Household Responses to Trade Shocks[a]

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Motivation

Large increases in Chinese exports in the 2000s.

Lots of work on

- Employment effects in local labour markets in Western countries.
  (Autor et al. (2013), Dauth et al. (2014), Foliano and Riley (2017))

- Earnings effects for employees. (Autor et al. (2014), De Lyon & Pessoa (2021)).

Less work on

- Impacts on families (Autor et al. (2019), Keller and Utar (2022), Giuntella et al. (2022))

- Partner responses and added worker effects

- Adjustment along self-employment and retirement margins

This Paper

- Study impacts and responses for workers affected by growing Chinese import competition
    - Exploit differences in exposure to shocks (2001-2011) among narrow industries
    - Attention to heterogeneity by age and gender

- Use large-scale data from linked decennial censuses in England and Wales (ONS Longitudinal Study)

- Includes data on
    - Labour force participation (including reasons for inactivity).
    - Whether employed, solo-self-employed, self-employed with employees.
    - Marital status, children at household.
    - On LS members *and* other individuals in their households $\implies$ added worker effects

Findings

1. **Different effects of the shock for men and women**
   - All workers: reallocate out of manufacturing.
   - Men: self-employment acts as a buffer against job loss, delay retirement.
   - Women: no increase in self-employment or delay in retirement.

2. **Families**
   - Women below 45: exposure to import competition reduces the likelihood of divorce or of living with a new partner. More financially reliant on the current partner?
   - Men below 45: No change in divorce or marriage

3. **Partners/Added worker effects**
   - Men increase activity if partners are exposed to import competition (esp. at older ages).
   - No added worker effects for female partners.
   - Older men increase activity if household shocked, regardless of who is exposed.

Related Literature

1. **Labour market effects of trade shocks**

   Autor et al. (2013, 2014, 2019); Dauth et al. (2014, 2021); Balsvik et al. (2015); Utar (2014, 2018); Bloom et al. (2016); De Lyon and Pessoa (2021); Keller and Utar (2022); Giuntella et al. (2022)

   - Different response margins (retirement, self-employment) and their use by gender

2. **Empirical literature on 'added worker effects'**

   Layard et al. (1980); Heckman and Macurdy (1980, 1982); Lundberg (1985); Maloney (1987,1991); Spletzer (1997); Cullen and Gruber (2000); Bredtmann et al. (2018); Halla et al. (2020)

   - Added worker effects in the context of structural changes
   - Relevant for men too

3. **Economic shocks and the role of self-employment ('forced entrepreneurs')**

   Babina (2020); Hacamo and Kleiner (2022)

   - Self-employment margin important - typically not observed in matched EE data

DATA

EMPIRICAL STRATEGY

MAIN RESULTS

    Individual Labour Market Responses

    Family outcomes

    Added Worker Effects

CONCLUSIONS

DATA

ONS Longitudinal Study (LS) Data

- The LS: linked census and life events data for 1% sample of the population of England and Wales (1971, 1981, 1991, 2001, 2011).

- Includes socio-demographic variables, employment status, occupation, industry, marital status, and location (does not include **earnings**).

Advantages

- Panel: tracks individuals across different censuses.
- Includes self-employed and those who leave the labour force.
- Contains info on co-residents of study members.
- Large sample (mandatory participation) with little attrition.
  - 88% of LS members in the 2001 census successfully matched to records 2011 census (excluding those known to have died or emigrated)

Other Data Sources

To construct exposure to import competition, we also use

1. Trade flows (imports and exports) $\Rightarrow$ UN Comtrade Database.

    - Mapping: commodity codes $\rightarrow$ CPA codes $\rightarrow$ SIC92 codes.

2. Industry turnover $\Rightarrow$ Business Structure Database (BSD)
    - Universe of firms above the VAT threshold

EMPIRICAL STRATEGY

Industry Shocks

- Exploit differences in import competition for workers in different industries following rapid rise in China's manufacturing exports (Autor, Dorn, Hanson, and Song (2014)).

UK Import Exposure

$$IE_{j,2011-2001}^{UK} = \frac{\Delta Imports_{j,2011-2001}^{China \rightarrow UK}}{Turnover_{j,2001} + Imports_{j,2001} - Exports_{j,2001}} \quad (1)$$

- Workers' initial industry is the three-digit SIC92 code of their employer in 2001.

- Chinese imports concentrated in low-tech manufacturing industries such as textiles, furniture, and machinery production.

Industries Most Exposed to Chinese Import Competition

- Games and Toys
- Luggage, Handbags
- Footwear
- Leather
- Other Transport Equipment
- Sports Goods
- Wearing Apparel
- Domestic Appliances
- Furniture

- Radio, TV and Communication Equipment
- Office Machinery and Computers
- Textiles
- Cutting, Shaping and Finishing of Stone
- Musical Instruments
- Rubber Products
- Refractory Ceramic Products
- Electrical Machinery

Estimation Model

- Compare changes in outcomes for workers with similar characteristics but initially employed in industries with different levels of exposure.

Baseline Specification

$$\Delta Y_{ij,t_1-t_0} = \alpha + \beta IE^{UK}_{j,t_1-t_0} + \delta X_{ij,t_0} + \gamma^{occ} + \gamma^{ind,one-digit} + \gamma^{ttwa} + \epsilon_{ij,t_1-t_0} \qquad (2)$$

- Baseline specification controls for age, gender, and foreign-born status, and fixed effects for initial (two-digit) occupation, location (TTWA), and broad industry sector.

- Cluster standard errors at the level of three-digit industries.

Identification

- Concern - domestic demand changes simultaneously affect imports and employment.

Import Exposure

$$\widetilde{IE}_{j,2011-2001} = \frac{\Delta Imports_{j,2011-2001}^{China \rightarrow Other}}{Turnover_{j,1997} + Imports_{j,1997} - Exports_{j,1997}} \tag{3}$$

- IV strategy - use increase in Chinese imports to other high-income countries (Australia, Canada, Denmark, France, Germany, Italy, Japan, Spain, Switzerland, and the US)

- Identifying assumption: no correlated demand or technology shocks across high-income countries (Autor, Dorn, Hanson, and Song (2014)).

Manufacturing Employment and Import Competition, OECD Countries (Source: Figure 4 in Dorn and Levell (2021))
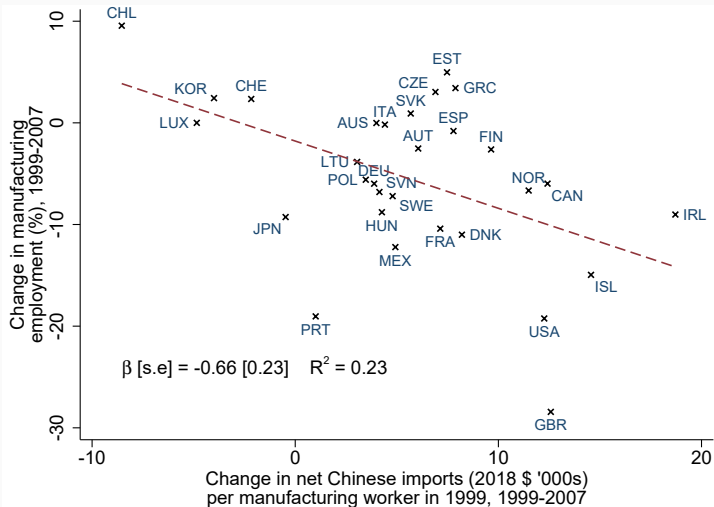
MAIN RESULTS

Individual Labour Market Responses

- Effects of import competition on changes in outcomes from 2001 to 2011 (net flows) for individual workers.

    - One unit - exposure change from 25th percentile of exposure among manufacturing workers to 75th percentile

- Look at change in manufacturing employment, unemployment, employment, self-employment, and activity (sum of previous three)

Individual Labour Market Responses: Men

⟩⟩ Self-Employment: Solo vs With Employees   ⟩⟩ Retirement

	Δ manuf	Δ unempl	Δ empl	Δ self-empl	Δ active
Panel A. Young Men (aged 18-44 in 2001)					
Import Exposure	-8.946***	0.870**	-2.041***	0.766**	-0.405**
	(2.520)	(0.357)	(0.686)	(0.401)	(0.206)
Observations	56,472	56,472	56,472	56,472	56,472
Panel B. Old Men (aged 45-59 in 2001)					
Import Exposure	-5.018**	0.717**	0.564	1.018*	2.298**
	(2.087)	(0.313)	(0.972)	(0.593)	(0.895)
Observations	27,155	27,155	27,155	27,155	27,155

Notes: Standard errors are clustered at the (SIC92) three-digit industry level. *p < 0.1, **p < 0.05, ***p < 0.01. Source is ONS Longitudinal Study.

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Individual Labour Market Responses: Women

	Δ manuf	Δ unempl	Δ empl	Δ self-empl	Δ active
Panel C. Young Women					
Import Exposure	-6.268***	0.317	-0.312	-0.685	-0.679
	(2.276)	(0.441)	(0.596)	(0.459)	(0.421)
Observations	56,800	56,800	56,800	56,800	56,800
Panel D. Old Women					
Import Exposure	-4.843*	-0.425**	0.430	-0.526	-0.521
	(2.726)	(0.199)	(1.254)	(0.443)	(1.070)
Observations	28,370	28,370	28,370	28,370	28,370

Notes: Standard errors are clustered at the (SIC92) three-digit industry level. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Source is ONS Longitudinal Study.

Individual Labour Market Responses: Summary

- Workers more likely to exit manufacturing (with the majority reallocating to non-manufacturing sectors) ⟩ Worker Reallocation

- Men: more unemployment in 2011, more self-employment, more activity at older ages due to less retirement.

- Women: no sig. effects on labour force participation or rates of self-employment.

Effects of Import Competition on Family Outcomes

- Changes in family formation and family stability important mechanisms by which labour market shocks affect broader social outcomes (including for later generations).

Recent Evidence Looking at Marriage/Fertility

1. US: family breakdown, lower fertility (Autor et al. (2019)).

2. Denmark: 'retreat to family', lower divorce rates for women, higher fertility (Keller and Utar (2022)).

3. Germany: import exposure $\implies$ lower fertility, export exposure $\implies$ higher fertility. Reduced divorce rates for women (Giuntella et al. (2022)).

Effects of Import Competition on Family Outcomes: Women

	Δ married (if unmarried)	Δ divorced (if married)	Δ new partner (if couple)	Δ fertility (everyone)
Panel A. Young Women (aged 18-44 in 2001)				
Import Exposure	-0.083	-2.041***	-1.201***	0.014
	(1.211)	(0.655)	(0.458)	(0.971)
Observations	28,716	28,126	30,698	56,842
Panel B. Old Women (aged 45-59 in 2001)				
Import Exposure	1.906	-0.097	0.013	0.666
	(1.475)	(0.461)	(0.320)	(0.480)
Observations	6,878	21,498	19,647	28,376

Notes: Standard errors clustered at the three-digit industry level are reported in parentheses *p < 0.1, **p < 0.05, ***p < 0.01. Source is ONS Longitudinal Study.

Effects of Import Competition on Family Outcomes: Men

	Δ married (if unmarried)	Δ divorced (if married)	Δ new partner (if couple)
Panel A. Young Men			
Import Exposure	0.428	0.216	0.651
	(1.122)	(0.693)	(0.553)
Observations	29,854	26,648	30,699
Panel B. Old Men			
Import Exposure	-3.218***	0.754	-0.856
	(1.237)	(0.768)	(0.618)
Observations	5,233	21,930	21,184

Notes: Standard errors clustered at the three-digit industry level are reported in parentheses *p < 0.1, **p < 0.05, ***p < 0.01. Source is ONS Longitudinal Study.

Effects of Import Competition on Family Outcomes: Summary

- No evidence for the effects on the marriage rates of young men who were initially unmarried, or on the divorce rates of young men who were initially married.

  - Contrasts with Autor et al. (2019) ...
  - ... but in line with findings from other European studies (Denmark, Germany)
    (Keller and Utar (2022); Giuntella et al. (2022))

- (But note lower marriage rate for older unmarried men)

- Two possibilities (understanding US vs Europe):
  - family breakdown and other social impacts identified in US not inevitable/depend on context?
  - Differences in research design?

Added Worker Effects

- Can also ask how *partners* of those directly exposed to rising import competition change their labour supply (if any).

- Focus on "stable" couples only
    - Individuals with partners in both waves and whose partners have consistent characteristics

- Additionally control for partner's industry and occupation.

Family Labour Supply Responses to Import Competition: Men

| | OWN RESPONSE | | | | | PARTNER RESPONSE | |
	Δ manuf	Δ unempl	Δ empl	Δ self-empl	Δ active	Δ partner in work	Δ partner active
Panel A. Men (aged 18-59 in 2001)							
Import Exposure	-7.715***	0.580**	-0.697	1.298***	1.182***	-0.764	-0.581
	(2.153)	(0.236)	(0.657)	(0.395)	(0.402)	(0.616)	(0.433)
Observations	51,302	51,302	51,302	51,302	51,302	51,302	51,302
Panel B. Young Men (aged 18-44 in 2001)							
Import Exposure	-9.406***	0.628**	-2.336***	1.622***	-0.085	-0.907	-0.457
	(2.503)	(0.312)	(0.677)	(0.502)	(0.225)	(0.553)	(0.565)
Observations	30,277	30,277	30,277	30,277	30,277	30,277	30,277
Panel C. Old Men (aged 45-59 in 2001)							
Import Exposure	-5.917***	0.444	1.603	0.722	2.770***	-0.807	-1.018
	(2.215)	(0.304)	(1.322)	(0.746)	(0.945)	(1.336)	(1.239)
Observations	21,025	21,025	21,025	21,025	21,025	21,025	21,025

Notes: Standard errors clustered at the three-digit industry level are reported in parentheses. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Source is ONS Longitudinal Study.

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Observations	21,025	21,025	21,025	21,025	21,025	21,025	21,025

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Family Labour Supply Responses to Import Competition: Women

	OWN RESPONSE					PARTNER RESPONSE	
	Δ manuf	Δ unempl	Δ empl	Δ self-empl	Δ active	Δ partner in work	Δ partner active
Panel A. Women (aged 18-59 in 2001)							
Import Exposure	-6.424***	-0.251	-0.212	-0.646*	-1.108	1.249***	1.064***
	(2.436)	(0.237)	(0.906)	(0.359)	(0.740)	(0.403)	(0.399)
Observations	49,767	49,767	49,767	49,767	49,767	49,767	49,767
Panel B. Young Women (aged 18-44 in 2001)							
Import Exposure	-6.820***	0.091	-0.353	-0.711	-0.973	1.092**	0.703**
	(2.364)	(0.335)	(0.810)	(0.455)	(0.606)	(0.506)	(0.329)
Observations	30,289	30,289	30,289	30,289	30,289	30,289	30,289
Panel C. Old Women (aged 45-59 in 2001)							
Import Exposure	-5.720**	-0.779***	0.103	-0.598	-1.273	1.627*	1.802**
	(2.914)	(0.227)	(1.824)	(0.513)	(1.711)	(0.848)	(0.811)
Observations	19,478	19,478	19,478	19,478	19,478	19,478	19,478

Notes: Standard errors clustered at the three-digit industry level are reported in parentheses.*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Source is ONS Longitudinal Study.

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- **Where does the increase in male activity come from?**
    - Focusing on those initially active only gives similar results
    - $\implies$ reduced flows from activity to inactivity (esp. at older ages)

- **The Role of Children**
    - Effects for women similarly negative and not significant for those with and w/o children

Family Labour Supply Responses to Import Competition: Additional Results (2)

- **Intensive vs Extensive Margins**
  - Men: those initially full-time less likely to go part-time work when female partners exposed to import competition.
  - Women: effects on full-time employment negative and not significant.

- **Correlated shocks across partners?**
  - Cross partner correlation in exposure low on average.
  - Restricting the sample to cases where partners are employed in non-tradable industries gives similar results.

Family Labour Supply Responses to Import Competition

- Limited added worker effects for women consistent with some prior work (Goux et al. (2014), Halla et al. (2020))

- Consistent with 'breadwinner norm' (Bertrand et al. (2015))?

- Or disincentives in tax and benefit system (Bredtmann et al., (2018))?

Robustness Checks

1. Industry-specific trends that predate the rise of Chinese import competition
2. Import exposure and the immigration boom in the 2000s
3. Rising import competition with Eastern Europe countries
4. Workers' exposure to rising export demand from China
5. The role of the industry and occupation controls
6. Alternative country groups for the construction of the instrument

CONCLUSIONS

Conclusions

- Use linked census data to investigate the responses of households in England and Wales to increased Chinese import competition in the 2000s.

- Men and women do not respond to trade shocks in the same way, nor do they respond in the same way to shocks affecting their partners.
    - Different constraints - social norms?

- Our findings underscore the significance of studying **household responses** and the **self-employment** margin to understand impacts of trade shocks.
    - Self-employment plays similar role to informality in developing countries
      (Dix-Carneiro et al. 2021)
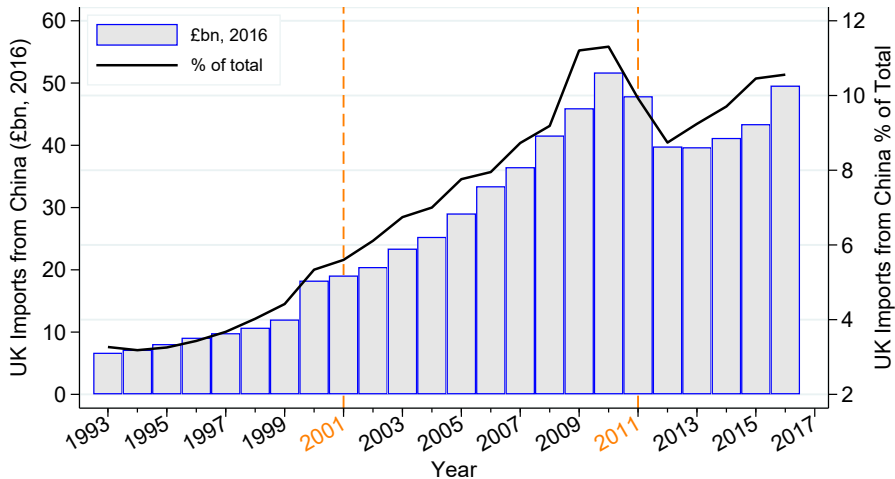   - Single households may be more in need of public insurance

THANK YOU!!
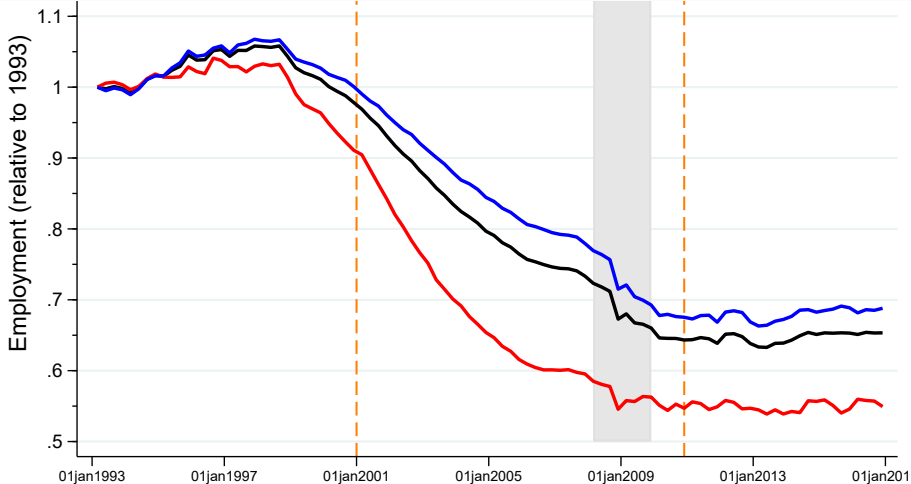
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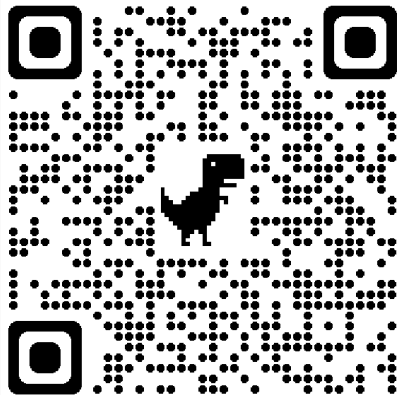
APPENDIX

UK Imports from China (1993-2016)

Source is UN Comtrade Database

▶▶ Go to Introduction

Manufacturing Employment Decline (1993-2016)

Source: ONS -- UK Total Employee Jobs by Industry, Quarterly Data
More Trade-Exposed Manuf: Textiles, Wearing Apparel, Leather, Footwear, Office Machinery, Electrical Machinery,
Radio & TV equipment, Other Transport Equipment, Furniture, Games and Toys
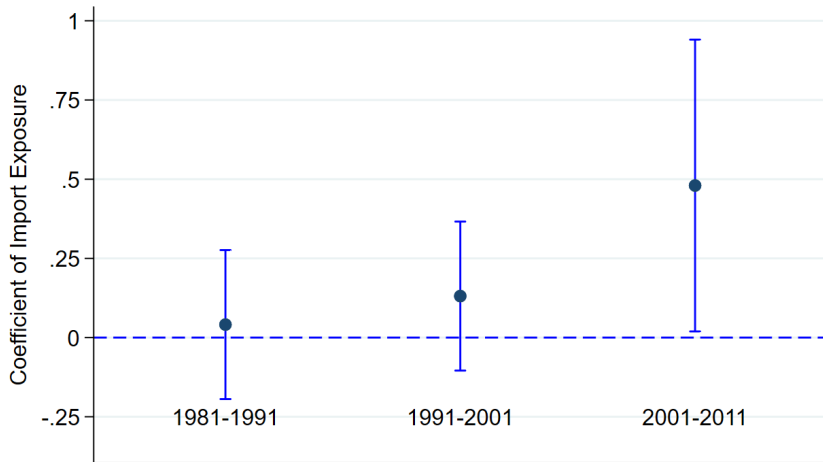
Import Competition and Manufacturing Employment
Estimates and 95% Confidence Intervals
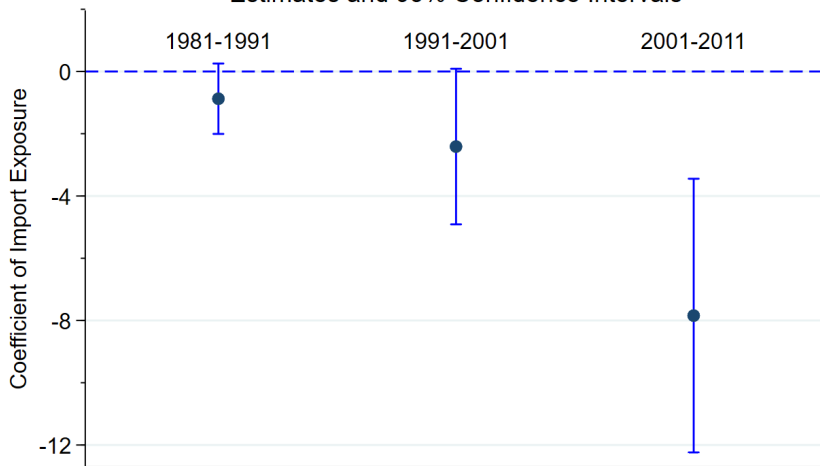
Sample size is 178,082 for 1981-1991; 83,800 for 1991-2001; 168,797 for 2001-2011
Source is ONS Longitudinal Study

Import Competition and Unemployment
Estimates and 95% Confidence Intervals

Sample size is 176,985 for 1981-1991; 83,786 for 1991-2001; 168,797 for 2001-2011
Source is ONS Longitudinal Study

Table 1: Import Exposure and Labour Reallocation

	Δ low-skill	Δ blue-collar	Δ white-collar
	Panel A. All		
Import Exposure	1.465***	-2.056***	0.590
	(0.444)	(0.633)	(0.789)
Observations	133,605	133,605	133,605
	Panel B. Men		
Import Exposure	1.172**	-2.708***	1.536*
	(0.468)	(0.811)	(0.851)
Observations	68,875	68,875	68,875
	Panel C. Women		
Import Exposure	1.151*	0.594	-1.745**
	(0.611)	(0.531)	(0.816)
Observations	64,730	64,730	64,730

Notes: Standard errors clustered at the three-digit industry level are reported in parentheses. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Source is ONS Longitudinal Study.

Table 2: Import Exposure and Types of Self-Employment

	(1) SE	(2) Solo SE	(3) SE with employees
Panel A. Men			
Import Exposure	0.897**	0.577**	0.320*
	(0.371)	(0.257)	(0.173)
Sample Size	83,627	83,627	83,627
Panel B. Young Men			
Import Exposure	0.766***	0.428	0.338*
	(0.401)	(0.301)	(0.182)
Sample Size	56,472	56,472	56,472
Panel C. Old Men			
Import Exposure	1.018*	0.721*	0.296
	(0.593)	(0.435)	(0.319)
Sample Size	27,155	27,155	27,155

Notes: Standard errors clustered at the three-digit industry level reported in parentheses. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. Source is ONS Longitudinal Study.

Table 3: Import Exposure and Economic (In)activity

	Δ inactivity	Δ retired	Δ studying	Δ at home	Δ sickness	Δ other
	Panel A. Young Men					
Import Exposure	0.405**	-0.036	-0.069	0.257**	0.111	0.143
	(0.206)	(0.121)	(0.073)	(0.112)	(0.167)	(0.102)
Observations	56,472	56,472	56,472	56,472	56,472	56,472
	Panel B. Old Men					
Import Exposure	-2.298**	-3.472***	-0.057	0.590**	0.079	0.562**
	(0.895)	(0.856)	(0.041)	(0.234)	(0.356)	(0.226)
Observations	27,155	27,155	27,155	27,155	27,155	27,155

Notes: Standard errors clustered at the three-digit industry level reported in parentheses. $*p < 0.1$, $**p < 0.05$, $***p < 0.01$. Source is ONS Longitudinal Study.