

Unravelling Deep Integration

Local Labour Market Effects of the Brexit Vote

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Setting

- ▶ The Brexit referendum introduced prospect of 'unravelling' of decades-long deep integration with the EU
- ▶ The prospect of leaving the Single Market created a threat of substantial and complex barriers to trade in services and (to a lesser extent) in goods
- ▶ Did the threat of future barriers matter for online job postings?

This paper

Question: How did the threat of future barriers to UK exports to the EU affect online job postings?

- ▶ Use 'near universe' of UK online job postings for 2015-2019 (BGT)
- ▶ Focus on local labour market exposure to prospective barriers
- ▶ 218 Travel to work areas (TTWAs), excl. Northern Ireland
- ▶ Consider trade in services and in goods
- ▶ Consider other key channels: exchange rate depreciation, immigration policy

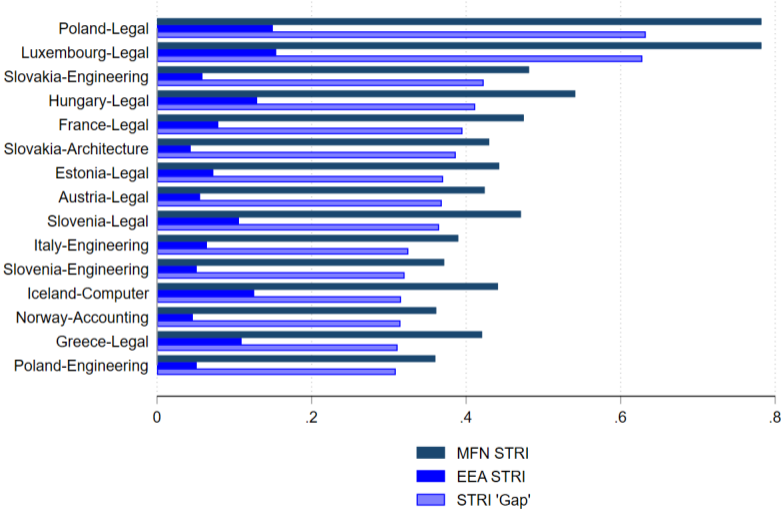
Brexit timeline

- ▶ 23rd Jan 2013: David Cameron declares he is in favour of an EU referendum
- ▶ **23rd Jun 2016: Brexit referendum**
- ▶ **29th Mar 2017: Invocation of Article 50**
- ▶ **12th July 2018: UK Government publishes its White Paper**
- ▶ 14th Nov 2018: The Withdrawal Agreement is agreed and published
- ▶ 31st Jan 2020: UK leaves the EU, entering transition period until the end of 2020
- ▶ 24th Dec 2020: Brexit trade deal agreed
- ▶ 1st Jan 2021: Transition period ended

OECD Services Trade Restrictiveness Index (STRI) for 2014

- ▶ Available at country-industry level
- ▶ Quantifies restrictions on services provision by (i) EEA countries, (ii) non-EEA WTO members
- ▶ Covers restrictions on foreign entry and movement of people, barriers to competition, regulatory transparency and other discriminatory measures
 - ▶ Examples: limits on foreign equity shares in local businesses, restrictions on cross-border mergers, product level regulations
- ▶ Calculate **the 'gap' between STRI within-EEA and STRI for third countries**
- ▶ Focus on professional services:
 - ▶ finance, insurance, legal, accounting, ICT, telecoms, engineering and architecture

OECD STRI country-sector pairs with highest EEA vs MFN barrier 'gap'



Notes: Raw OECD STRI scores from 2014

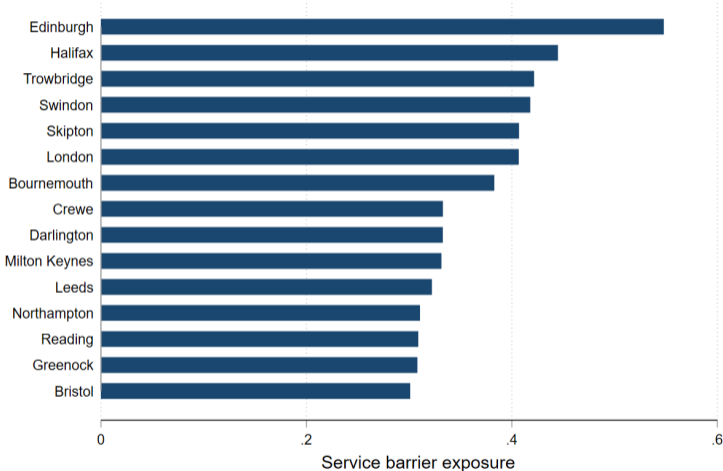
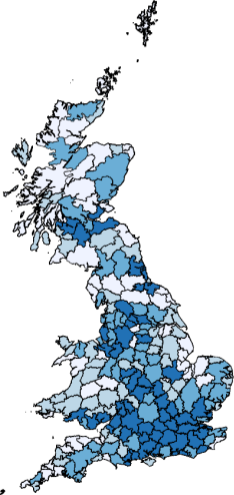
Professional services trade barrier exposure

$$prof_services_exposure_{j^{serv}} = \frac{Exports_{j^{serv},2015}}{L_{j^{serv},2015}} \times avg_STRI_gap_{j^{serv},2014} \quad (1)$$

$$prof_services_exposure_r = \sum_{j^{serv}} empl_share_{rj^{serv},2015} \times prof_services_exposure_{j^{serv}} \quad (2)$$

- ▶ Avg STRI gap $_{j^{serv},2014}$: difference between the 2014 MFN STRI and intra-EEA STRI for industry j^{serv} in EEA country c , weighted by UK exports to EEA country c in sector j^{serv} in 2015
- ▶ $Exports_{j^{serv},2015}$: UK exports from industry j^{serv} to the EEA in 2015
- ▶ $L_{j^{serv},2015}$: national employment in sector j^{serv} in 2015
- ▶ $empl_share_{rj^{serv},2015}$: industry j^{serv} share of TTWA r employment (BRES)

Professional services exposure by UK region



Baseline specification

$$\log(\text{job_postings}_{rt}) = \beta_0 + \beta_1 \text{trade_barrier_exposure}_r \times \text{post_vote}_t + \mathbf{X}_{rt} + \gamma_t + \gamma_r + \epsilon_{rt} \quad (3)$$

- ▶ Period: Jan 2015 - Dec 2019
- ▶ job_postings_{rt} : count of postings by TTWA r & month t
- ▶ post_vote_t : dummy for the post referendum period
- ▶ \mathbf{X}_{rt} : region-specific time-varying controls
- ▶ Fixed effects: year-month t and TTWA r
- ▶ Clustering: year-month t and TTWA r

Baseline results

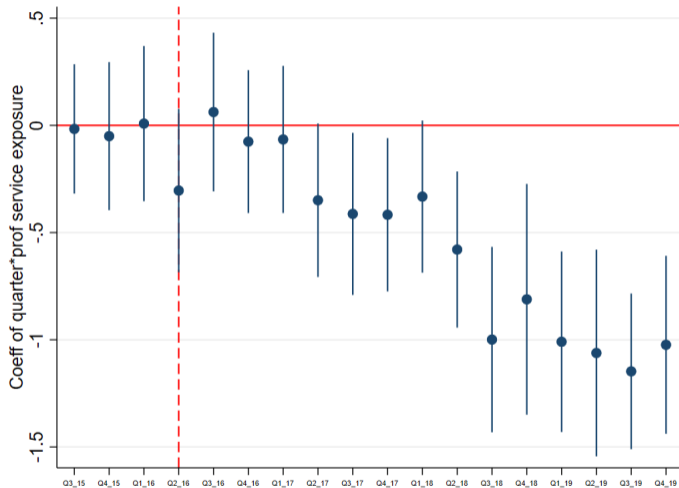
Dep variable: log postings	(1)	(2)	(3)	(4)	(5)
post vote * service barrier exposure	-0.538*** (0.132)	-0.540*** (0.132)	-0.559*** (0.134)	-0.553*** (0.127)	-0.557*** (0.133)
post vote * tariff exposure		-0.008 (0.033)	-0.029 (0.055)	-0.029 (0.055)	-0.029 (0.054)
export REER			-0.135 (0.146)	-0.136 (0.146)	-0.141 (0.146)
post vote * EU national share				-0.267 (0.861)	
post vote * EU8 national share					-0.885 (1.377)
Observations	12,780	12,780	12,780	12,780	12,780
Adjusted R-squared	0.984	0.984	0.984	0.984	0.984
TTWA FE	YES	YES	YES	YES	YES
Month-Year FE	YES	YES	YES	YES	YES

Notes: Standard errors two-way clustered at TTWA & month-year level

Baseline results magnitude

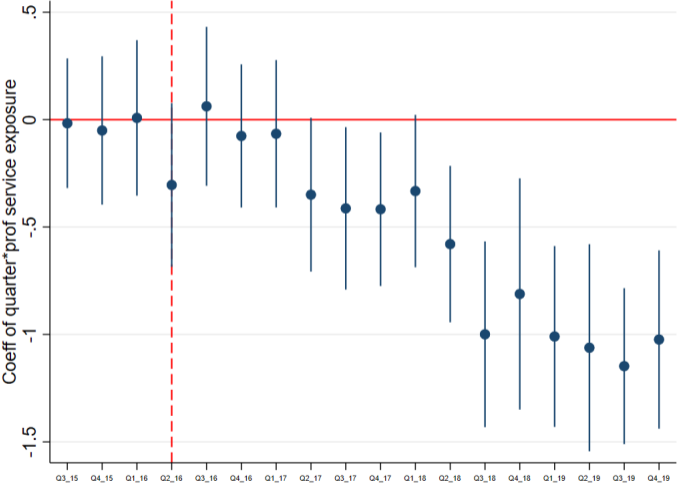
- ▶ Prof services exposure:
 - ▶ 1 sd increase in exposure (0.09) reduces postings by 4.95% (based on col 4)
 - ▶ Average number of monthly postings is 2,409 → a decline of 120 postings per month per TTWA
 - ▶ Aggregate effect: if all TTWAs had the 10th percentile exposure score, there would have been cumulatively approx. 1.5 million more postings over post vote period

Timing of the effects: 29th Mar 2017 Invocation of Article 50



Note: Quarters 1 & 2 of 2015 excluded. 95% confidence intervals displayed.

12th July 2018 UK Gov't publishes its White Paper ruling out mutual recognition as preferred option for financial services sector



Note: Quarters 1 & 2 of 2015 excluded. 95% confidence intervals displayed.

'A real blow': City group lashes out at Brexit white paper

TheCityUK also describes white paper as 'frustrating'

Katie Martin JULY 12 2018



The UK government's [preferred path forward](#) with the EU is “a real blow for the UK’s financial and related professional services sector”, the City of London Corporation said on Thursday.

White paper

- ▶ July 2018 publication of a white paper fleshing out Theresa May's proposal for Britain's future relationship with the EU
- ▶ The White paper "confirms that Britain would seek a "free trade area" for goods (...). But it also sets out plans for a **looser relationship on services**, which represent 80 per cent of the British economy, **including financial services**; the white paper says Britain would seek the 'freedom to chart its own path'."
- ▶ Quote from [FT article from 12th July 2018](#)

Impact on high vs low skill occupations

Dep variable: log postings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel (a) High skill					Panel (b) Low skill				
post vote * service barrier exposure	-0.637***	-0.635***	-0.649***	-0.642***	-0.647***	-0.280**	-0.283**	-0.297**	-0.298**	-0.296**
	(0.132)	(0.132)	(0.133)	(0.127)	(0.132)	-0.127	-0.127	-0.128	-0.122	-0.127
post vote * tariff exposure		0.00904	-0.00585	-0.00638	-0.00558		-0.0172	-0.0316	-0.0315	-0.0316
		(0.0322)	(0.0504)	(0.0503)	(0.0497)		-0.0373	-0.0557	-0.0555	-0.0557
export REER			-0.0972	-0.0981	-0.105			-0.0942	-0.0939	-0.0955
			(0.134)	(0.134)	(0.133)			-0.14	-0.14	-0.14
post vote * EU national share				-0.280					0.0788	
				(0.861)					-0.844	
post vote * EU8 national share					-1.119					-0.18
					(1.382)					-1.375
Observations	12,773	12,773	12,773	12,773	12,773	12,766	12,766	12,766	12,766	12,766
Adjusted R-squared	0.982	0.982	0.982	0.982	0.982	0.976	0.976	0.976	0.976	0.976
TTWA FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Month-Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Clustering	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM	TTWA-YM

Notes: Standard errors two-way clustered at TTWA & month-year level

Impact on postings for different occupations

Dep var: log SOC postings	1. Managers, Directors and Senior Officials	2. Professional Occupations	3. Associate Professional and Technical Occupations	4. Administrative and Secretarial Occupations	5. Skilled Trades Occupations
post vote * prof services exposure	-0.546*** (0.133)	-0.792*** (0.147)	-0.542*** (0.149)	-0.022 (0.133)	-0.239 (0.153)
post vote * tariff exposure	-0.042 (0.048)	0.058 (0.053)	-0.043 (0.057)	-0.055* (0.033)	-0.063 (0.043)
export REER	0.019 (0.029)	-0.018 (0.022)	0.030 (0.025)	0.044** (0.018)	0.060* (0.030)
post vote * EU national share	0.531 (0.850)	-1.077 (0.889)	0.002 (0.976)	0.625 (0.921)	2.231** (0.958)
	6. Caring, Leisure and Other Service Occupations	7. Sales and Customer Service Occupations	8. Process, Plant and Machine Operatives	9. Elementary Occupations	
post vote * prof services exposure	-0.170 (0.121)	-0.241 (0.151)	-0.182 (0.157)	-0.172 (0.174)	
post vote * tariff exposure	0.023 (0.040)	-0.048 (0.034)	-0.090** (0.041)	0.038 (0.078)	
export REER	-0.014 (0.017)	0.009 (0.023)	0.041 (0.025)	-0.014 (0.031)	
post vote * EU national share	-1.281 (0.938)	0.724 (0.932)	2.081** (0.906)	0.635 (0.984)	
Observations	12,780	12,780	12,780	12,780	
TTWA FE	YES	YES	YES	YES	
Month-Year FE	YES	YES	YES	YES	

Notes: 98.% of postings are assigned an SOC code. Standard errors two-way clustered at TTWA & month-year level

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Extensions and Robustness

- ▶ Zoom in on financial services using more detailed data on regional exports
- ▶ Excluding London [Table](#)
- ▶ Share controls [Table](#)
- ▶ Alternative tariff measures [Table](#)
- ▶ Intermediate import & import competing tariffs [Table](#)
- ▶ NTBs on goods [Table](#)

Summary

- ▶ UK areas more exposed to future EU barriers on services exports experienced a substantial reduction in online job adverts after the Brexit referendum relative to less exposed regions
- ▶ The impact was particularly acute for skilled jobs and professional occupations
- ▶ Robust to controlling for exchange rate depreciation and migrant presence

APPENDIX

Trade in goods: tariff 'threat'

- ▶ If no trade deal negotiated, UK trade with EU reverts to MFN levels
- ▶ At HS6 level: 37% are $>5\%$, 11% are $>10\%$, and 2% are $>15\%$
- ▶ Firms differentially affected by tariff uncertainty after vote depending on pre-referendum composition of products
- ▶ Focus on export tariff 'threat' but also look at intermediate import tariff 'threat' and prospective import protection
- ▶ Local labour markets differentially affected depending on pre-referendum composition of employment

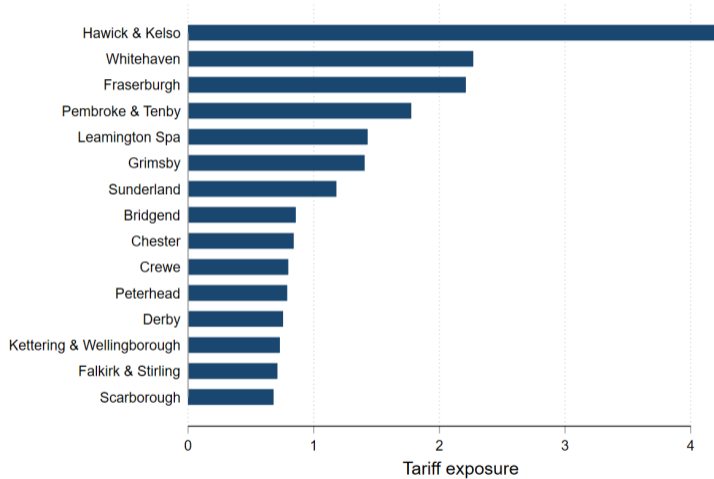
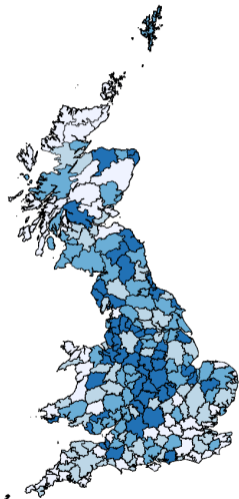
Export tariff exposure

$$tariff_exposure_{j^{manu},2014} = \frac{Exports_{j^{manu},2014}}{L_{j^{manu},2015}} \times avg_MFN_tariff_{j^{manu},2014} \quad (4)$$

$$tariff_exposure_r = \sum_{j^{manu} \in r} empl_share_{rj^{manu},2015} \times tariff_exposure_{j^{manu},2014} \quad (5)$$

- ▶ $avg_MFN_tariff_{j^{manu},2014}$: export-weighted average EU MFN ad valorem tariff across all HS6 products mapped to sector j^{manu}
- ▶ $empl_share_{rj^{manu},2015}$: industry j^{manu} share of TTWA r employment
- ▶ $L_{j^{manu},2015}$: national employment (4-digit SIC sector j^{manu})
- ▶ $Exports_{j^{manu},2014}$: UK exports to the EU in 2014

Export tariff exposure by UK TTWA



Other channels: Exchange rate

- ▶ Large overnight depreciation of the pound with respect to the dollar and euro after the referendum
- ▶ Construct an exchange rate control based on the real effective exchange rate (REER):

$$E_{rt}^X \equiv \sum_j \text{empl_sh}_{jr,2015} \times \frac{\text{Exports}_{j,2014}}{L_{j,2015}} \times REER_t \quad (6)$$

Other channels: EU immigration

- ▶ Employment share of EU and Eastern EU nationals before the vote \times *post_vote*
- ▶ Use data from the Annual Population Survey (APS) in 2015: a continuous household survey
- ▶ Provides breakdown of the share of employment of EU and Eastern EU nationals in each UK region and SIC1 industry (11 regions excluding Northern Ireland)
- ▶ Use data on the SIC1 (k) employment composition of each TTWA in a given region to construct the employment share measures

$$EU_national_share_r = \sum_k empl_share_{kr} \times \frac{EUworkers_{k,reg}}{Totalworkers_{k,reg}} \quad (7)$$