Brexit, Business Activities and Uncertainty: Japanese Perspectives

Tatsuro Senga (Queen Mary University of London, ESCoE and RIETI)

ESCoE workshop: What Can We Learn from Business Expectations Data?
Monday 26th November 2018

Japanese perspectives

Japanese firms and Brexit

英EU離脱ルポ　日系車部品「在庫持たざるをえない」

2018年10月29日 2:56【有料会員限定】

英国の欧州連合（EU）離脱交渉が進むなか、同国に工場がある日本の自動車部品メーカーに困惑が広がっている。「合意なし離脱」になれば部品などの調達網の混乱が予想され、在庫を極力もたず迅速に供給するサプライチェーンが強みの日本勢には逆風となる。「在庫を持たざるをえない」といった声が出てきた英国の生産現場を追った。

ファルテックは部品の素材の過半を英国外から輸入する(英サンダーランド市近郊の工場)

Japanese firms and Brexit

英EU離脱ルポ　日系車部品「在庫持たざるをえない」

2018年10月29日 2:56【有料会員限定】

英国の欧州連合（EU）離脱交渉が進むなか、同国に工場がある日本の自動車部品メーカーに困惑が広がっている。「合意なし離脱」になれば部品などの調達網の混乱が予想され、在庫を極力もたず迅速に供給するサプライチェーンが強みの日本勢には逆風となる。「在庫を持たざるをえない」といった声が出てきた英国の生産現場を追った。

ファルテックは部品の素材の過半を英国外から輸入する(英サンダーランド市近郊の工場)

BMW asks if they can hold three months worth of inventory (Nikkei, 29 October).

- Ordinarily, they hold one week worth of inventory on hand.
- 60 percent of materials come from France.

Negative impact of Brexit on Japanese firms in the UK

英の日系企業、ＥＵ離脱「負の影響」55%　本社調査

国際 11月23日

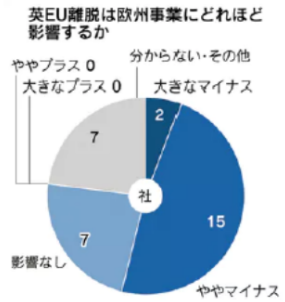
【ロンドン＝篠崎健太】英国に展開する日系企業が欧州連合（ＥＵ）離脱の悪影響に身構えている。日本経済新聞

【ロンドン=篠崎健太】英国に展開する日系企業が欧州連合（EU）離脱の悪影響に身構えている。日本経済新聞社が在英の日系企業にアンケート調査したところ、回答企業の5割強がEU離脱で事業に「負の影響がある」と答えた。離脱後のEUとの通商環境や英経済の先行きの不透明さを警戒する企業が多い。条件合意のない「無秩序離脱」のリスクに9割が懸念を示した。

英国内に事業所や工場などがある主要な日系企業75社に調査票を送り、4割強の31社から回答を得た。回収期間は13～22日で、大半が英政府が離脱協定案を閣議了解した14日より後に集まった。

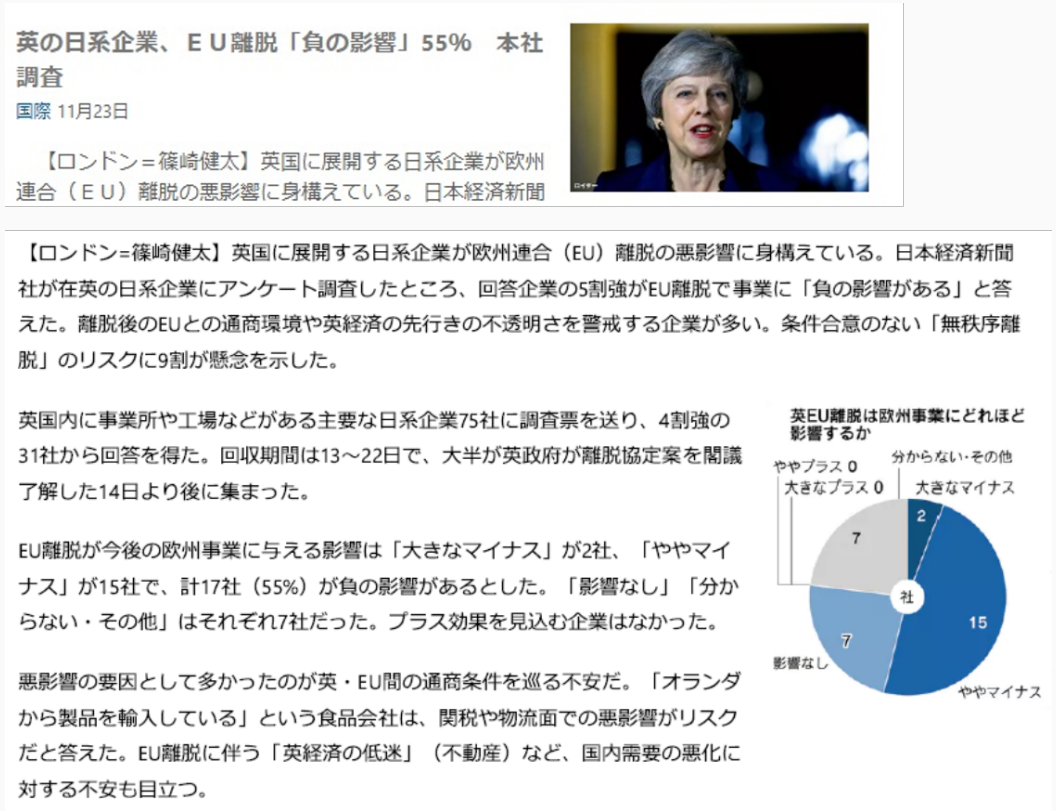
EU離脱が今後の欧州事業に与える影響は「大きなマイナス」が2社、「ややマイナス」が15社で、計17社（55%）が負の影響があるとした。「影響なし」「分からない・その他」はそれぞれ7社だった。プラス効果を見込む企業はなかった。

悪影響の要因として多かったのが英・EU間の通商条件を巡る不安だ。「オランダから製品を輸入している」という食品会社は、関税や物流面での悪影響がリスクだと答えた。EU離脱に伴う「英経済の低迷」（不動産）など、国内需要の悪化に対する不安も目立つ。



55 % of Japanese firms expect a negative impact of Brexit (Nikkei, 23 November).

Negative impact of Brexit on Japanese firms in the UK



英の日系企業、ＥＵ離脱「負の影響」55%　本社調査

国際 11月23日

【ロンドン＝篠崎健太】英国に展開する日系企業が欧州連合（ＥＵ）離脱の悪影響に身構えている。日本経済新聞

【ロンドン=篠崎健太】英国に展開する日系企業が欧州連合（EU）離脱の悪影響に身構えている。日本経済新聞社が在英の日系企業にアンケート調査したところ、回答企業の5割強がEU離脱で事業に「負の影響がある」と答えた。離脱後のEUとの通商環境や英経済の先行きの不透明さを警戒する企業が多い。条件合意のない「無秩序離脱」のリスクに9割が懸念を示した。

英国内に事業所や工場などがある主要な日系企業75社に調査票を送り、4割強の31社から回答を得た。回収期間は13～22日で、大半が英政府が離脱協定案を閣議了解した14日より後に集まった。

EU離脱が今後の欧州事業に与える影響は「大きなマイナス」が2社、「ややマイナス」が15社で、計17社（55%）が負の影響があるとした。「影響なし」「分からない・その他」はそれぞれ7社だった。プラス効果を見込む企業はなかった。

悪影響の要因として多かったのが英・EU間の通商条件を巡る不安だ。「オランダから製品を輸入している」という食品会社は、関税や物流面での悪影響がリスクだと答えた。EU離脱に伴う「英経済の低迷」（不動産）など、国内需要の悪化に対する不安も目立つ。

55 % of Japanese firms expect a negative impact of Brexit (Nikkei, 23 November).

- 15 respondents said the impact of Brexit is negative.
- 2 respondents said the impact of Brexit is very negative.
- 7 respondents said they are unsure about the impact of Brexit.

Negative impact of Brexit on Japanese firms in the UK

35 % of Japanese firms said they have amended or are making changes to their supply chain (Nikkei, 23 November).

- 26 % of respondents said their plan involves **opening a new location** in other EU countries.
- 13 % of respondents said their plan involves **relocation** to other EU countries.

Negative impact of Brexit on Japanese firms in the UK

35 % of Japanese firms said they have amended or are making changes to their supply chain (Nikkei, 23 November).

- 26 % of respondents said their plan involves **opening a new location** in other EU countries.
- 13 % of respondents said their plan involves **relocation** to other EU countries.

90 % of Japanese firms express concern about a no-deal Brexit (Nikkei, 23 November).

Measuring Firm-level Uncertainty

Brexit is a process - not a one time event.

- Isolating the impact of Brexit on the UK business sector in real time is an obvious issue due to lack of data.
- It is also important to track the UK businesses in the long run.

Firms face substantial uncertainty and imperfect information when making decisions.

Global supply chains around the UK businesses evolve facing elevated uncertainty.

Agenda setting

Data: Japanese multinational enterprises (MNEs)

- We have a panel of "Head quarters (Japan) - foreign affiliate" pairs.
- We can track each foreign affiliate over time.
- A key feature: foreign affiliates' sales forecasts and forecast errors.

Agenda setting

Data: Japanese multinational enterprises (MNEs)

- We have a panel of "Head quarters (Japan) - foreign affiliate" pairs.
- We can track each foreign affiliate over time.
- A key feature: foreign affiliates' sales forecasts and forecast errors.

I talk about Chen, Chang, Senga and Zhang (2018) who provides stylized facts on of firm sales expectation.

Agenda setting

Data: Japanese multinational enterprises (MNEs)

- We have a panel of "Head quarters (Japan) - foreign affiliate" pairs.
- We can track each foreign affiliate over time.
- A key feature: foreign affiliates' sales forecasts and forecast errors.

I talk about Chen, Chang, Senga and Zhang (2018) who provides stylized facts on of firm sales expectation.

After Brexit, We would look at the impact on global supply chains around the UK businesses.

Data on Japanese Multinational Enterprises

Panel of MNEs ("Head quarters-affiliate" pairs)

- "Basic Survey of Japanese Business Structure" merged with "Basic Survey of Overseas Business Activities provided by the Ministry of Economy, Trade and Industry (METI).

- Sample of 2,300 parents 14,000 affiliates each year.

  e.g. Nissan (HQs in Japan)
  - NISSAN MOTOR MANUFACTURING UK LTD.
  - NISSAN TECHNICAL CENTER EUROPE LTD.
  - NISSAN EUROPE S.A.S
  - NTCE DIVISION, DYNAMIC PERFORMANCE TEAM
  - etc...

- Firm = affiliate; HQs = parent firm.

Firms' sales forecasts

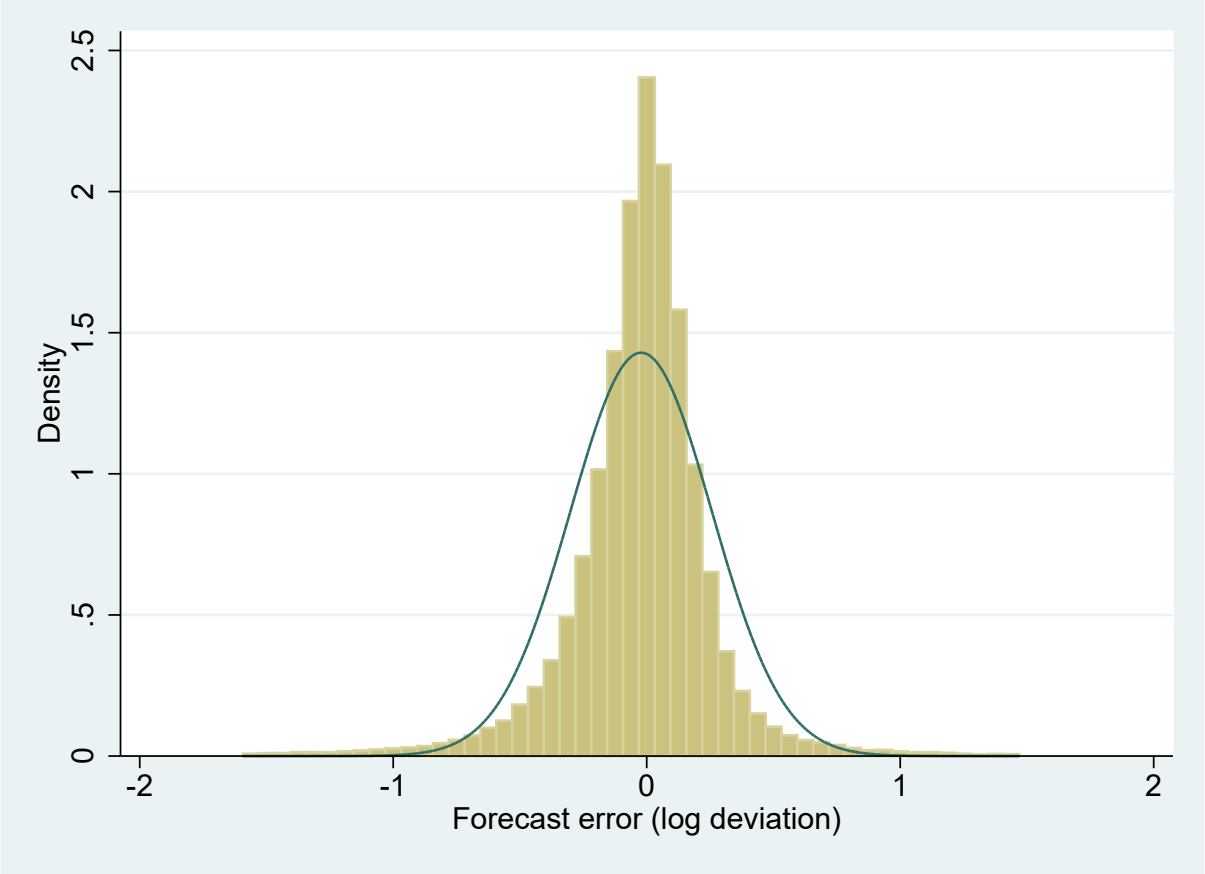
- Each firm reports "projected sales" for next year (Apr./1-Mar./31).
- Sent to HQs on April/1, and deadline for submission is Aug./31.
- Usual timing of collection: July.

- Forecast error (FE): difference between the realized sales and projected sales

$$FE^{\log} = \log\left[R_{t+1} / E_t\left(R_{t+1}\right)\right]$$

Definition and descriptive Statistics of FE

- Distribution of $FE_t^{\log} = \log\left[R_{t+1} / E_t\left(R_{t+1}\right)\right]$



Two alternative measures: residual FE and percentage deviation

1. percentage FE:

$$FE_t^{pct} = R_{t+1} / E_t \left(R_{t+1} \right) - 1$$

2. residual FE
   - Project $FE_{it}^{\log}$ on country-year and industry-year fixed effects

$$\hat{\varepsilon}_{FE^{\log}} = FE_{it}^{\log} - \hat{\delta}_{ct} - \hat{\delta}_{st}$$

   - Residual FEs maintain 90% of variation in $FE_{it}^{\log}$

Summary statistics of FE

Table 1: Summary Statistics of Forecast Errors

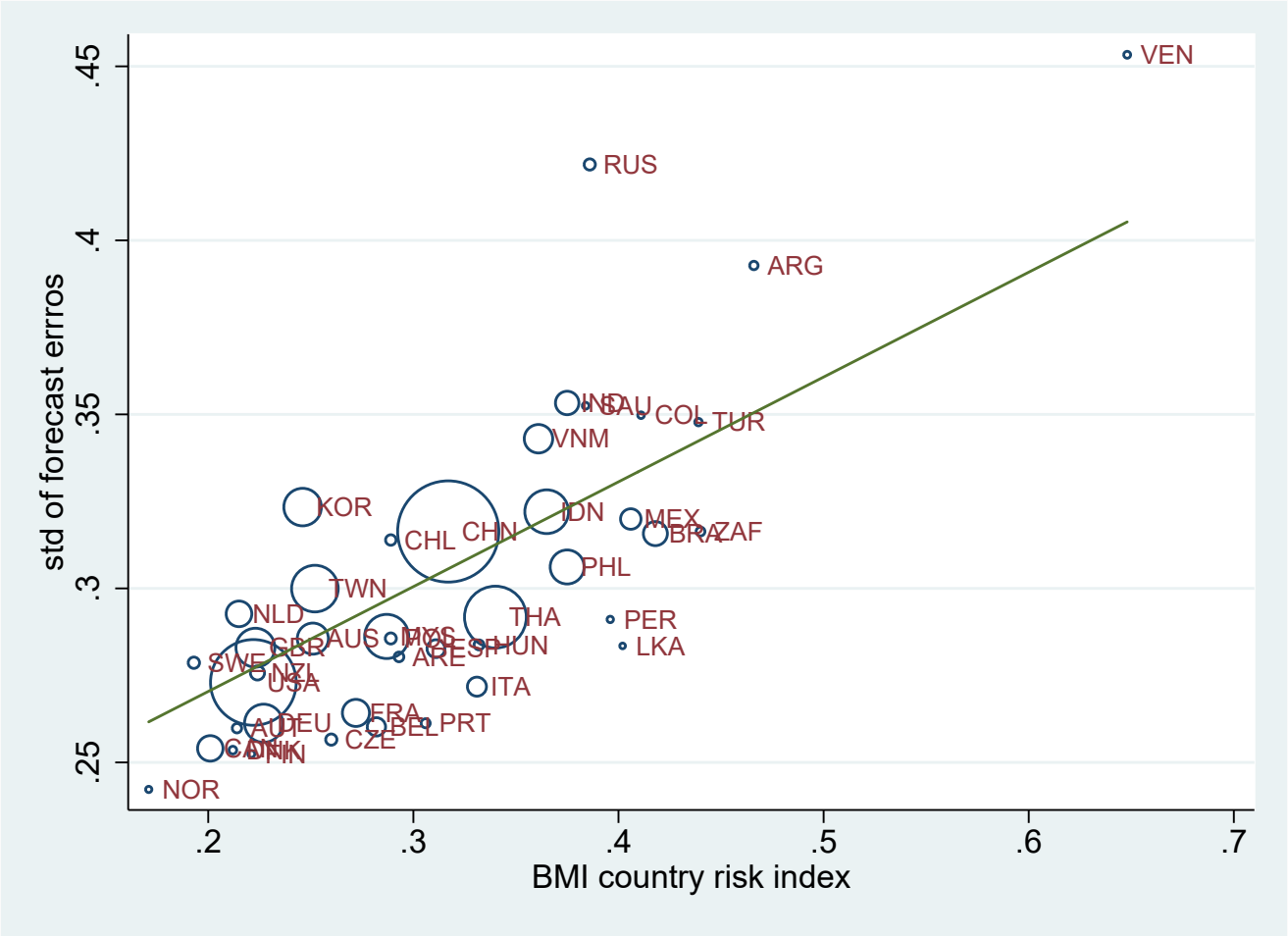
	Obs.	mean	std. dev.	median
FE^{log}	132050	-0.024	0.298	-0.005
FE^{pct}	132589	0.017	0.333	-0.006
$\hat{\epsilon}_{FE}$	131754	-0.000	0.281	0.011
$\lvert FE^{log} \rvert$	132050	0.200	0.223	0.130
$\lvert \hat{\epsilon}_{FE} \rvert$	131754	0.184	0.212	0.116
FE^{log} - Manufacturing	91574	-0.022	0.278	-0.003
FE^{pct} - Manufacturing	91858	0.014	0.307	-0.004
$\lvert FE^{log} \rvert$ - Manufacturing	91574	0.186	0.208	0.123

FE^{log} is the log deviation of the realized sales from the projected sales, while $\hat{\epsilon}_{FE}$, is the residual forecast error, which we obtain by regressing FE^{log} on a set of industry-year and country-year fixed effects. Manufacturing subsample refers to affiliates in manufacturing or wholesale/retail whose parent firm is in manufacturing.

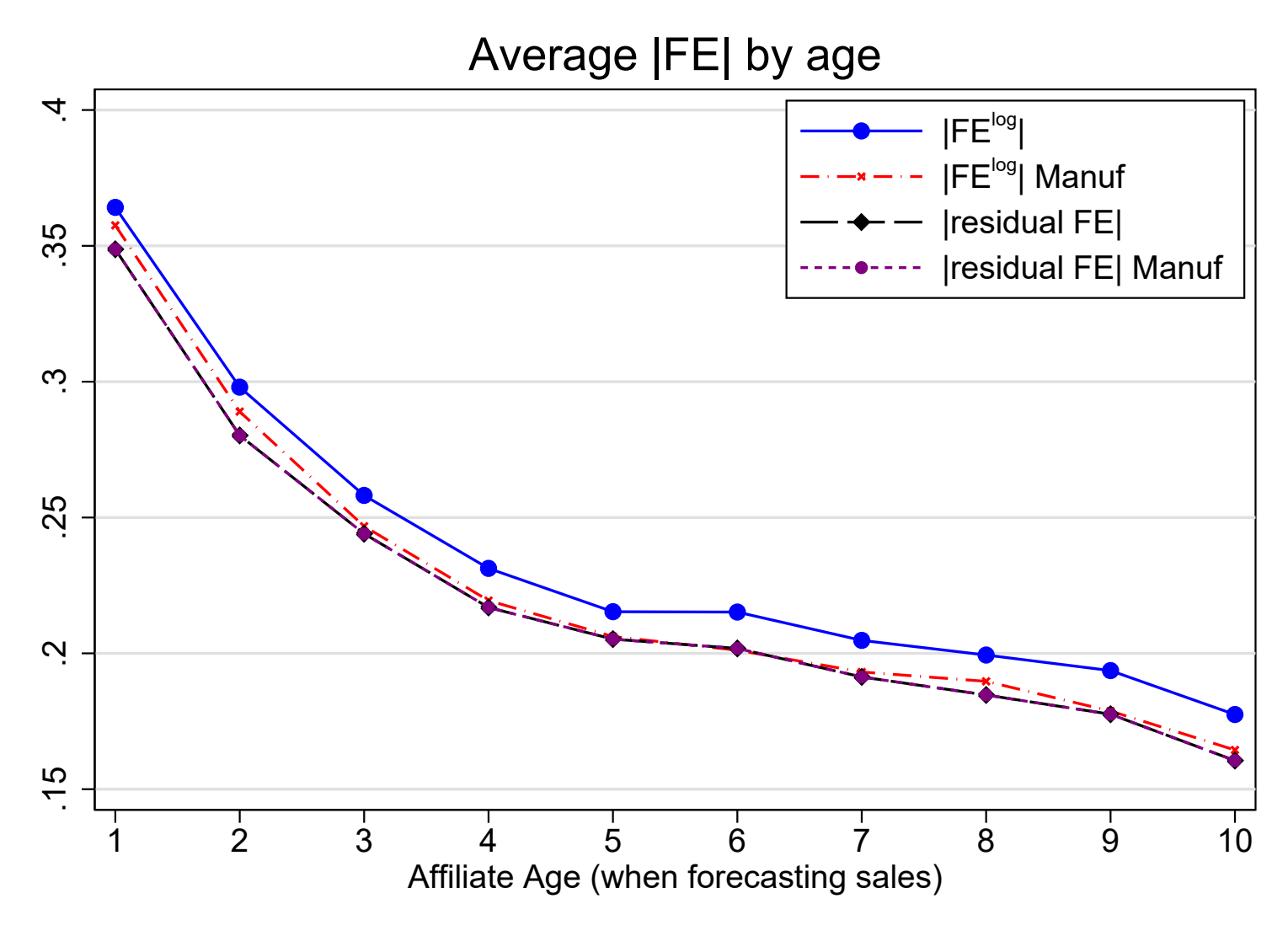
Fact 1: Firm-level uncertainty is positively correlated with aggregate uncertainty

▸ Regression

- $Var(FE)$ and $Var(\hat{\epsilon}_{FE})$ are correlated with country-level risk index (risk of economic crisis and change in political environment).



Fact 2: |FE| declines with firm age



Fact 3: previous export experience reduces |FE|

- Previous work suggests export experience reduces uncertainty in MP (Conconi et al., 16).

- Data and sample selection:
  - Examine first-time entrants into the host-country/region.
  - Focus on manufacturing parent firms and manufacturing or distributional-oriented affiliates (wholesalers + retailers). ▸ summary

Fact 3: previous export experience reduces $|FE|$

▸ Figure ▸ Robustness

Table 2: Forecast error and previous exporting

Dep.Var: $\lvert FE_{1,2}\rvert$	(1)	(2)	(3)	(4)
$Exp_{-1} > 0$	-0.159**			
	(0.065)			
$Exp_{-1} > 0$ or $Exp_{-2} > 0$		-0.151**		
		(0.064)		
Exp $Expe. > 0$			-0.132*	
			(0.070)	
Exp $Expe.$				-0.013**
				(0.006)
Industry FE	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes
N	553	561	658	658
R^2	0.486	0.499	0.472	0.472

Standard errors are clustered at parent firm level, * 0.10 ** 0.05 *** 0.01. Dependent variable is affiliates' initial forecast error, which is calculated as the absolute log deviation of the realized sales at age = 2 from the projected sales (predicted by an affiliate at age = 1). We only include affiliates that are first-time entrants into a particular host country. Exporting experience (Exp Expe.) is defined at the continent level for each parent firm. Each column head indicates the different measure of exporting experience used in the regression.

Fact 4: positive autocorrelation of FEs

▸ regressions with parent FEs

Table 3: Serial Correlation of Forecast Errors Made in Two Consecutive Years

	All Firms	Manufacturing	Survivors	Manufacturing & Survivors
corr. $(FE^{log}_{t-1,t}, FE^{log}_{t,t+1})$	0.137	0.136	0.170	0.167
N	96889	68440	15632	11166

Notes: $FE^{log}_{t-1,t}$ is the log deviation of the realized sales in year t from the projected sales in year $t-1$, while $FE^{log}_{t,t+1}$ is the log deviation of the realized sales in year $t+1$ from the projected sales in year t. Top and bottom one percent observations of forecast errors are trimmed. The manufacturing sample includes affiliates in manufacturing, wholesale or retail whose parent firms are in manufacturing. The survivor sample includes affiliates that continuously appeared in the sample from age 1 to age 7. All correlation coefficients are significant at 1% level.

Fact 4: age and positive autocorrelation of FEs: summary statistics

Table 4: Serial Correlation of Forecast Errors for Different Age Groups

	age 2-4	age 5-7	age ≥ 8
corr. $(FE^{log}_{t-1,t}, FE^{log}_{t,t+1})$	0.175^{***}	0.131^{***}	0.122^{***}
N	12524	14446	73183

Notes: $FE^{log}_{t-1,t}$ is the log deviation of the realized sales in year t from the projected sales in year $t-1$, while $FE^{log}_{t,t+1}$ is the log deviation of the realized sales in year $t+1$ from the projected sales in year t. Firm age refers to the age in year t. Top and bottom one percent observations of forecast errors are trimmed. The sample only includes affiliates in manufacturing, wholesale or retail whose parent firms are in manufacturing, i.e., the manufacturing sample. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Fact 5: Both lagged forecast and sales predict current sales

Table 5: Both Current Sales and Forecasts Predict Future Sales

Dep.Var: $\log(R_t)$	(1)	(2)	(3)	(4)	(5)
Sample:	All	All	All	Manufacturing	Manu. & Survivors
$\log(E_{t-1}(R_t))$	0.968***	0.716***	0.660***	0.725***	0.777***
	(0.002)	(0.011)	(0.013)	(0.012)	(0.018)
$\log(R_{t-1})$		0.254***	0.251***	0.246***	0.186***
		(0.010)	(0.016)	(0.011)	(0.016)
$\log(R_{t-2})$			0.072***		
			(0.008)		
Industry-year FE	Yes	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes	Yes
N	134110	132636	111447	91716	13198
R^2	0.939	0.947	0.955	0.950	0.938

Standard errors are clustered at parent firm level, * 0.10 ** 0.05 *** 0.01. Dependent variable is affiliates' log sales in period t. Regressors are affiliates' log forecasts about R_t at time $t-1$ and lagged log sales. Columns 1-3 include all firms. Column 4 only includes the manufacturing (or wholesale or retail) affiliates whose parent firms are in manufacturing. Column 5 further restricts to affiliates that have survived at least 7 years (from age one to age seven) in our sample.

◂ Robustness: domestic firms

Progress reports

Provide stylized facts for firm-level expectation, uncertainty and imperfect information.

1. Aggregate- and micro-level uncertainty covary.
2. Firm-level uncertainty declines with firm age and export experience.
3. Forecast errors are serially correlated (declining with age).

Future Agenda

Data: Japanese multinational enterprises (MNEs)

- We have a panel of "Head quarters (Japan) - foreign affiliate" pairs.
- We can track each foreign affiliate over time.
- foreign affiliates' sales forecasts.

Future Agenda

Data: Japanese multinational enterprises (MNEs)

- We have a panel of "Head quarters (Japan) - foreign affiliate" pairs.
- We can track each foreign affiliate over time.
- foreign affiliates' sales forecasts.

- **Sales destination: (1) domestic, (2) third countries, (3) Japan**

Future Agenda

Data: Japanese multinational enterprises (MNEs)

- We have a panel of "Head quarters (Japan) - foreign affiliate" pairs.
- We can track each foreign affiliate over time.
- foreign affiliates' sales forecasts.

- **Sales destination: (1) domestic, (2) third countries, (3) Japan**

[future] The impact of uncertainty faced by firms on their supply chains after Brexit.

[future] How the evolution of supply chains affects firm performance and productivity.