

# City-REDI

## Policy Briefing Series

CITY  
REDI



May  
2019

## Brexit Employment Risks by Occupation

Pieter IJtsma and Bart Los

University of Groningen, Faculty of Economics and Business  
Members of City-REDI's *the UK in a Changing Europe* team

### Summary

Brexit will cause impediments to exports from the UK to the EU. These will affect UK sectors to different extents. Some sectors sell large shares of their output to EU markets, while others do not. These differences have an impact on the degree to which specific occupational types of employment are exposed to trade risks associated with Brexit. Using well-established methods based on global input-output tables (which quantify the world's production structure) and detailed data on employment by occupational group and industry, we develop an occupational risk indicator.

Focusing on broad occupational groups, we find that almost 12 per cent of UK employment of “skilled agricultural, forestry and fisheries workers” is exposed to Brexit’s export risks. The second most exposed group are “plant and machine operators”(11 per cent). Among the broad groups, “services and sales workers” are least exposed (3 per cent). Among occupations defined at a more fine-grained level, employment of veterinary workers is most exposed (36 per cent). Finally, risk levels for male and female workers are different: the risk indicator for male employment is 8 per cent, whereas it amounts to 5 per cent for female employment.

## Research Context

This research is part of a project subsidized by the UK's Economic and Social Research Council looking at **the Economic Consequences of Brexit on the UK, its Regions, Sectors and its Cities**. This project is part of the umbrella initiative **The UK in a Changing Europe**. The project is coordinated by the City-REDI institute at the University of Birmingham with research partners at the University of Sheffield, the University of Groningen (The Netherlands), Erasmus University Rotterdam (The Netherlands) and the PBL Netherlands Environmental Assessment Agency in the Hague (The Netherlands).

## Policy Context

By now, only the most ardent Brexiteers believe that Brexit of whatever type will have positive consequences for the UK. Negotiators discussing options for future relationships between the UK and the EU and politicians contemplating support for revocation of Article 50 should have accurate indications of the economic risks associated with the decreased opportunities for UK-based businesses to export to the EU.

This Policy Briefing complements findings in Los et al. (2017) and in Chen et al (2018). The latter paper focused (among other things) on the extent to which economic activity and labour income in UK *regions* are exposed to export effects of Brexit, while Los et al. (2017) considered exposure to these effects of economic activity in UK *industries*. In this brief, we discuss the exports-reducing effects of Brexit on employment of workers with specific *professions*.

Workers with a specific occupation who get fired might be successful in finding a job in which they would perform similar tasks, but in a different industry. If Brexit endangers employment of such workers in various industries simultaneously, however, finding a new job is much more difficult. Policies regarding the retraining of such workers to obtain the skills required for occupations that remain in relatively high demand might be needed.

## Method and Data

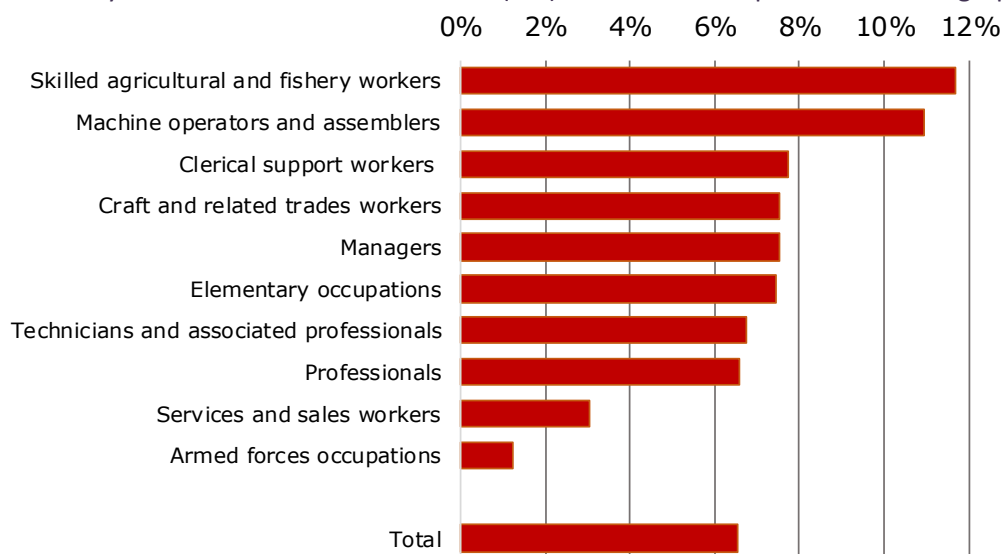
The methodology used to arrive at the risk indicators presented here has been discussed extensively in Los and Timmer (2018). We use an adapted version of their VAX-D statistic. It does not focus on value added like VAX-D, but on employment by occupational type. It quantifies the number of jobs in the UK economy that are dependent on exports from the UK to EU countries. We obtain the risk indicator by dividing this number of EU-exports dependent jobs by the total number of jobs of this occupation in the UK (details: [http://www.rug.nl/staff/b.los/Occ\\_Risk.pdf](http://www.rug.nl/staff/b.los/Occ_Risk.pdf)).

It is important to stress that our indicator also takes indirect effects into account. A specific type of worker might not be employed intensively by industries selling to the EU, but might produce output that is sold mainly to exporting industries. Quantifying such indirect effects requires the use of input-output tables. We use data from WIOD, release 2016 (Timmer et al., 2016). The tables in this database provide information about the global production structure for 55 industries in each of 43 countries (plus the "Rest of the World").

We used data on UK employment by industry and occupation, updated from Timmer et al. (2019). The indicators have been computed for 2013, the most recent year for which all data is available.

# Risk Indicators

We computed the risk indicators at two levels of detail. We first considered the ten “major” occupational groups as defined by the International Labour Office (ILO). The results are presented in the graph below.



For the UK economy as a whole, the exposure index amounts to 6.6%, but this figure hides a lot of variation across occupations. Not surprisingly, we find that the highest risks are faced by occupations that are almost exclusively employed in agriculture, fisheries and manufacturing. For these occupations, about 11-12% of jobs are at risk due to Brexit-related reductions in exports. Only slightly more than 3% of services and sales workers’ jobs are at risk.

The results for the major groups in the graph hide a lot of variation. Legal professionals (who often work in exporting firms or in firms selling to exporters), for example, are in the same major group as medical doctors. If we consider ILO’s more fine-grained “minor” occupational groups, we find that *veterinary technicians* and *veterinarians* face the highest risks: 35-37%. These are followed by *telecommunications and broadcasting technicians* (21%) and *rubber, plastic and paper products machine operators* (19%).

Some of these “minor” groups are small in terms of the number of jobs involved. The table on the right gives the top-10 of most exposed groups containing at least a quarter of a million jobs.

Architects, planners, surveyors and designers	14%
Manufacturing labourers	13%
Finance professionals	11%
Sales and purchasing agents and brokers	11%
Sales, marketing and public relations professionals	11%
Engineering professionals (excluding electrotechnology)	11%
Machinery mechanics and repairers	11%
Financial and mathematical associate professionals	10%
Business services and administration managers	10%
Software and applications developers and analysts	10%

The table reveals that the set of occupations at highest risk constitute a mixed bag, in terms of both skill levels and main sector of employment.

Given that male and female employment are not identically distributed over occupations, the economy-wide risk levels for men and women differ. They amount to 8% and 5%, respectively.

## *Risk measurement versus forecasting*

We present indications of the risks associated with Brexit-induced reductions in UK-EU exports. These indications have relevance and should be taken into account in policy debates. It is important, however, to note explicitly that readers should *not* view our risk indicators as forecasts of what will happen to employment after the UK leaves the EU. There are several reasons for this.

First, UK-EU exports will not disappear altogether. The reduction of exports depends on the future relationship between the two parties involved. We also do not take into account that the UK might be able to strike better trade deals with non-EU countries (most economists think that such mitigating effects will be minor). Second, we focus on reduced exports, while imports from the EU will decline as well. After Brexit, UK users will purchase part of these products domestically. Third, workers might accept lower wages in return for continued employment. These three issues imply that parts of the risks will not materialize, although the reduced availability of imports from the EU might also lower the competitiveness of UK exporters.

Brexit might also affect employment in ways not directly related to trade. First, various multinational companies use the UK as their main hub to supply Europe. Such companies could decide to disinvest in the UK. In such cases, not only UK employment associated with exports to the EU will decrease. Demand for output for British customers will also be reduced, because the UK market will be served from locations elsewhere. Second, our risk indicators include the risks associated with production in supply chains. Other types of indirect effects are not taken into account, however. Lower exports to the EU might cause lower investment levels in the UK itself, because UK businesses need less production capacity. Third, higher unemployment due to reductions in exports might exert a downward pressure on consumption demand. We do not include such behavioural effects, because they require strong modelling assumptions. Still, these effects could add to the exports-related risks of Brexit as documented in this note.

## Sources

**Chen, W., B. Los, P. McCann, R. Ortega-Argilés, M. Thissen and F. van Oort (2018)**, “The Continental Divide? Economic Exposure to Brexit in Regions and Countries on Both Sides of the Channel”, *Papers in Regional Science*, 97, 25-54.

**Los, B., W. Chen, P. McCann and R. Ortega-Argilés (2017)**, “An Assessment of Brexit Risks for 54 Industries: Most Services Industries are also Exposed”, City-REDI Policy Briefing Series (December 2017), Birmingham.

**Los, B. and M. Timmer (2018)**, “Measuring Bilateral Exports of Value Added: A Unified Framework”, NBER Working Paper 24896, Cambridge MA: NBER.

**Timmer, M., B. Los, R. Stehrer and G. de Vries (2016)**, “An Anatomy of the Global Trade Slowdown based on the WIOD 2016 Release”, GGDC Research Memorandum 162, Groningen: GGDC.

**Timmer, M., S. Miroudot and G. de Vries (2019)**, “Functional Specialization in Trade”, *Journal of Economic Geography*, 19, 1-30.

## Details of authors

**Pieter IJtsma** and **Bart Los** are lecturer and professor, respectively, at the Faculty of Economics and Business of the University of Groningen. Both are members of the Groningen Growth and Development Centre (see <http://www.rug.nl/ggdc/>). E-mail correspondence can be addressed to [b.los@rug.nl](mailto:b.los@rug.nl).