising about 4.0 % would be:	10
Total	100

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August 2017 – SALES AND PRICES

Aim for 6-7 questions that take about 10 minutes to complete.

Typical data: Distribution of expected sales growth scenarios

Actual and expected sales growth

Percentage change on a year earlier

Solid lines: past year
Dotted line: expectations for next year

DMP: Nominal Sales Growth

ONS: Nominal Total Final Expenditure

Reference period

Actual and expected sales growth

Percentage change on a year earlier

Solid lines: past year
Dotted lines: expectations for next year

Domestic
EU exporters
Non-EU exporters

Reference period
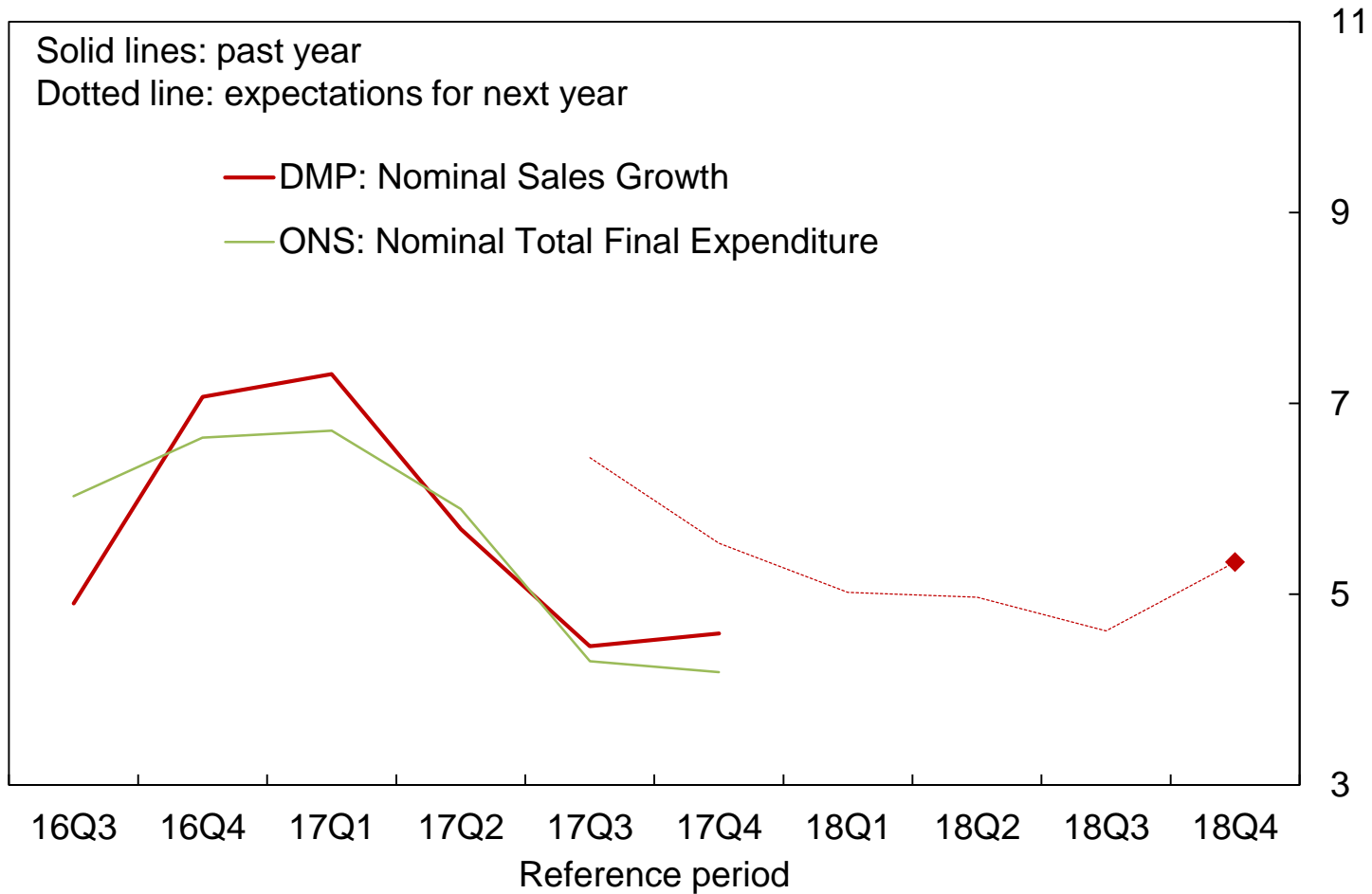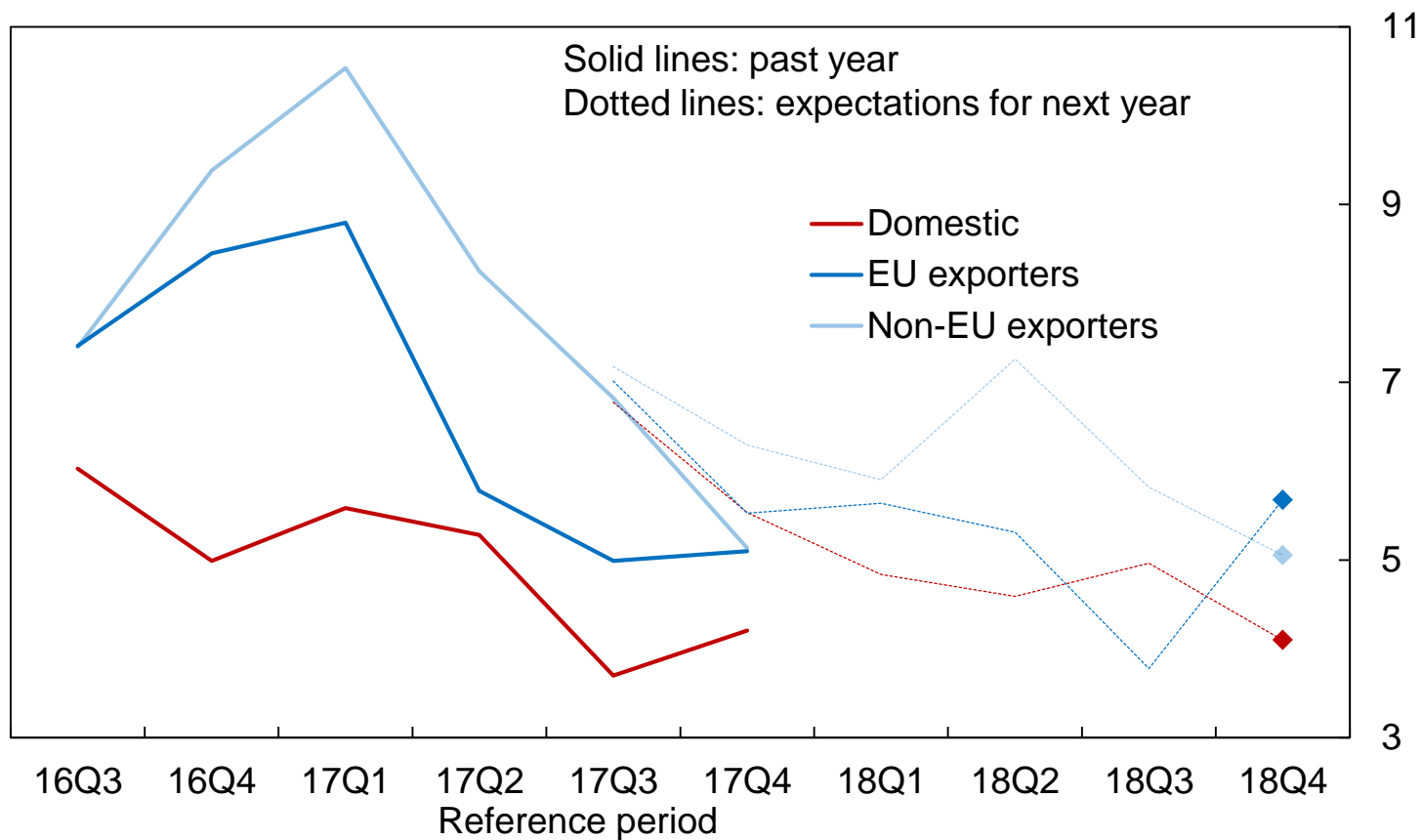
How important is Brexit as a source of uncertainty?

In September 2016 we asked the question:

'How much has the result of the EU-referendum impacted the level of uncertainty affecting your business?'

We asked the same question in February-April 2017 and in August-October 2017.

Brexit is considered an important source of uncertainty

Legend:
- September 2016
- February to April 2017
- August to October 2017

Percentage of respondents

Categories: Not important, One of many sources, One of top 2 or 3 sources, Largest current source
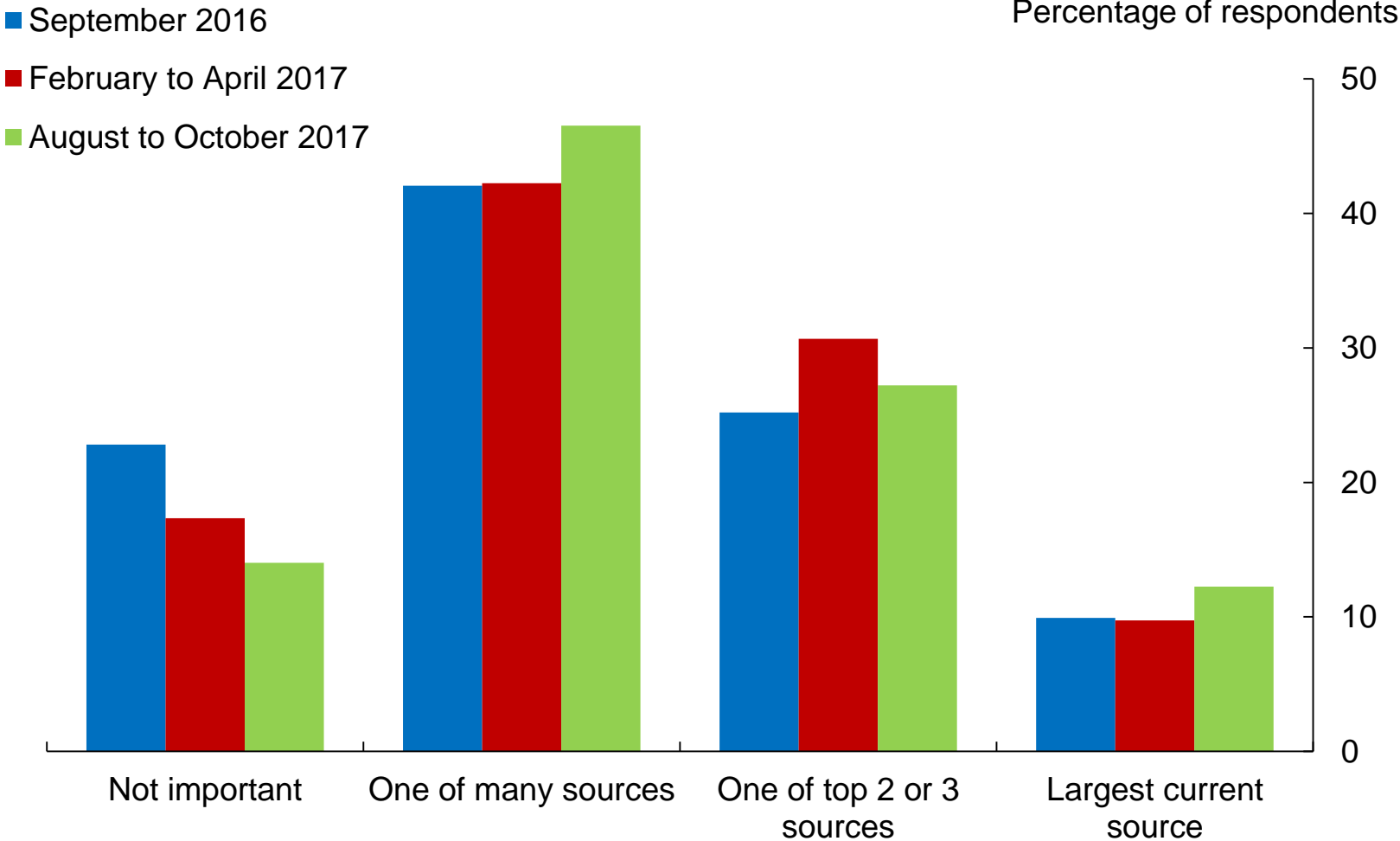
# Companies most likely to see Brexit as an important source of uncertainty tend to:

- Export to the EU

- Import a substantial proportion of inputs from the EU

- Depend on EU migrant labour

- Be more productive than average

# How does Brexit impact on business decisions and conditions?

Companies expect that it is more likely than not that Brexit will reduce their **sales** and **investment**; they expect an increase in their **unit costs, labour costs** and **financing costs.** Exports are more or less unchanged.

Larger firms are **more pessimistic** about the impact of Brexit than smaller firms.

Share of respondents (unweighted), %
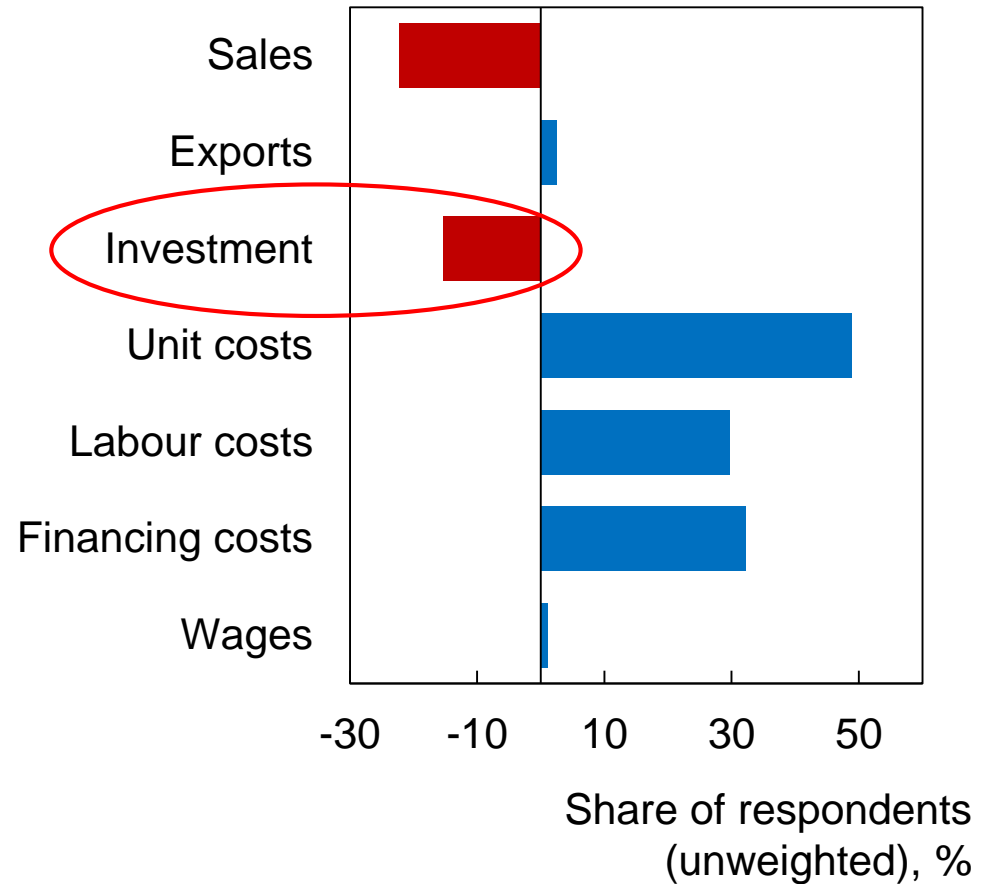
A range of surveys point to Brexit weighing on investment

Percentage of respondents reporting a negative impact

Survey	Value
EEF (a)	49
Lloyds (b)	44
Agents (c)	37
CBI (d)	36
Deloitte (e)	30
Thomson Reuters (f)	21
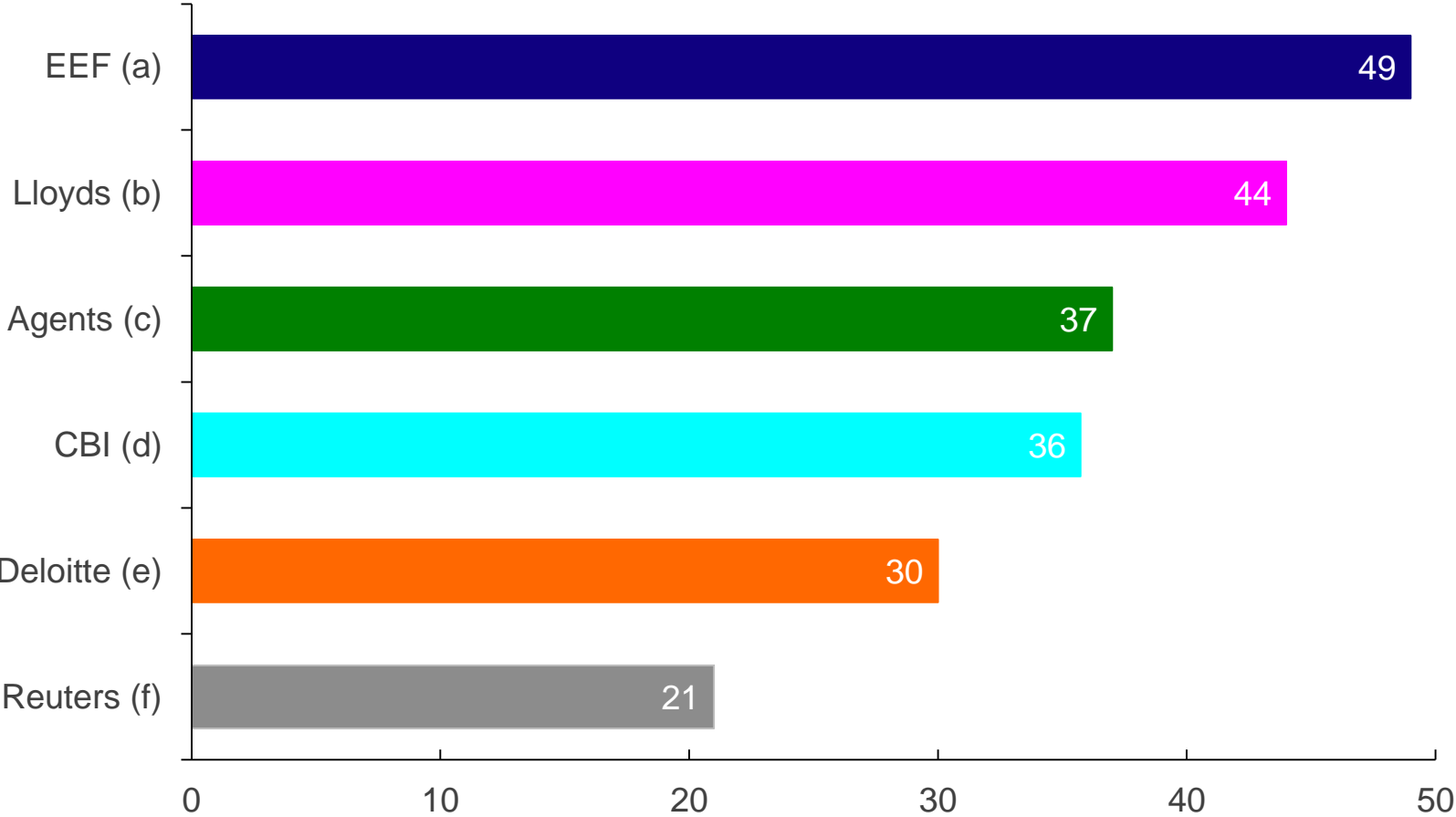
(a) Percentage of respondents who are holding off or limiting investment because of Brexit.
(b) Response to the EU referendum: delaying investment decision-making.
(c) Percentage reporting that economic uncertainty, expected future international trade arrangements or other Brexit factors were affecting investment negatively.
(d) Negative responses to: How has Brexit impacted your organisation's investment decisions?
(e) CFOs who expect capital expenditure by their business to decrease over the next three years as a consequence of Brexit.
(f) Impact of Brexit: holding off from expanding operations in the UK.

Investment growth has been lower for firms who see Brexit as an important source of uncertainty

■ Past year (2017 H1)

Average annual nominal investment growth (per cent)

Brexit as a source of uncertainty

Categories: Not important | One of many | One of top 2 or 3 sources | Top source
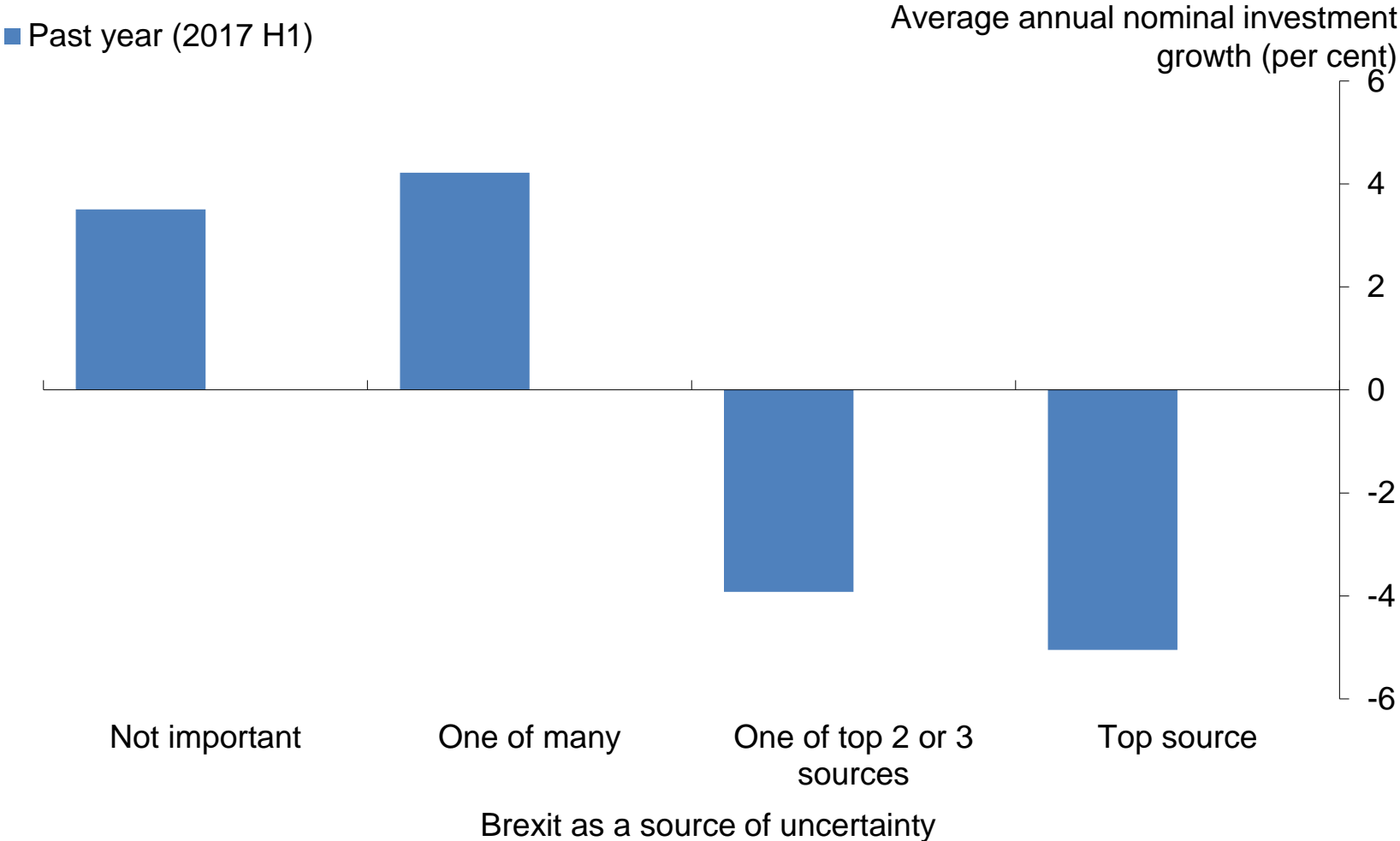
Investment growth also lower for firms who expect Brexit to lower sales

■ Past year (2017 H1)

Average annual investment growth (per cent)

No/positive impact expected   Chance of negative impact   Negative effect likely

Brexit impact on sales in 2020
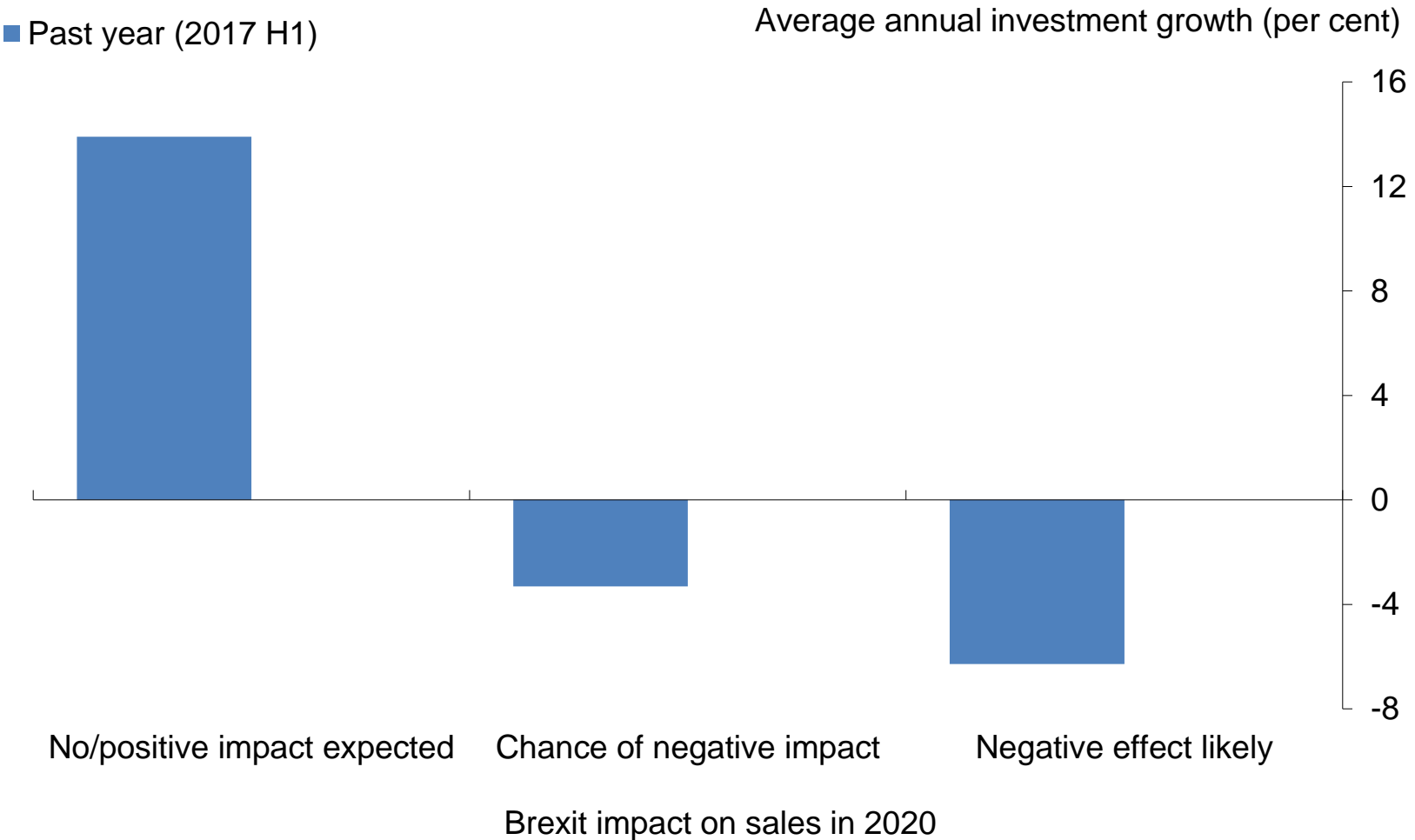
Probit models for whether Brexit at least one of top 2 or 3 sources of uncertainty
(marginal effects reported)

	(1)	(2)	(3)
Firm level variables:			
ln(employment)	0.004	0.006	-0.004
	(0.014)	(0.014)	(0.014)
ln(productivity)	0.091***	0.076**	0.094***
	(0.033)	(0.033)	(0.032)
Share of sales to EU	0.006***		
	(0.002)		
Share of sales to non-EU	-0.004***		
	(0.002)		
Share of costs from EU imports		0.004***	
		(0.001)	
Share of costs from non-EU-imports		0.003**	
		(0.001)	
EU migrants 1-5% workforce (dummy)			0.074
			(0.045)
EU migrant 6-10% workforce (dummy)			0.141***
			(0.054)
EU migrants 11-20% workforce (dummy)			0.151**
			(0.064)
EU migrants > 20% workforce (dummy)			0.250***
			(0.063)
Industry dummies	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes
Observations	1,208	1,208	1,208

OLS regression for investment growth over the past year (2017 Q1 and Q2 - standard errors clustered)

	(1)	(2)	(3)
Firm level variables:			
Brexit uncertainty dummies			
- Top 2 or 3 sources	-9.200***	-8.197**	
	(2.840)	(3.364)	
- One of many			2.096
			(4.774)
- Top 2 or 3 but not largest			-4.650
			(5.041)
- Largest current source			-11.698*
			(6.226)
Net probability of Brexit eventually		-0.103**	-0.102**
		(0.043)	(0.045)
Quarter dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Observations	1,080	859	859

OLS regression for investment growth over the next year (2017 Q1 and Q2 - standard errors clustered)

	(1)	(2)	(3)
Firm level variables:			
Brexit uncertainty dummies			
- Top 2 or 3 sources	-5.861**	-5.073	
	(2.611)	(3.116)	
- One of many			-3.774
			(4.286)
- Top 2 or 3 but not largest			-6.333
			(4.754)
- Largest current source			-12.842**
			(6.221)
Net probability of Brexit eventually re		0.058	0.073*
		(0.039)	(0.041)
Quarter dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Observations	1,255	988	988

Table: GMM Investment growth and uncertainty

Table 1. Determinants of Investment Decisions - Regression Results

	(1) GMM	(2) GMM	(3) GMM
Investment (-1)	0.310***	0.369***	0.365***
	(0.027)	(0.027)	(0.027)
Investment (-2)		0.107***	0.106***
		(0.013)	(0.013)
Q	0.222***	0.275***	0.272***
	(0.001)	(0.001)	(0.001)
Cash Flow (-1)	0.062***	0.048***	0.048***
	(0.001)	(0.001)	(0.001)
Vol^{r}/Vol^mkt	-0.043***	-0.042***	-0.042***
	(0.001)	(0.002)	(0.002)
Uncertainty	-0.037***	-0.031***	
	(0.005)	(0.005)	
EPU-UK			-0.031***
			(0.000)
No. of Obs	10203	9041	9041
R^2	.4985	.5167	.5177

* p<0.1, ** p<0.05, *** p<0.01

Quantifying the impact of Brexit on investment

- Estimate regression models for investment growth last year/next year with Brexit variables on right hand side

- Use those models to estimate how different investment growth would be if all firms behaved like those who expect no Brexit impact

- Allow for separate effects from Brexit lowering future sales and Brexit related uncertainty

- Scale aggregate figure by the share of investment accounted for by sectors covered by the DMP (76%)

- Doesn't account for any possible general equilibrium effects

# Estimates of impact of Brexit on aggregate investment <u>growth</u>

	Past year	**Next year**
Brexit reducing future sales	-1.6pp to -2.0pp	No effect
+ Brexit related uncertainty	-1.0pp to -2.5pp	-1.6pp to -1.9pp
= Total Brexit effect on investment <u>growth</u> in 2017 H1	-3.0pp to -4.2pp	-1.6pp to -1.9pp

- Effects on investment growth smaller for year ahead, but still implies levels effect continues to build

Aggregate business investment growth

Nominal business investment

◆ Counterfactual without Brexit effect

Percentage change on a year earlier
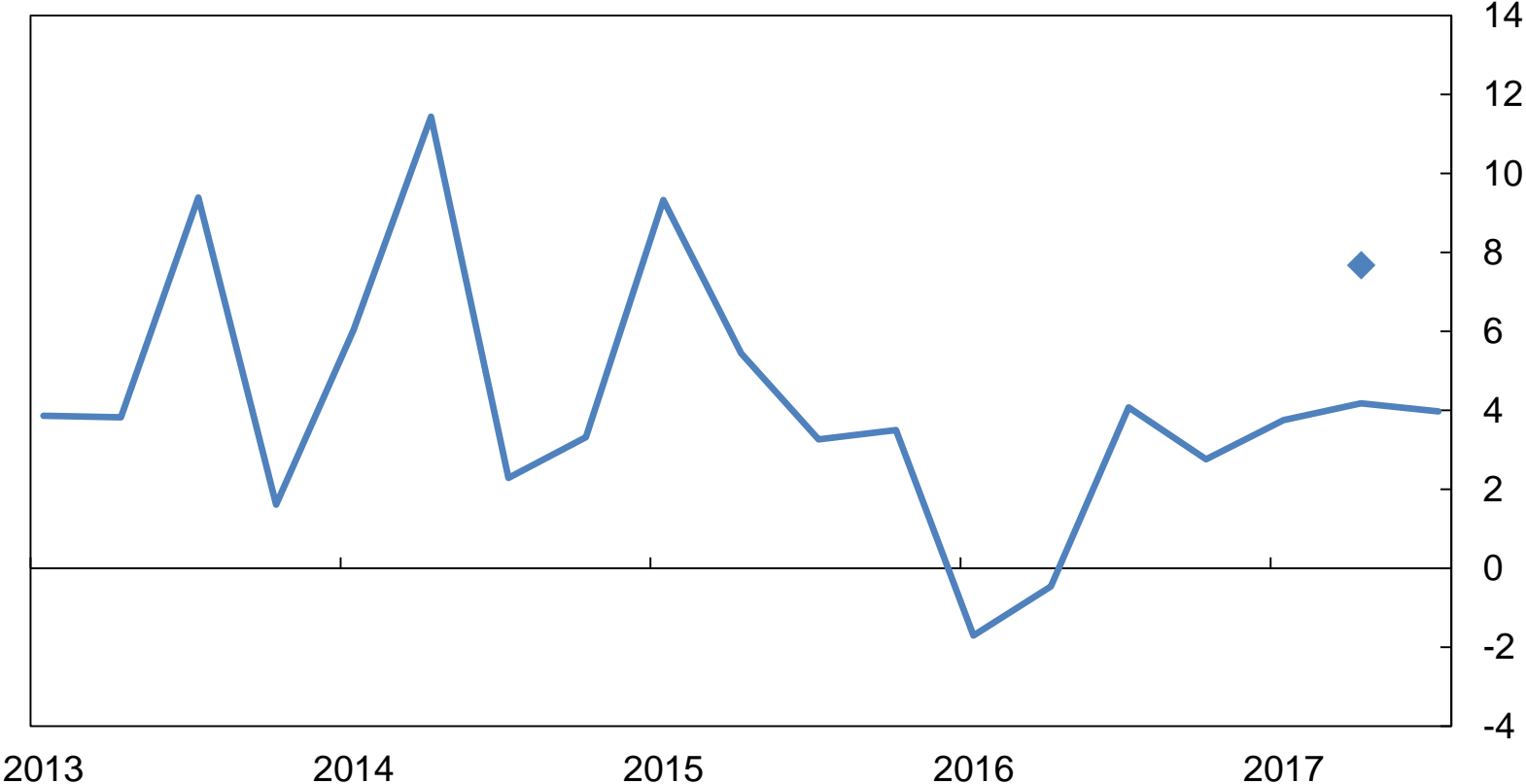
Summary

The DMP survey shows Brexit had a slowing effect on the UK economy

- Brexit it has already negatively affected past growth of investment and sales

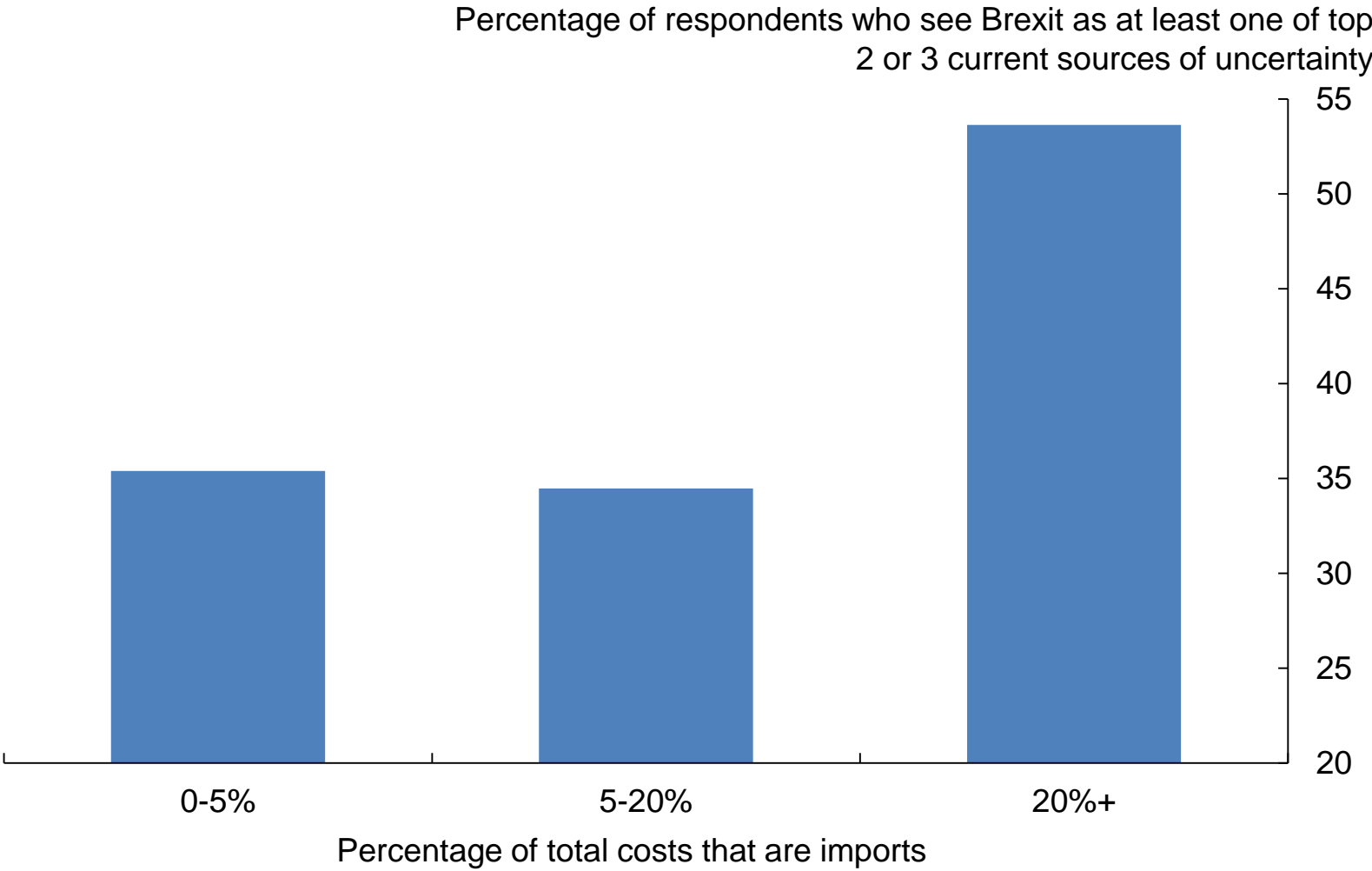- Brexit is negatively affecting future growth of investment

DMP responses from firms indicate Brexit reduced investment growth by 3-4pp in 2017 and a projected reduction of 1.6-2pp in 2018.

Firms with greater exports to the EU, greater imports from the EU and greater use of migrant labour are more affected than others.
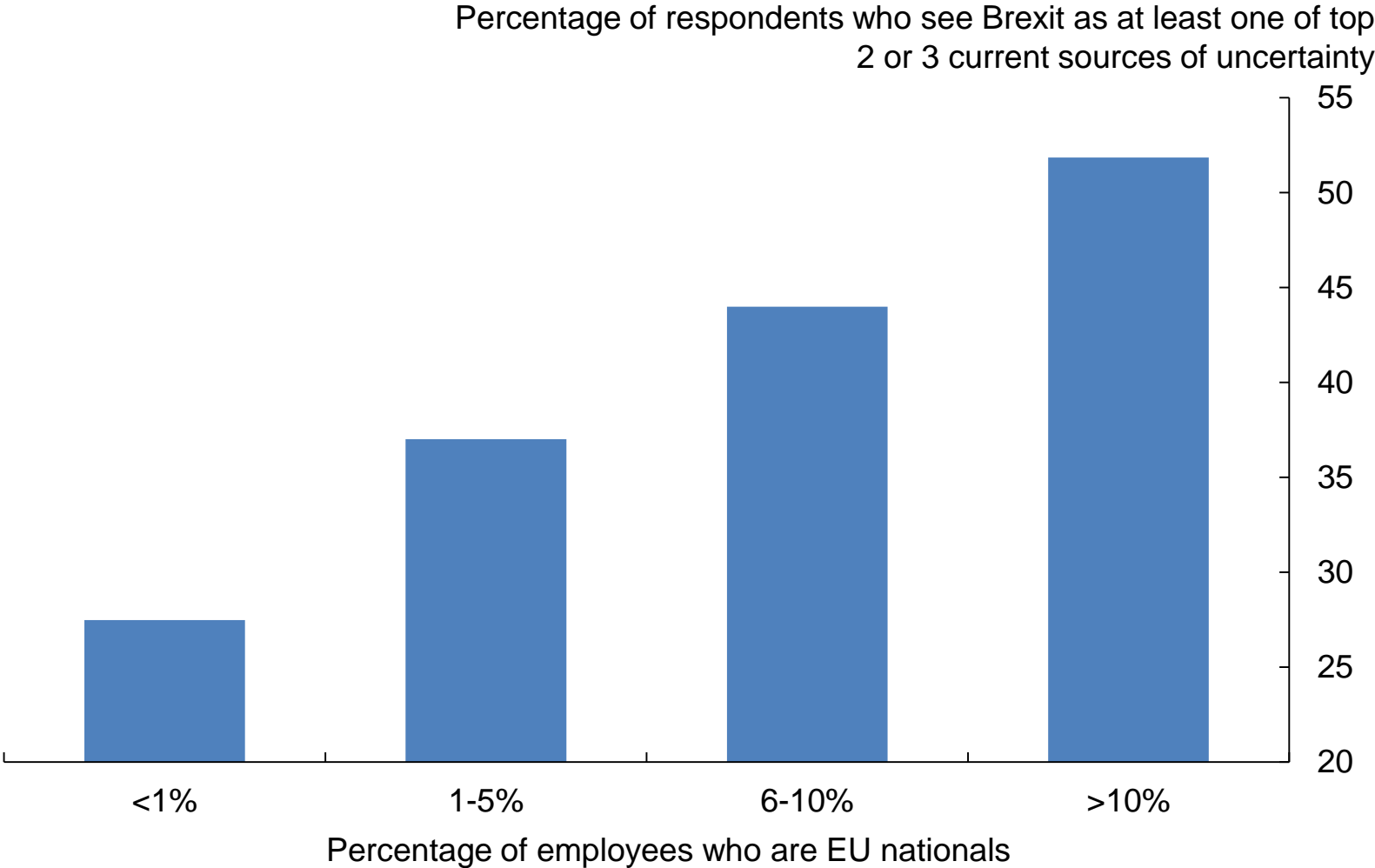
Brexit as a source of uncertainty by largest export market

Percentage of respondents who see Brexit as at least one of top 2 or 3 current sources of uncertainty

Largest export market
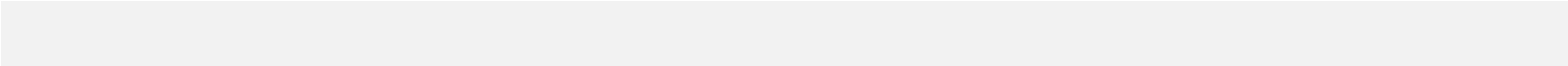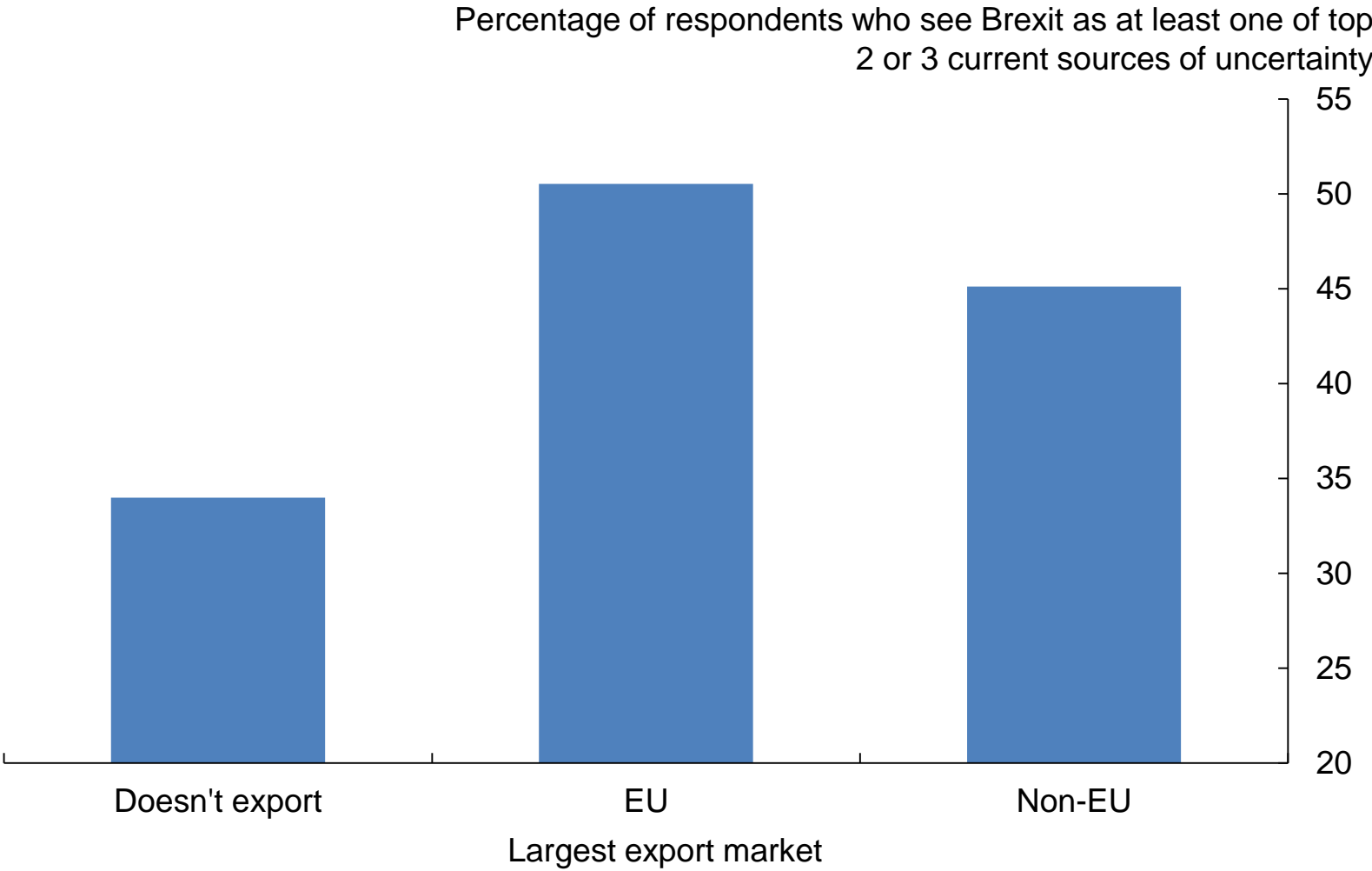
Brexit as a source of uncertainty by share of imports in total costs

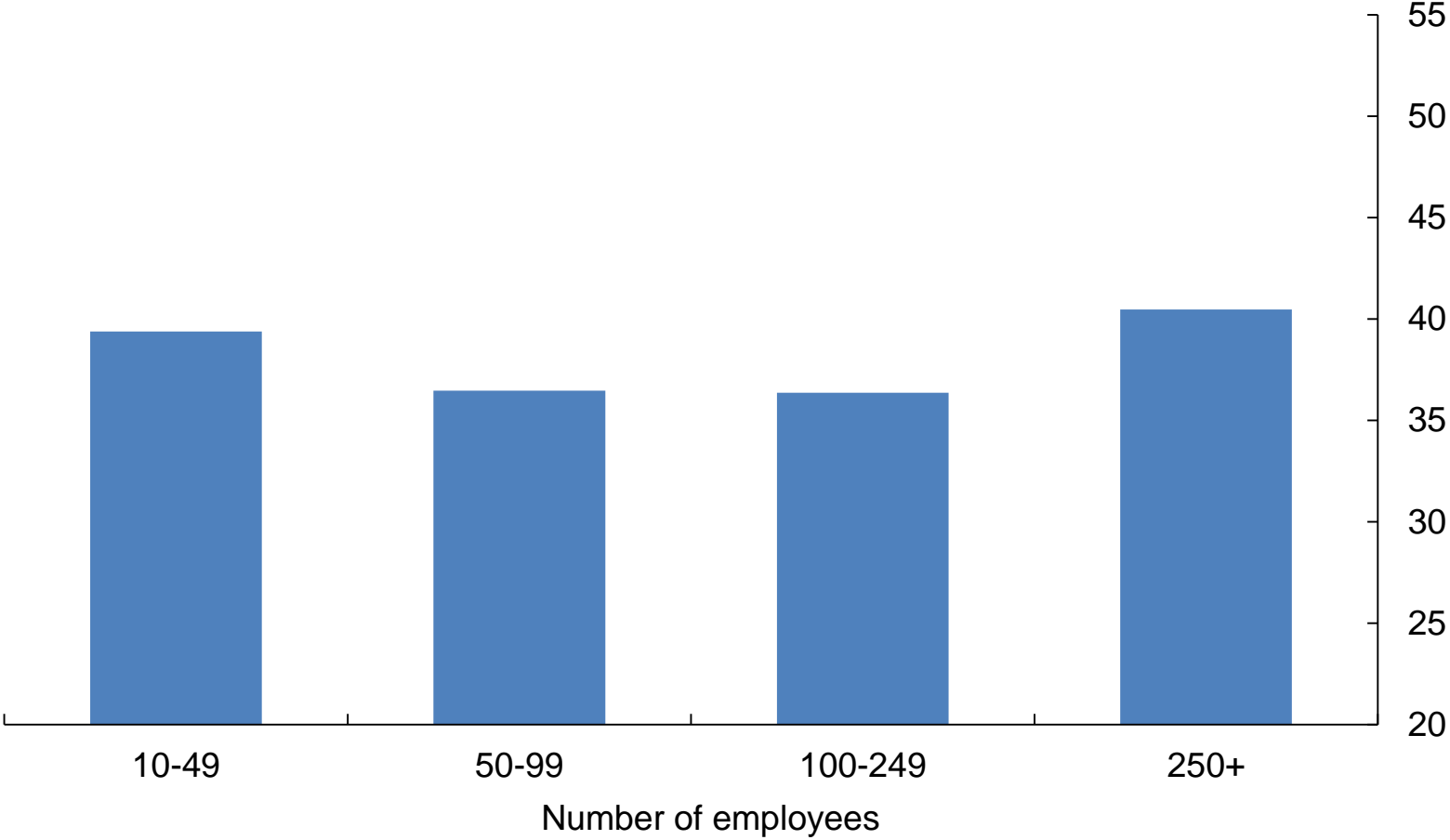Percentage of respondents who see Brexit as at least one of top 2 or 3 current sources of uncertainty

Percentage of total costs that are imports

0-5%   5-20%   20%+

Brexit as a source of uncertainty by share of workforce who are EU nationals

Percentage of respondents who see Brexit as at least one of top 2 or 3 current sources of uncertainty

Percentage of employees who are EU nationals

Brexit as a source of uncertainty by firm size

Percentage of respondents who see Brexit as at least one of top 2 or 3 current sources of uncertainty
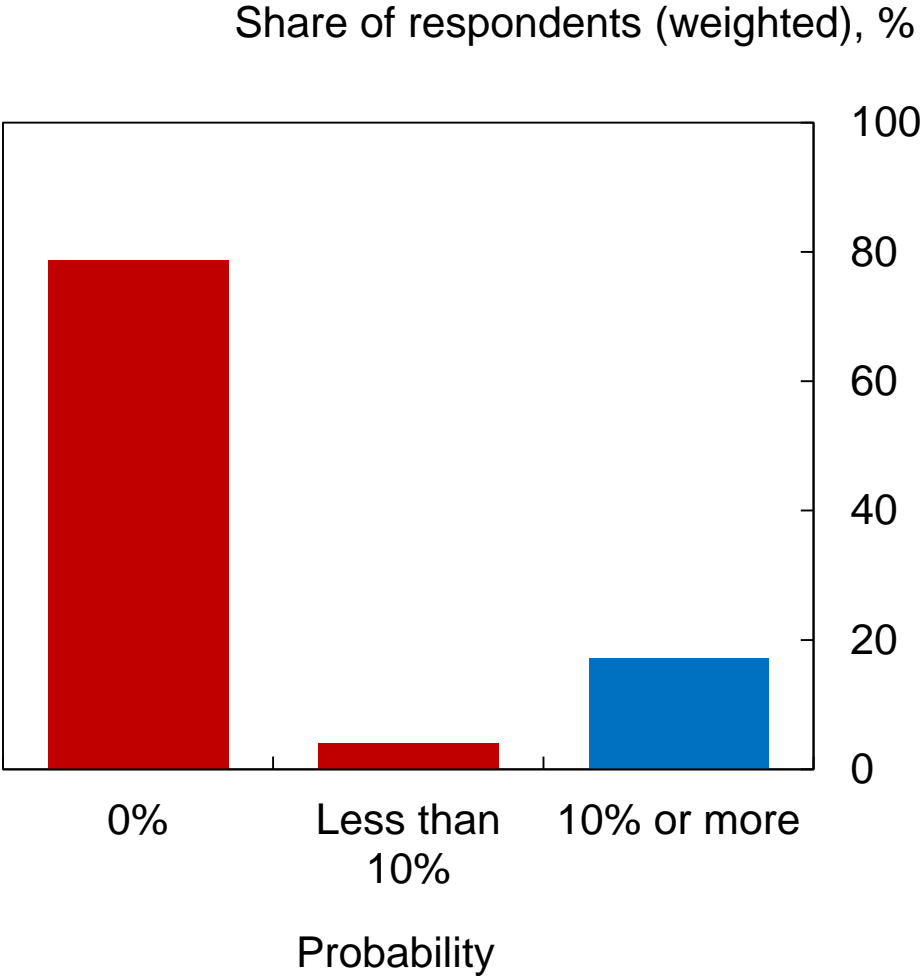
Number of employees

Brexit as a source of uncertainty by ownership

Percentage of respondents who see Brexit as at least one of top 2 or 3 current sources of uncertainty

Location of ultimate owner
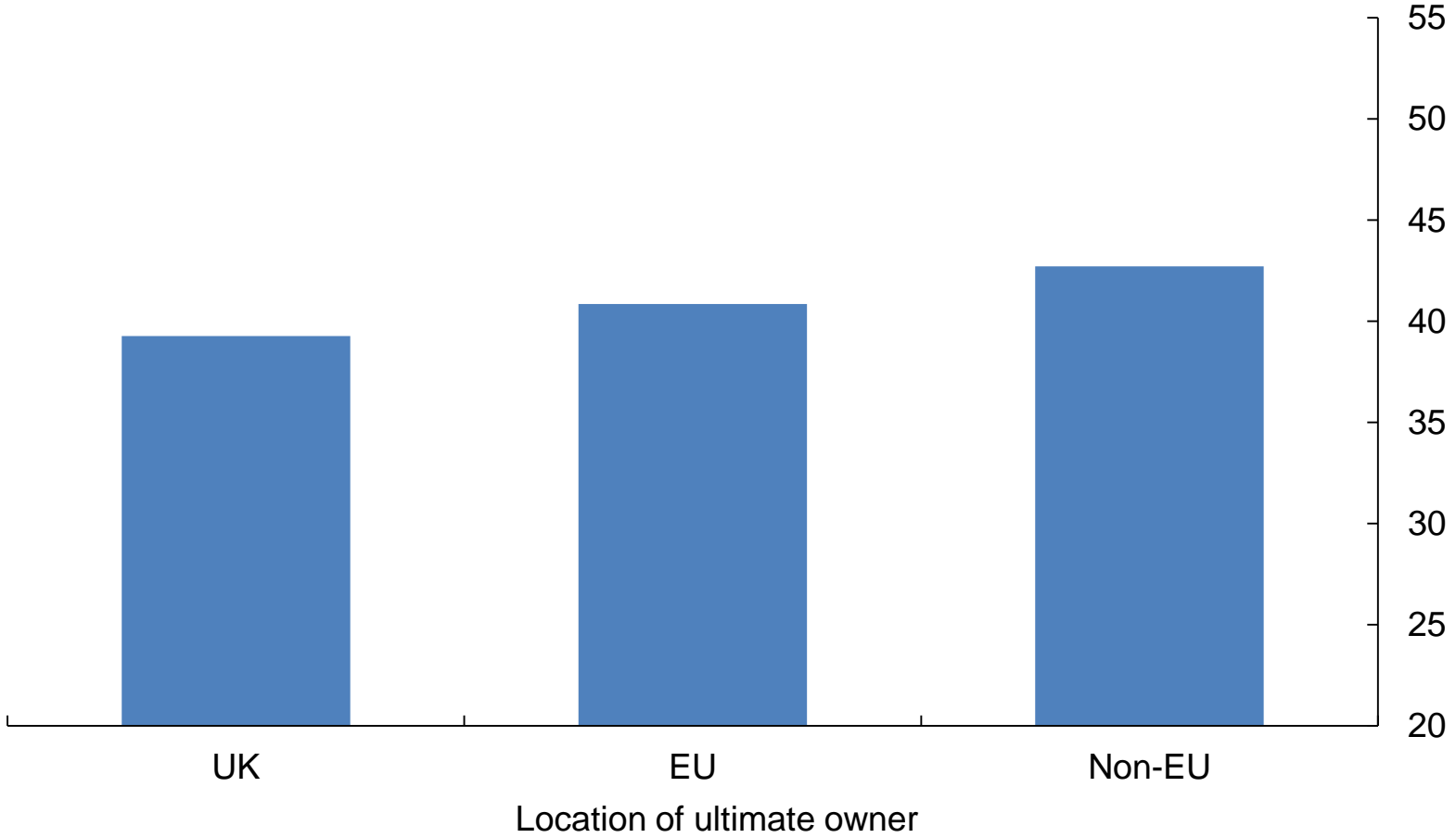
How does Brexit impact decisions about relocating abroad?

Share of respondents (weighted), %

Probability

Between May and July 2017, panel members were asked about the possibility of moving parts of their business abroad.

Vast **majority** said that the chance is **zero** or close to zero.

One in six panel members said that the chance is **10% or more**.

Brexit impacts decisions about relocating back to UK

Considering relocation back to the UK:

- **69%** said that the question was **not applicable** (no overseas operations);
- **27%** said that there was **less than 10%** chance of relocation to the UK;
- and **4%** said that there was **more than 10%** chance of relocation.
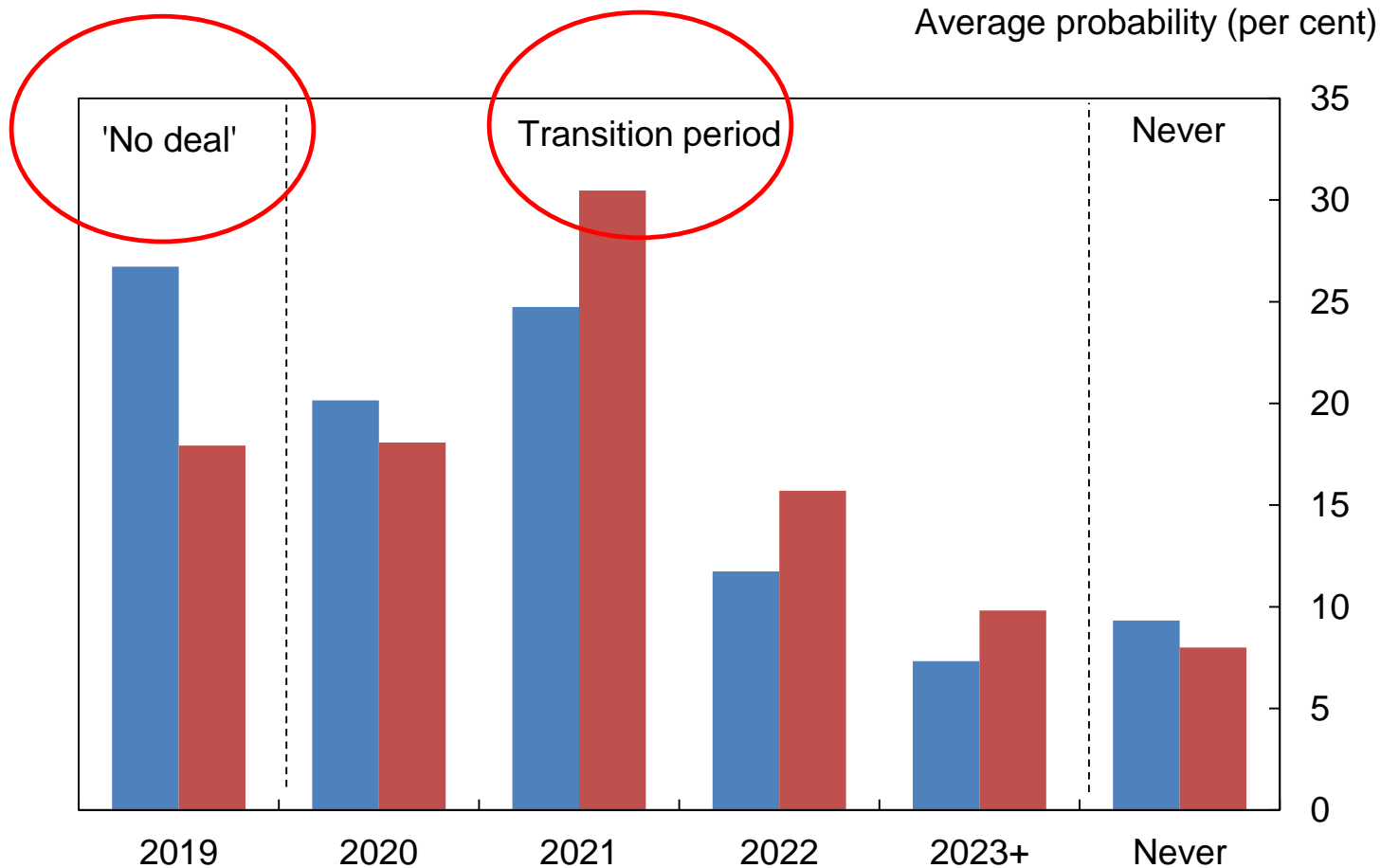
Share of respondents (weighted), %
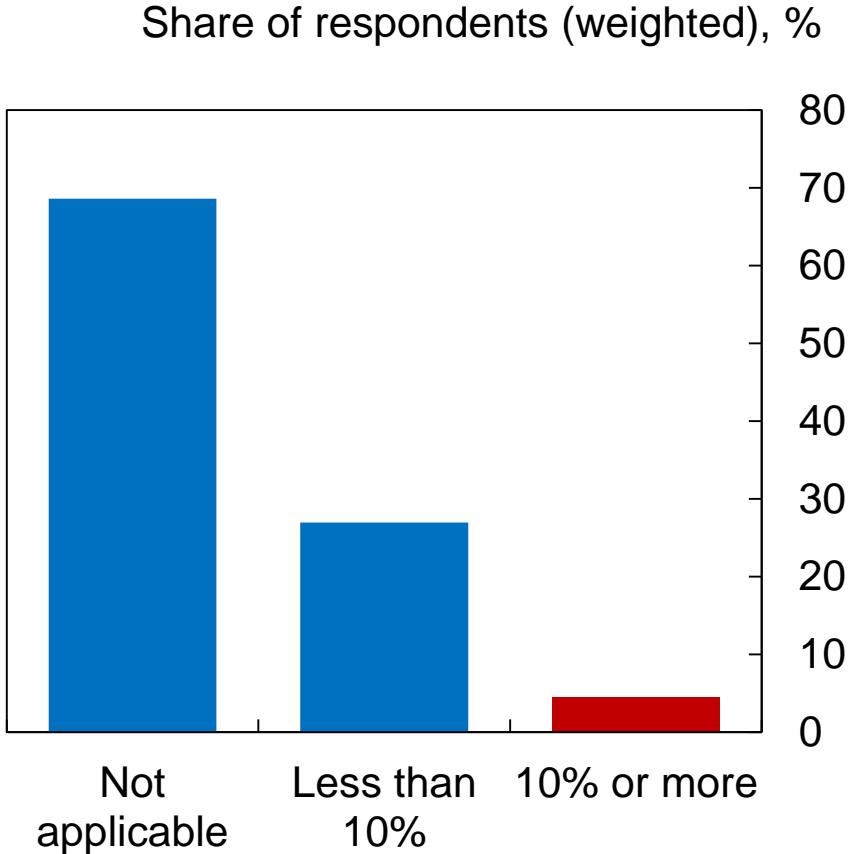
How much planning time is devoted to Brexit?

Table 1 Number of hours a week spent on preparing for Brexit (share of respondents).

	CEO	CFO
None	41%	38%
Up to 1 hour	37%	39%
1 to 5 hours	14%	18%
6 to 10 hours	3%	3%
More than 10 hours	1%	1%
Don't know	4%	2%

- Around three quarters of CEOs and CFOs are spending no more than an hour a week on preparing for Brexit, but 15-18% spend a up to half a day a week and the remaining 6-10% more than that.

- Impact on productivity?

When do DMP members expect to the UK to leave the EU?

Average probability (per cent)

'No deal' | Transition period | Never

2019 | 2020 | 2021 | 2022 | 2023+ | Never

- CFOs place less probability on the UK leaving the EU in 2019 since December Summit, and greater probability on leaving 2021 or later.