



# The Economic Impacts of Brexit in Europe

## **Brexit Competitiveness Challenges**

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# The Implications of Brexit for UK and EU Regional Competitiveness

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How does Brexit impact on competitiveness of  
(firms in) regions?

We distinguish Brexit-related:

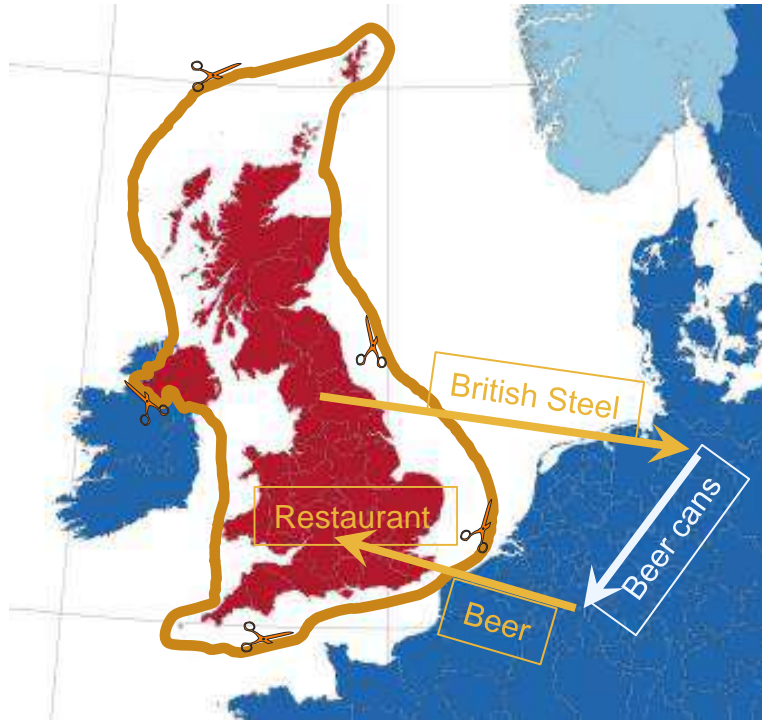
- Direct cost/price effect of tariffs
- Indirect global value chain effects
  - Spatial competition effects

We decompose direct cost/price effects into:

- Sector/region specific sensitivities of firms to WTO tariffs and non-tariff barriers (elasticities, scenario independent)
  - Policy-sensitive scenario's ("hard Brexit", Dhingra et al. 2017)

The logo for Erasmus University, featuring the word "Erasmus" in a stylized, cursive script.

## Example of indirect Brexit-related effects



Illustrative example of the Brexit-related impact on the price of beer in the United Kingdom:

1. A tariff is imposed on British steel
2. The German company that uses British steel to produce beer cans has to pay more – their production costs increase
3. The more expensive German cans are bought by a brewery in Belgium – their beer becomes more expensive
4. The beer from Belgium is exported to the United Kingdom. A tariff is imposed on the beer imported into the UK – the price of the beer increases even further.

The effect of the Brexit on production costs is larger as more components (raw materials, intermediate products, services) along the value chain of the production process cross the border between the United Kingdom and the European Union.

# Value chain effects

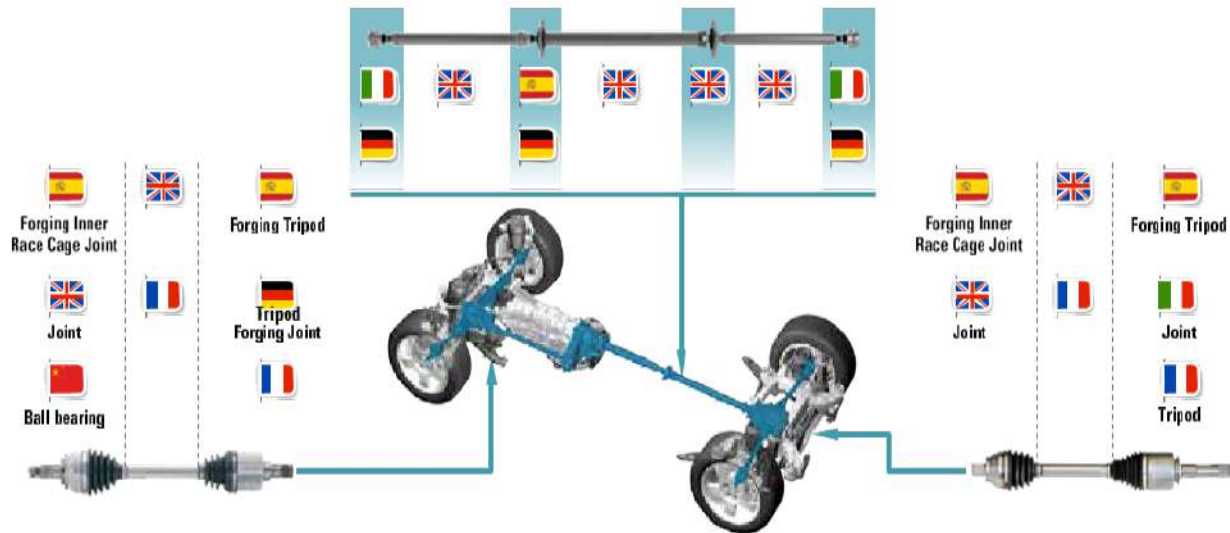
## Impact of tariffs on integrated supply chain - Tier 1

Case study

### GKN Driveline – Illustration of an integrated supply chain

A typical driveline system produced by GKN incorporates specialist parts largely from the rest of the EU.

GKN sources specialist forged parts from Spain, Italy, France and Germany which are then assembled at GKN Driveline's factory in the UK and supplied to UK and EU OEMs.



## What are spatial competition effects?

- Changes in the competitiveness of sectors and regions depend not only on Brexit-related cost increases for companies in UK or EU regions, but also on those for their competitors.
- The Brexit-related effect on the competitiveness of companies in different regions is therefore determined as the change in costs compared to the cost changes for their competitors.
- This depends on:
  - the extent to which EU companies depend on UK products and services for their production, compared to their competitors;
  - where products and services of EU companies are sold and whether their competitors are located in the United Kingdom;
    - A Brexit will increase the price of EU products and services sold in the United Kingdom, while the price of those by UK competitors remains the same.
  - whether EU companies compete with UK companies in markets elsewhere in Europe.
    - A Brexit increases the price of UK products and services sold in the EU, while the price of those by their EU competitors remains the same.



## Illustration of how competitiveness is measured

The map shows an illustrative example of the markets of:

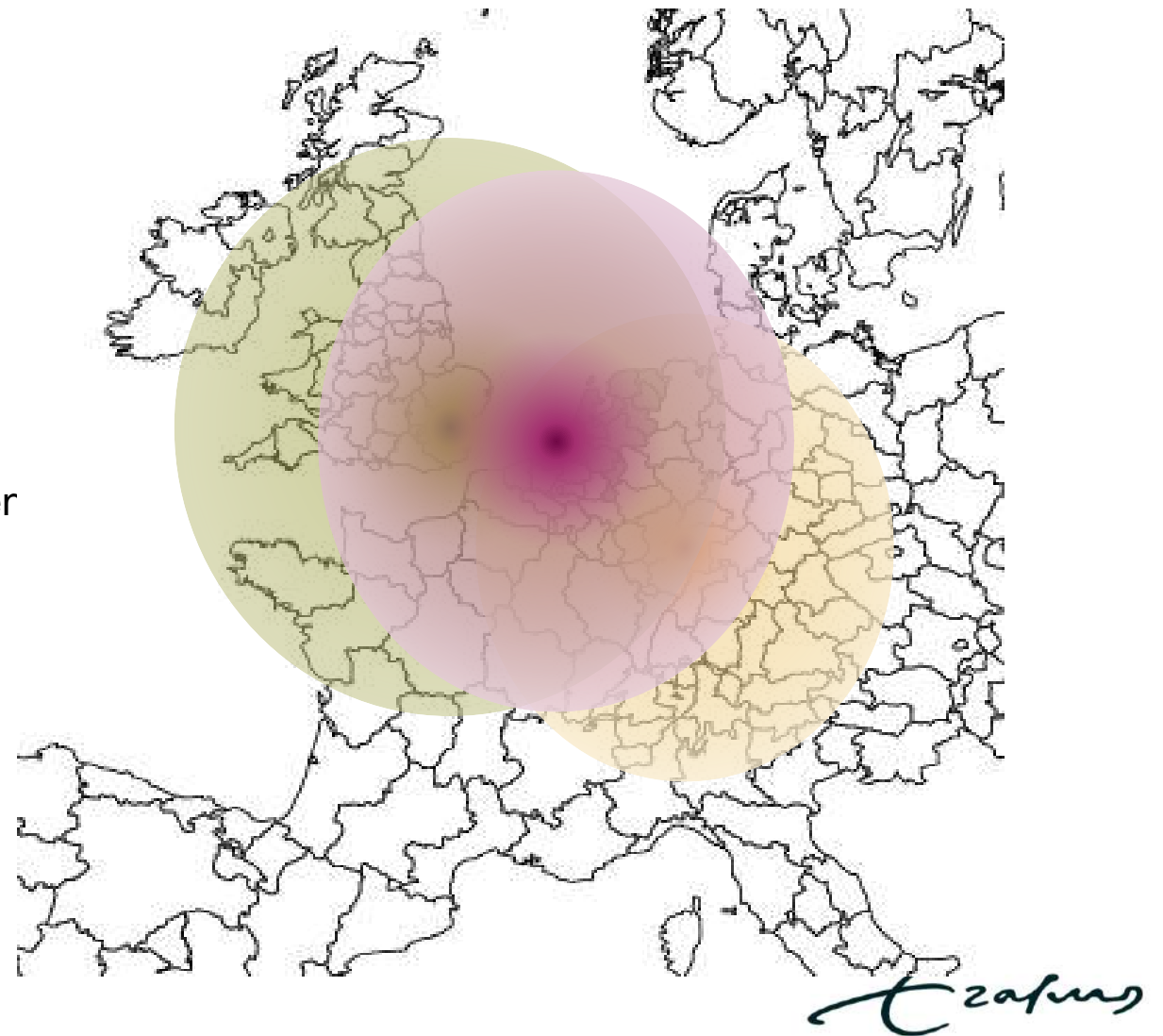
Rotterdam 

London 

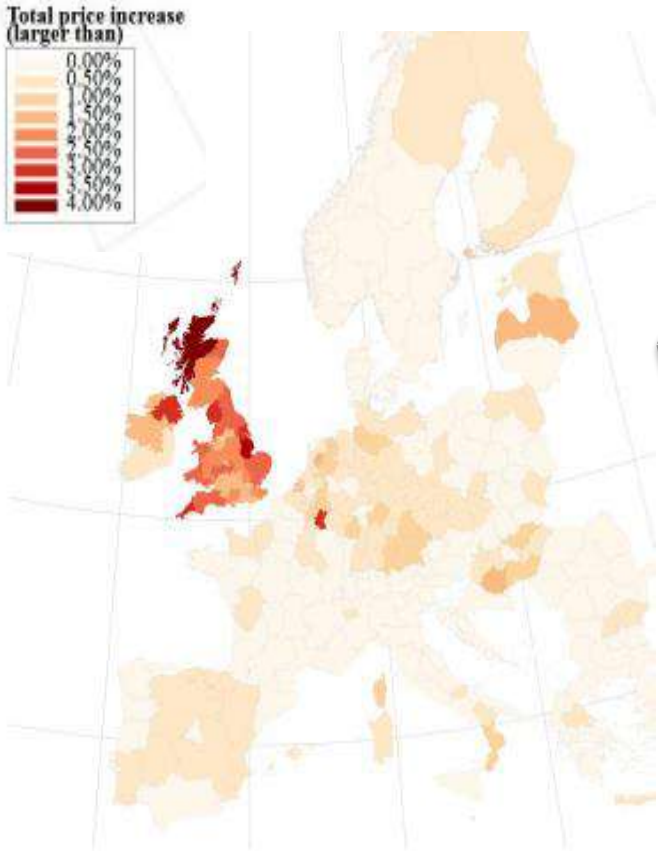
Vienna 

London and Rotterdam have the largest overlap in sales market. Competition between companies in **London and those in Rotterdam** is therefore larger than between those in **London and those in Vienna**

For this research, we used the actual data on trade between all regions and the rest of the world.

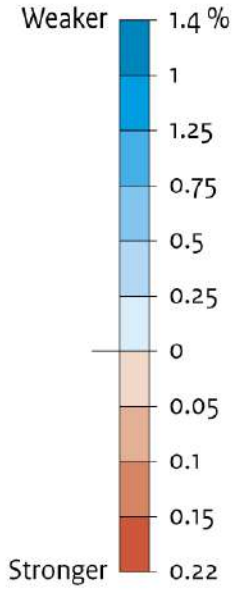
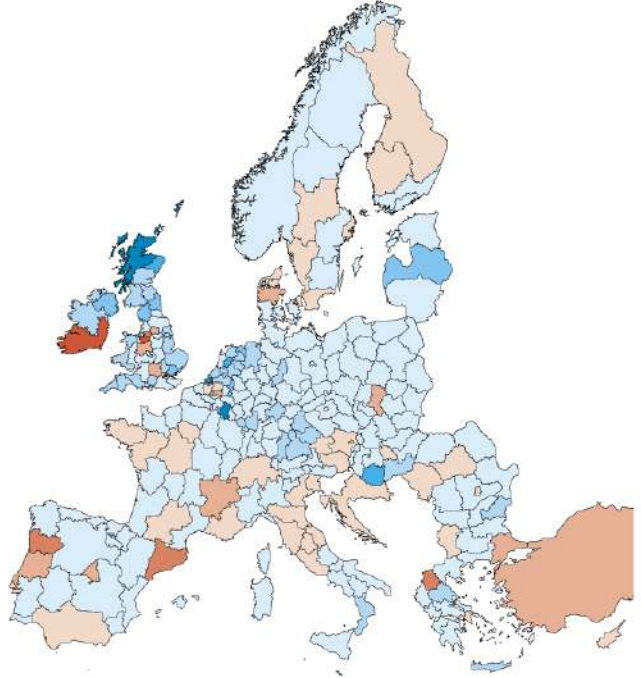


Total production cost increase in hard-Brexit scenario in EU regions (direct effect of tariffs and indirect effect of value chains)

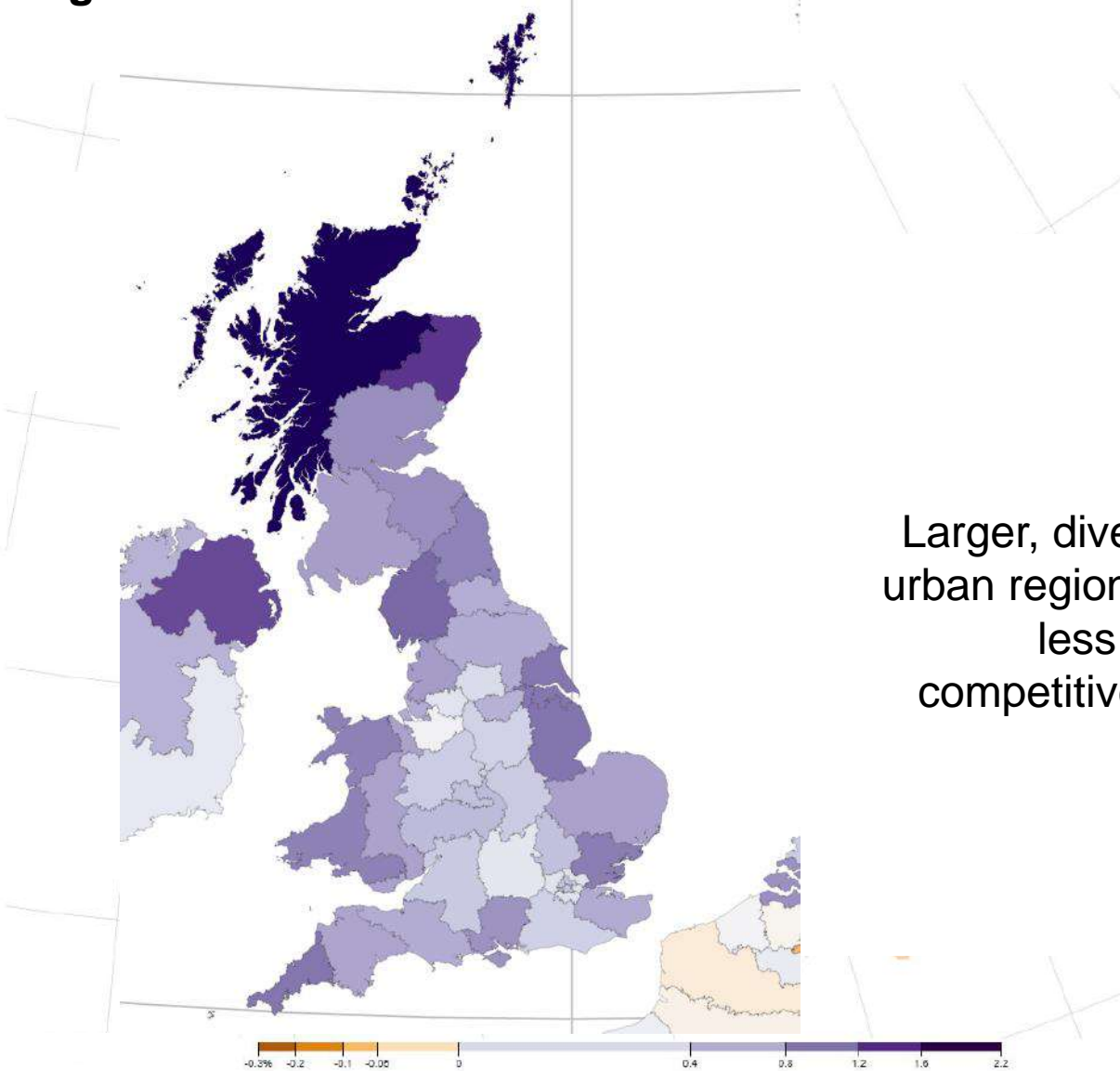


Comparable to spatial exposure pattern

The average change in regional competitiveness due to Brexit



# The average change in international competitiveness due to Brexit



Larger, diversified urban regions lose less competitiveness

# Competitiveness in detail in the UK

Figure 4: Gains and losses of competitiveness (and cost increases) in a hard-Brexit scenario in UK regions for selected industries and regions

|   | EU Average | NL Average | UK Average | Greater Manchester | Cheshire   | Merseyside | East Riding and North Lincolnshire | West Yorkshire | Lincolnshire | West Midlands | Berkshire, Buckinghamshire and Oxfordshire |
|---|------------|------------|------------|--------------------|------------|------------|------------------------------------|----------------|--------------|---------------|--|
| Average over all sectors  | 0.1 (0.4)  | 0.5 (0.8)  | 0.5 (1.7)  | 0 (1.3)            | -0.2 (1.5) | 0.3 (2.2)  | 0.3 (2.9)                          | 0 (1.4)        | 0.4 (3)      | 0.2 (1.7)     | 0 (1.5)                                    |
| Crop and animal production, hunting and related service activities                              | 0 (1)      | 1 (2)      | 1 (7)      | 0 (6)              | -2 (5)     | 1 (7)      | 3 (7)                              | 0 (6)          | 2 (7)        | 2 (8)         | 1 (7)                                      |
| Fishing and aquaculture   | -1 (0)     | -1 (2)     | 6 (8)      | 5 (7)              | 5 (7)      | 4 (6)      | 7 (9)                              | 5 (7)          | 10 (12)      | 4 (6)         | 5 (7)                                      |
| Manufacture of food products; beverages and tobacco products                                    | 1 (1)      | 5 (6)      | -5 (8)     | -5 (3)             | -4 (3)     | -5 (3)     | -6 (6)                             | -5 (5)         | -3 (8)       | -4 (6)        | -7 (4)                                     |
| Manufacture of textiles, wearing apparel, leather and related products                          | 0 (0)      | 5 (6)      | 3 (3)      | 3 (6)              | 1 (2)      | 2 (4)      | 4 (7)                              | 2 (4)          | 2 (5)        | 2 (4)         | 2 (4)                                      |
| Manufacture of coke and refined petroleum products  | 0 (0)      | 1 (0)      | 1 (3)      | 2 (5)              | 1 (4)      | -1 (2)     | 6 (9)                              | 0 (3)          | 2 (5)        | 3 (5)         | 0 (3)                                      |
| Manufacture of chemicals and chemical products  | 1 (1)      | 1 (1)      | 1 (6)      | -3 (5)             | -1 (6)     | 0 (6)      | 1 (8)                              | -4 (4)         | 4 (11)       | -1 (7)        | -4 (5)                                     |
| Manufacture of basic pharmaceutical products and pharmaceutical preparations                    | 0 (0)      | 0 (0)      | 4 (1)      | 3 (4)              | -1 (1)     | 0 (1)      | 5 (6)                              | 4 (5)          | 3 (4)        | 5 (6)         | 0 (1)                                      |
| Manufacture of rubber and plastic products  | 0 (1)      | 0 (1)      | 7 (8)      | 6 (11)             | 0 (6)      | 2 (8)      | 5 (12)                             | 7 (13)         | 6 (12)       | 4 (10)        | 7 (12)                                     |
| Manufacture of fabricated metal products, except machinery and equipment                        | 0 (0)      | 0 (0)      | 1 (2)      | 0 (2)              | -1 (2)     | -1 (1)     | 1 (3)                              | 0 (2)          | 3 (5)        | 0 (2)         | 0 (2)                                      |
| Manufacture of computer, electronic and optical products  | 0 (1)      | 0 (1)      | 3 (2)      | 2 (3)              | 1 (1)      | 0 (1)      | 4 (5)                              | 2 (4)          | 4 (5)        | 2 (4)         | 2 (3)                                      |
| Manufacture of machinery and equipment n.e.c.   | 0 (1)      | 0 (1)      | 5 (5)      | 3 (9)              | -1 (3)     | 1 (4)      | 6 (12)                             | 4 (10)         | 6 (12)       | 3 (9)         | 3 (10)                                     |
| Manufacture of motor vehicles, trailers and semi-trailers                                       | 0 (2)      | 0 (1)      | 11 (13)    | 5 (15)             | -1 (8)     | 9 (16)     | 18 (25)                            | 6 (16)         | 10 (19)      | 4 (14)        | 5 (15)                                     |
| Manufacture of other transport equipment  | 1 (1)      | 1 (1)      | 7 (6)      | 7 (11)             | 1 (4)      | 3 (6)      | 11 (16)                            | 9 (13)         | 9 (13)       | 5 (9)         | 5 (10)                                     |
| Manufacture of furniture; other manufacturing   | 0 (1)      | 1 (1)      | 3 (2)      | 2 (5)              | -3 (1)     | -2 (2)     | 5 (9)                              | 2 (5)          | 5 (8)        | 1 (5)         | 1 (5)                                      |
| Water transport   | 1 (1)      | 0 (0)      | 0 (1)      | 0 (2)              | -2 (0)     | -2 (1)     | 0 (2)                              | -2 (1)         | 8 (10)       | 2 (4)         | -1 (3)                                     |
| Warehousing and support activities for transportation   | 0 (0)      | 0 (0)      | 1 (2)      | 2 (2)              | 1 (2)      | 1 (2)      | 1 (2)                              | 1 (2)          | 1 (2)        | 1 (2)         | 2 (2)                                      |
| Accommodation and food service activities   | 0 (0)      | 0 (0)      | 2 (3)      | 1 (3)              | -1 (2)     | 0 (2)      | 3 (5)                              | 1 (3)          | 3 (5)        | 2 (3)         | 1 (3)                                      |
| Publishing activities   | 0 (0)      | -1 (1)     | 1 (2)      | 1 (2)              | 0 (1)      | 1 (2)      | 1 (2)                              | 1 (2)          | 1 (2)        | 1 (2)         | 0 (2)                                      |
| Telecommunications  | 0 (0)      | 0 (0)      | 1 (2)      | 1 (2)              | 1 (2)      | 1 (2)      | 3 (3)                              | 1 (2)          | 2 (3)        | 1 (2)         | 1 (2)                                      |
| Financial service activities, except insurance and pension funding                              | 0 (0)      | 0 (0)      | 1 (1)      | 1 (1)              | 1 (1)      | 1 (1)      | 1 (1)                              | 1 (1)          | 1 (1)        | 1 (1)         | 1 (1)                                      |
| Insurance, reinsurance and pension funding, except compulsory social security                   | 0 (0)      | 0 (0)      | 0 (1)      | 0 (0)              | 0 (0)      | 0 (1)      | 0 (1)                              | 0 (0)          | 1 (1)        | 0 (0)         | 0 (0)                                      |
| Activities auxiliary to financial services and insurance activities                             | 0 (0)      | 0 (0)      | 1 (2)      | 1 (1)              | 1 (1)      | 1 (1)      | 0 (1)                              | 1 (1)          | 0 (1)        | 1 (1)         | 1 (1)                                      |
| Advertising and market research   | 0 (0)      | -1 (0)     | 2 (1)      | 2 (1)              | 2 (1)      | 2 (2)      | 1 (1)                              | 1 (1)          | 2 (1)        | 1 (1)         | 1 (1)                                      |
| Security and investigation, service and landscape, office administrative and support activities | 0 (0)      | 0 (0)      | 0 (1)      | 0 (1)              | 0 (1)      | 0 (1)      | 0 (1)                              | 0 (1)          | 0 (1)        | 0 (1)         | 0 (1)                                      |

| Legend (colours) |                 |  |
|------------------|-----------------|--|
| gains            | losses          | in competitiveness                       |
| Dark Green       | Dark Red        | Important                                |
| Light Green      | Light Red       | Important due to cost change competitors |
| Yellow           | Yellow          | Important due to political scenario      |
| Light Yellow     | Light Yellow    | Not important because small sector       |
| Lightest Yellow  | Lightest Yellow | Not important because small effect       |
| White            | White           | Not important                            |

**Explanation of the table:**

In the table is the change in competitiveness presented as the change in costs relative to the competitors. The change in costs for the sector in the region is presented in between brackets.

The results have been classified using four characteristics: Size of the sector in value added (Cs), size of the effect on the competitiveness (Cc), average sensitivity to tariffs (Ce), and the total change in costs (Ct).

From the perspective of the region all sectors have been classified based on whether the characteristics are above or below average, where the average is determined excluding outliers using Tukey's method.

Important are large sectors with a large competitiveness effect and a strong sensitivity to tariffs.

Important due to cost change competitors are large sectors with a large competitiveness effect, but with a low sensitivity to tariffs and a small cost change.

Important due to political scenario are large sectors with a large competitiveness effect and a large total change in the costs, but with a low sensitivity to tariffs in general.

Not important because small sector are sectors that have a large effect on their competitiveness but they are small

Not important because small effect are large sectors that have a small effect on their competitiveness

Not important are all other sectors

The table shows only sectors with effects that can be considered important in at least two UK regions.

# Competitiveness in detail in the UK

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| <b>Average over all sectors</b>   | <b>0.1 (0.4)</b> | <b>0.5 (0.8)</b> | <b>0.5 (1.7)</b> | <b>0 (1.3)</b>     | <b>-0.2 (1.5)</b> | <b>0.3 (2.2)</b> | <b>0.3 (2.9)</b>                   | <b>0 (1.4)</b> | <b>0.4 (3)</b> | <b>0.2 (1.7)</b> | <b>0 (1.5)</b>                             |
| Crop and animal production, hunting and related service activities                              | 0 (1)            | 1 (2)            | 1 (7)            | 0 (6)              | -2 (5)            | 1 (7)            |                                    | 0 (6)          |                | 2 (8)            | 1 (7)                                      |
| Fishing and aquaculture   | -1 (0)           | -1 (2)           | 6 (8)            | 5 (7)              | 5 (7)             | 4 (6)            | 7 (9)                              | 5 (7)          |                | 4 (6)            | 5 (7)                                      |
| Manufacture of food products; beverages and tobacco products                                    | 1 (7)            | 5 (6)            |                  |                    |                   |                  |                                    |                |                |                  |  |
| Manufacture of textiles, wearing apparel, leather and related products                          | 0 (0)            | 5 (6)            | 3 (3)            | 3 (6)              | 1 (2)             | 2 (4)            | 4 (7)                              | 2 (4)          | 2 (5)          | 2 (4)            | 2 (4)                                      |
| Manufacture of coke and refined petroleum products  | 0 (0)            | 1 (0)            | 1 (3)            | 2 (5)              | 1 (4)             | -1 (2)           | 6 (9)                              | 0 (3)          | 2 (5)          | 3 (5)            | 0 (3)                                      |
| Manufacture of chemicals and chemical products  | -1 (1)           | 1 (1)            | 1 (6)            |                    |                   |                  | 0 (6)                              | 1 (8)          |                | 4 (11)           | -1 (7)                                     |
| Manufacture of basic pharmaceutical products and pharmaceutical preparations                    | 0 (0)            | 0 (0)            | 4 (1)            | 3 (4)              | -1 (1)            | 0 (1)            | 5 (6)                              | 4 (5)          | 3 (4)          | 5 (6)            | 0 (1)                                      |
| Manufacture of rubber and plastic products  | 0 (1)            | 0 (1)            | 7 (8)            | 6 (11)             | 0 (6)             |                  | 5 (12)                             | 7 (13)         | 6 (12)         | 4 (10)           | 7 (12)                                     |
| Manufacture of fabricated metal products, except machinery and equipment                        | 0 (0)            | 0 (0)            | 1 (2)            | 0 (2)              |                   | -1 (1)           | 1 (3)                              | 0 (2)          | 3 (5)          | 0 (2)            | 0 (2)                                      |
| Manufacture of computer, electronic and optical products  | 0 (1)            | 0 (1)            |                  |                    |                   |                  | 0 (1)                              | 4 (5)          | 2 (4)          | 4 (5)            | 2 (4)                                      |
| Manufacture of machinery and equipment n.e.c.   | 0 (1)            | 0 (1)            | 5 (5)            | 3 (5)              |                   |                  | 6 (12)                             |                | 6 (12)         |                  | 3 (10)                                     |
| <b>Manufacture of motor vehicles, trailers and semi-trailers</b>                                | <b>0 (2)</b>     | <b>0 (1)</b>     | <b>11 (13)</b>   | <b>5 (15)</b>      | <b>-1 (8)</b>     | <b>9 (16)</b>    | <b>18 (25)</b>                     | <b>6 (16)</b>  | <b>10 (19)</b> | <b>4 (8)</b>     | <b>5 (15)</b>                              |
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| Water transport   | 1 (1)            | 0 (0)            | 0 (1)            | 0 (2)              |                   |                  | 0 (2)                              | -2 (1)         | 8 (10)         | 2 (4)            | -1 (3)                                     |
| Warehousing and support activities for transportation   | 0 (0)            | 0 (0)            | 1 (2)            | 2 (2)              | 1 (2)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 2 (2)                                      |
| Accommodation and food service activities   | 0 (0)            | 0 (0)            |                  |                    |                   | 0 (2)            |                                    |                |                |                  |  |
| Publishing activities   | 0 (0)            | -1 (1)           | 1 (2)            | 1 (2)              | 0 (1)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 0 (2)                                      |
| Telecommunications  | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (2)             | 1 (2)            |                                    |                | 2 (3)          |                  |  |
| Financial service activities, except insurance and pension funding                              | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (1)             | 1 (1)            | 1 (1)                              | 1 (1)          | 1 (1)          | 1 (1)            | 1 (1)                                      |
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| Advertising and market research   | 0 (0)            | -1 (0)           | 2 (1)            | 2 (1)              | 2 (1)             | 2 (2)            | 1 (1)                              | 1 (1)          | 2 (1)          | 1 (1)            | 1 (1)                                      |
| Security and investigation; service and landscape, office administrative and support activities | 0 (0)            | 0 (0)            | 0 (1)            | 0 (1)              | 0 (1)             | 0 (1)            | 0 (1)                              | 0 (1)          | 0 (1)          | 0 (1)            | 0 (1)                                      |

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| Crop and animal production, hunting and related service activities                                     | 0 (1)            | 1 (2)            | 1 (7)            | 0 (6)              | 2 (5)             | 1 (7)            | 0 (6)                              | 0 (6)          | 2 (8)          | 2 (8)            | 1 (7)                                      |
| Fishing and aquaculture  | -1 (0)           | -1 (2)           | 6 (8)            | 5 (7)              | 5 (7)             | 4 (6)            | 7 (9)                              | 5 (7)          | 0 (1)          | 4 (6)            | 5 (7)                                      |
| Manufacture of food products; beverages and tobacco products   | 1 (7)            | 5 (6)            | 0 (0)            | 0 (0)              | 0 (0)             | 0 (0)            | 0 (0)                              | 0 (0)          | 0 (0)          | 0 (0)            | 0 (0)                                      |
| Manufacture of textiles, wearing apparel, leather and related products                                 | 0 (0)            | 5 (6)            | 3 (3)            | 3 (6)              | 1 (2)             | 2 (4)            | 4 (7)                              | 2 (4)          | 2 (5)          | 2 (4)            | 2 (4)                                      |
| Manufacture of coke and refined petroleum products   | 0 (0)            | 1 (0)            | 1 (3)            | 2 (5)              | 1 (4)             | -1 (2)           | 6 (9)                              | 0 (3)          | 2 (5)          | 3 (5)            | 0 (3)                                      |
| Manufacture of chemicals and chemical products   | 0 (0)            | 1 (1)            | 1 (6)            | 0 (0)              | 0 (0)             | 0 (6)            | 1 (8)                              | 0 (0)          | 4 (11)         | -1 (7)           | -4 (5)                                     |
| Manufacture of basic pharmaceutical products and pharmaceutical preparations                           | 0 (0)            | 0 (0)            | 4 (1)            | 3 (4)              | -1 (1)            | 0 (1)            | 5 (6)                              | 4 (5)          | 3 (4)          | 5 (6)            | 0 (1)                                      |
| Manufacture of rubber and plastic products   | 0 (1)            | 0 (1)            | 7 (8)            | 6 (11)             | 0 (6)             | 0 (0)            | 5 (12)                             | 7 (13)         | 6 (12)         | 4 (10)           | 7 (12)                                     |
| Manufacture of fabricated metal products, except machinery and equipment                               | 0 (0)            | 0 (0)            | 1 (2)            | 0 (2)              | 0 (0)             | -1 (1)           | 1 (2)                              | 0 (2)          | 3 (5)          | 0 (2)            | 0 (2)                                      |
| <b>Manufacture of computer, electronic and optical products</b>  | <b>0 (1)</b>     | <b>0 (1)</b>     | <b>3 (2)</b>     | <b>2 (3)</b>       | <b>1 (1)</b>      | <b>0 (1)</b>     | <b>4 (5)</b>                       | <b>2 (4)</b>   | <b>4 (5)</b>   | <b>2 (4)</b>     | <b>2 (3)</b>                               |
| Manufacture of machinery and equipment n.e.c.  | 0 (0)            | 0 (1)            | 5 (5)            | 3 (8)              | 1 (2)             | 0 (0)            | 6 (12)                             | 0 (0)          | 6 (12)         | 0 (0)            | 3 (10)                                     |
| Manufacture of motor vehicles, trailers and semi-trailers  | 0 (0)            | 0 (1)            | 1 (2)            | 5 (15)             | 1 (2)             | 0 (0)            | 0 (0)                              | 6 (16)         | 10 (19)        | 0 (0)            | 5 (15)                                     |
| Manufacture of other transport equipment   | 1 (1)            | 1 (1)            | 7 (6)            | 7 (11)             | 1 (1)             | 1 (1)            | 11 (16)                            | 9 (13)         | 9 (13)         | 5 (9)            | 5 (10)                                     |
| Manufacture of furniture; other manufacturing  | 0 (1)            | 0 (0)            | 3 (2)            | 2 (5)              | 0 (0)             | 0 (2)            | 5 (9)                              | 2 (5)          | 5 (8)          | 1 (5)            | 1 (5)                                      |
| Water transport  | 1 (1)            | 0 (0)            | 0 (1)            | 0 (2)              | 0 (0)             | 0 (1)            | 0 (2)                              | -2 (1)         | 8 (10)         | 2 (4)            | -1 (3)                                     |
| Warehousing and support activities for transportation  | 0 (0)            | 0 (0)            | 1 (2)            | 2 (2)              | 1 (2)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 2 (2)                                      |
| Accommodation and food service activities  | 0 (0)            | 0 (0)            | 0 (0)            | 0 (0)              | 0 (0)             | 0 (2)            | 0 (0)                              | 0 (0)          | 0 (0)          | 0 (0)            | 0 (0)                                      |
| Publishing activities  | 0 (0)            | -1 (1)           | 1 (2)            | 1 (2)              | 0 (1)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 0 (2)                                      |
| Telecommunications   | 0 (0)            | 0 (0)            | 1 (1)            | 1 (2)              | 1 (2)             | 1 (2)            | 0 (0)                              | 0 (0)          | 2 (3)          | 0 (0)            | 0 (0)                                      |
| Financial service activities, except insurance and pension funding                                     | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (1)             | 1 (1)            | 1 (1)                              | 1 (1)          | 1 (1)          | 1 (1)            | 1 (1)                                      |
| Insurance, reinsurance and pension funding, except compulsory social security                          | 0 (0)            | 0 (0)            | 0 (1)            | 0 (0)              | 0 (0)             | 0 (1)            | 0 (1)                              | 0 (0)          | 1 (1)          | 0 (0)            | 0 (0)                                      |
| Activities auxiliary to financial services and insurance activities                                    | 0 (0)            | 0 (0)            | 1 (2)            | 1 (1)              | 1 (1)             | 1 (1)            | 0 (1)                              | 1 (1)          | 0 (1)          | 1 (1)            | 1 (1)                                      |
| Advertising and market research  | 0 (0)            | -1 (0)           | 2 (1)            | 2 (1)              | 2 (1)             | 2 (2)            | 1 (1)                              | 1 (1)          | 2 (1)          | 1 (1)            | 1 (1)                                      |
| <b>Security and investigation; service and landscape; office administrative and support activities</b> | <b>0 (0)</b>     | <b>0 (0)</b>     | <b>0 (1)</b>     | <b>0 (1)</b>       | <b>0 (1)</b>      | <b>0 (1)</b>     | <b>0 (1)</b>                       | <b>0 (1)</b>   | <b>0 (1)</b>   | <b>0 (1)</b>     | <b>0 (1)</b>                               |

| Legend (colours) |              |  |
|------------------|--------------|--|
| gains            | losses       | in competitiveness                       |
| Dark Green       | Dark Red     | Important                                |
| Light Green      | Light Red    | Important due to cost change competitors |
| Yellow           | Light Yellow | Important due to political scenario      |
| Light Green      | Light Yellow | Not important because small sector       |
| Light Green      | Light Yellow | Not important because small effect       |
| Light Green      | Light Yellow | Not important                            |

### Explanation of the table:

In the table is the change in competitiveness presented as the change in costs relative to the competitors. The change in costs for the sector in the region is presented in between brackets.

The results have been classified using four characteristics: Size of the sector in value added (Cs), size of the effect on the competitiveness (Cc), average sensitivity to tariffs (Ce), and the total change in costs (Ct).

From the perspective of the region all sectors have been classified based on whether the characteristics are above or below average, where the average is determined excluding outliers using Tukey's method.

Important are large sectors with a large competitiveness effect and a strong sensitivity to tariffs.

Important due to cost change competitors are large sectors with a large competitiveness effect, but with a low sensitivity to tariffs and a small cost change.

Important due to political scenario are large sectors with a large competitiveness effect and a large total change in the costs, but with a low sensitivity to tariffs in general.

Not important because small sector are sectors that have a large effect on their competitiveness but they are small

Not important because small effect are large sectors that have a small effect on their competitiveness

Not important are all other sectors

The table shows only sectors with effects that can be considered important in at least two UK regions.

# Competitiveness in detail in the UK

Figure 4: Gains and losses of competitiveness (and cost increases) in a hard-Brexit scenario in UK regions for selected industries and regions

|   | EU Average       | NL Average       | UK Average       | Greater Manchester | Cheshire          | Merseyside       | East Riding and North Lincolnshire | West Yorkshire | Lincolnshire   | West Midlands    | Berkshire, Buckinghamshire and Oxfordshire |
|---|------------------|------------------|------------------|--------------------|-------------------|------------------|------------------------------------|----------------|----------------|------------------|--|
| <b>Average over all sectors</b>   | <b>0.1 (0.4)</b> | <b>0.5 (0.8)</b> | <b>0.5 (1.7)</b> | <b>0 (1.3)</b>     | <b>-0.2 (1.5)</b> | <b>0.3 (2.2)</b> | <b>0.3 (2.9)</b>                   | <b>0 (1.4)</b> | <b>0.4 (3)</b> | <b>0.2 (1.7)</b> | <b>0 (1.5)</b>                             |
| Crop and animal production, hunting and related service activities                              | 0 (1)            | 1 (2)            | 1 (7)            | 0 (6)              | 2 (5)             | 1 (7)            | 0 (6)                              | 0 (6)          | 2 (8)          | 1 (7)            | 1 (7)                                      |
| Fishing and aquaculture   | -1 (0)           | -1 (2)           | 6 (8)            | 5 (7)              | 5 (7)             | 4 (5)            | 7 (9)                              | 5 (7)          | 4 (5)          | 4 (5)            | 5 (7)                                      |
| Manufacture of food products, beverages and tobacco products                                    | 1 (2)            | 5 (6)            | 3 (3)            | 3 (6)              | 1 (2)             | 2 (4)            | 4 (7)                              | 2 (4)          | 2 (5)          | 2 (4)            | 2 (4)                                      |
| Manufacture of textiles, wearing apparel, leather and related products                          | 0 (0)            | 5 (6)            | 3 (3)            | 3 (6)              | 1 (2)             | 2 (4)            | 4 (7)                              | 2 (4)          | 2 (5)          | 2 (4)            | 2 (4)                                      |
| Manufacture of coke and refined petroleum products  | 0 (0)            | 1 (0)            | 1 (3)            | 2 (5)              | 1 (4)             | 1 (2)            | 6 (9)                              | 0 (3)          | 2 (5)          | 3 (5)            | 0 (3)                                      |
| Manufacture of chemicals and chemical products  | 1 (2)            | 1 (2)            | 1 (6)            | 0 (5)              | 1 (4)             | 0 (5)            | 1 (2)                              | 0 (3)          | 4 (11)         | -1 (7)           | -4 (5)                                     |
| <b>Manufacture of basic pharmaceutical products and pharmaceutical preparations</b>             | <b>0 (0)</b>     | <b>0 (0)</b>     | <b>4 (1)</b>     | <b>3 (4)</b>       | <b>-1 (1)</b>     | <b>0 (1)</b>     | <b>5 (6)</b>                       | <b>4 (5)</b>   | <b>3 (4)</b>   | <b>5 (6)</b>     | <b>0 (1)</b>                               |
| Manufacture of rubber and plastic products  | 0 (1)            | 0 (1)            | 7 (8)            | 6 (11)             | 0 (6)             | 0 (1)            | 5 (12)                             | 7 (13)         | 6 (12)         | 4 (10)           | 7 (12)                                     |
| Manufacture of fabricated metal products, except machinery and equipment                        | 0 (0)            | 0 (0)            | 1 (2)            | 0 (2)              | 0 (1)             | -1 (1)           | 1 (3)                              | 0 (2)          | 3 (5)          | 0 (2)            | 0 (2)                                      |
| Manufacture of computer, electronic and optical products  | 0 (1)            | 0 (1)            | 1 (1)            | 2 (3)              | 1 (1)             | 0 (1)            | 4 (5)                              | 2 (4)          | 4 (5)          | 2 (4)            | 2 (3)                                      |
| Manufacture of machinery and equipment n.e.c.   | 0 (1)            | 0 (1)            | 5 (5)            | 3 (9)              | 1 (1)             | 0 (1)            | 6 (12)                             | 0 (1)          | 6 (12)         | 0 (1)            | 3 (10)                                     |
| Manufacture of motor vehicles, trailers and semi-trailers                                       | 0 (1)            | 0 (1)            | 5 (15)           | 5 (15)             | 1 (0)             | 0 (1)            | 0 (1)                              | 6 (16)         | 10 (19)        | 0 (1)            | 5 (15)                                     |
| Manufacture of other transport equipment  | 1 (1)            | 1 (1)            | 7 (6)            | 7 (11)             | 0 (1)             | 0 (1)            | 11 (16)                            | 9 (13)         | 9 (13)         | 5 (9)            | 5 (10)                                     |
| Manufacture of furniture; other manufacturing   | 0 (1)            | 0 (1)            | 3 (2)            | 3 (2)              | 0 (1)             | 0 (1)            | 5 (9)                              | 2 (5)          | 5 (8)          | 1 (5)            | 1 (5)                                      |
| Water transport   | 1 (1)            | 0 (0)            | 0 (1)            | 0 (2)              | 0 (0)             | 0 (1)            | 0 (2)                              | -2 (1)         | 8 (10)         | 2 (4)            | -1 (3)                                     |
| Warehousing and support activities for transportation   | 0 (0)            | 0 (0)            | 1 (2)            | 2 (2)              | 1 (2)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 2 (2)                                      |
| Accommodation and food service activities   | 0 (0)            | 0 (0)            | 0 (0)            | 0 (0)              | 0 (0)             | 0 (2)            | 0 (0)                              | 0 (0)          | 0 (0)          | 0 (0)            | 0 (0)                                      |
| Publishing activities   | 0 (0)            | -1 (1)           | 1 (2)            | 1 (2)              | 0 (1)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 0 (2)                                      |
| Telecommunications  | 0 (0)            | 0 (0)            | 1 (1)            | 1 (2)              | 1 (2)             | 1 (2)            | 0 (0)                              | 0 (0)          | 2 (3)          | 0 (0)            | 0 (0)                                      |
| Financial service activities, except insurance and pension funding                              | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (1)             | 1 (1)            | 1 (1)                              | 1 (1)          | 1 (1)          | 1 (1)            | 1 (1)                                      |
| Insurance, reinsurance and pension funding, except compulsory social security                   | 0 (0)            | 0 (0)            | 0 (1)            | 0 (0)              | 0 (0)             | 0 (1)            | 0 (1)                              | 0 (0)          | 1 (1)          | 0 (0)            | 0 (0)                                      |
| Activities auxiliary to financial services and insurance activities                             | 0 (0)            | 0 (0)            | 1 (2)            | 1 (1)              | 1 (1)             | 1 (1)            | 0 (1)                              | 1 (1)          | 0 (1)          | 1 (1)            | 1 (1)                                      |
| Advertising and market research   | 0 (0)            | -1 (0)           | 2 (1)            | 2 (1)              | 2 (1)             | 2 (2)            | 1 (1)                              | 1 (1)          | 2 (1)          | 1 (1)            | 1 (1)                                      |
| Security and investigation, service and landscape, office administrative and support activities | 0 (0)            | 0 (0)            | 0 (1)            | 0 (1)              | 0 (1)             | 0 (1)            | 0 (1)                              | 0 (1)          | 0 (1)          | 0 (1)            | 0 (1)                                      |

| Legend (colours) |                 |  |
|------------------|-----------------|--|
| gains            | losses          | in competitiveness                       |
| dark green       | dark red        | important                                |
| light green      | light red       | important due to cost change competitors |
| yellow           | orange          | important due to political scenario      |
| light yellow     | light orange    | Not important because small sector       |
| lightest yellow  | lightest orange | Not important because small effect       |
| white            | white           | Not important                            |

**Explanation of the table:**  
 In the table is the change in competitiveness presented as the change in costs relative to the competitors. The change in costs for the sector in the region is presented in between brackets.  
 The results have been classified using four characteristics: Size of the sector in value added (Cs), size of the effect on the competitiveness (Cc), average sensitivity to tariffs (Ce), and the total change in costs (Ct).  
 From the perspective of the region all sectors have been classified based on whether the characteristics are above or below average, where the average is determined excluding outliers using Tukey's method.  
 Important are large sectors with a large competitiveness effect and a strong sensitivity to tariffs.  
 Important due to cost change competitors are large sectors with a large competitiveness effect, but with a low sensitivity to tariffs and a small cost change.  
 Important due to political scenario are large sectors with a large competitiveness effect and a large total change in the costs, but with a low sensitivity to tariffs in general.  
 Not important because small sector are sectors that have a large effect on their competitiveness but they are small  
 Not important because small effect are large sectors that have a small effect on their competitiveness  
 Not important are all other sectors  
 The table shows only sectors with effects that can be considered important in at least two UK regions.

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# Competitiveness in detail in the UK

Figure 4: Gains and losses of competitiveness (and cost increases) in a hard-Brexit scenario in UK regions for selected industries and regions

|   | EU Average       | NL Average       | UK Average       | Greater Manchester | Cheshire          | Merseyside       | East Riding and North Lincolnshire | West Yorkshire | Lincolnshire   | West Midlands    | Berkshire, Buckinghamshire and Oxfordshire |
|---|------------------|------------------|------------------|--------------------|-------------------|------------------|------------------------------------|----------------|----------------|------------------|--|
| <b>Average over all sectors</b>   | <b>0.1 (0.4)</b> | <b>0.5 (0.8)</b> | <b>0.5 (1.7)</b> | <b>0 (1.3)</b>     | <b>-0.2 (1.5)</b> | <b>0.3 (2.2)</b> | <b>0.3 (2.9)</b>                   | <b>0 (1.4)</b> | <b>0.4 (3)</b> | <b>0.2 (1.7)</b> | <b>0 (1.5)</b>                             |
| Crop and animal production, hunting and related service activities                              | 0 (1)            | 1 (2)            | 1 (7)            | 0 (6)              | -2 (5)            | 1 (7)            |                                    | 0 (6)          |                | 2 (8)            | 1 (7)                                      |
| <b>Fishing and aquaculture</b>  | <b>-1 (0)</b>    | <b>-1 (2)</b>    | <b>6 (8)</b>     | <b>5 (7)</b>       | <b>5 (7)</b>      | <b>4 (6)</b>     | <b>7 (9)</b>                       | <b>5 (7)</b>   | <b>10 (12)</b> | <b>4 (6)</b>     | <b>5 (7)</b>                               |
| <b>Manufacture of food products; beverages and tobacco products</b>                             | <b>1 (1)</b>     | <b>5 (6)</b>     | <b>-5 (8)</b>    | <b>-5 (3)</b>      | <b>-4 (3)</b>     | <b>-5 (3)</b>    | <b>-6 (6)</b>                      | <b>-5 (5)</b>  | <b>-3 (8)</b>  | <b>-4 (6)</b>    | <b>-7 (4)</b>                              |
| Manufacture of textiles, wearing apparel, leather and related products                          | 0 (0)            | 5 (6)            | 3 (3)            | 3 (6)              | 1 (4)             | 2 (4)            | 4 (7)                              | 2 (4)          | 2 (5)          | 2 (4)            | 2 (4)                                      |
| Manufacture of coke and refined petroleum products  | 0 (0)            | 1 (0)            | 1 (3)            | 2 (5)              | 1 (4)             | -1 (2)           | 6 (9)                              | 0 (3)          | 2 (5)          | 3 (5)            | 0 (3)                                      |
| Manufacture of chemicals and chemical products  | -1 (1)           | 1 (1)            | 1 (6)            | 1 (5)              | 1 (5)             | 0 (6)            | 1 (8)                              | 1 (8)          | 4 (11)         | -1 (7)           | -4 (5)                                     |
| Manufacture of basic pharmaceutical products and pharmaceutical preparations                    | 0 (0)            | 0 (0)            | 4 (1)            | 3 (4)              | -1 (1)            | 0 (1)            | 5 (6)                              | 4 (5)          | 3 (4)          | 5 (6)            | 0 (1)                                      |
| Manufacture of rubber and plastic products  | 0 (1)            | 0 (1)            | 7 (8)            | 6 (11)             | 0 (6)             | 1 (2)            | 5 (12)                             | 7 (13)         | 6 (12)         | 4 (10)           | 7 (12)                                     |
| Manufacture of fabricated metal products, except machinery and equipment                        | 0 (0)            | 0 (0)            | 1 (2)            | 0 (2)              | 1 (2)             | -1 (1)           | 1 (3)                              | 0 (2)          | 3 (5)          | 0 (2)            | 0 (2)                                      |
| Manufacture of computer, electronic and optical products  | 0 (1)            | 0 (1)            | 1 (2)            | 2 (3)              | 1 (1)             | 1 (1)            | 0 (1)                              | 4 (5)          | 2 (4)          | 4 (5)            | 2 (4)                                      |
| Manufacture of machinery and equipment n.e.c.   | 0 (1)            | 0 (1)            | 5 (5)            | 3 (9)              | 1 (3)             | 1 (4)            | 6 (12)                             | 3 (9)          | 6 (12)         | 3 (9)            | 3 (10)                                     |
| Manufacture of motor vehicles, trailers and semi-trailers                                       | 0 (1)            | 0 (1)            | 11 (12)          | 5 (15)             | 1 (2)             | 0 (1)            | 1 (2)                              | 6 (16)         | 10 (19)        | 4 (13)           | 5 (15)                                     |
| Manufacture of other transport equipment  | 1 (1)            | 1 (1)            | 7 (6)            | 7 (11)             | 1 (1)             | 1 (1)            | 11 (16)                            | 9 (13)         | 9 (13)         | 5 (9)            | 5 (10)                                     |
| Manufacture of furniture; other manufacturing   | 0 (1)            | 1 (1)            | 3 (2)            | 2 (5)              | 1 (1)             | 1 (2)            | 5 (9)                              | 2 (5)          | 5 (8)          | 1 (5)            | 1 (5)                                      |
| Water transport   | 1 (1)            | 0 (0)            | 0 (1)            | 0 (2)              | 1 (0)             | 1 (1)            | 0 (2)                              | -2 (1)         | 8 (10)         | 2 (4)            | -1 (3)                                     |
| Warehousing and support activities for transportation   | 0 (0)            | 0 (0)            | 1 (2)            | 2 (2)              | 1 (2)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 2 (2)                                      |
| Accommodation and food service activities   | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (1)             | 0 (2)            | 1 (1)                              | 1 (1)          | 1 (1)          | 1 (1)            | 1 (1)                                      |
| Publishing activities   | 0 (0)            | -1 (1)           | 1 (2)            | 1 (2)              | 0 (1)             | 1 (2)            | 1 (2)                              | 1 (2)          | 1 (2)          | 1 (2)            | 0 (2)                                      |
| Telecommunications  | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (2)             | 1 (2)            | 1 (1)                              | 1 (1)          | 2 (3)          | 1 (1)            | 1 (1)                                      |
| Financial service activities, except insurance and pension funding                              | 0 (0)            | 0 (0)            | 1 (1)            | 1 (1)              | 1 (1)             | 1 (1)            | 1 (1)                              | 1 (1)          | 1 (1)          | 1 (1)            | 1 (1)                                      |
| Insurance, reinsurance and pension funding, except compulsory social security                   | 0 (0)            | 0 (0)            | 0 (1)            | 0 (0)              | 0 (0)             | 0 (1)            | 0 (1)                              | 0 (0)          | 1 (1)          | 0 (0)            | 0 (0)                                      |
| Activities auxiliary to financial services and insurance activities                             | 0 (0)            | 0 (0)            | 1 (2)            | 1 (1)              | 1 (1)             | 1 (1)            | 0 (1)                              | 1 (1)          | 0 (1)          | 1 (1)            | 1 (1)                                      |
| Advertising and market research   | 0 (0)            | -1 (0)           | 2 (1)            | 2 (1)              | 2 (1)             | 2 (2)            | 1 (1)                              | 1 (1)          | 2 (1)          | 1 (1)            | 1 (1)                                      |
| Security and investigation, service and landscape, office administrative and support activities | 0 (0)            | 0 (0)            | 0 (1)            | 0 (1)              | 0 (1)             | 0 (1)            | 0 (1)                              | 0 (1)          | 0 (1)          | 0 (1)            | 0 (1)                                      |

| Legend (colours) |             |  |
|------------------|-------------|--|
| gains            | losses      | in competitiveness                       |
| Dark Green       | Dark Red    | Important                                |
| Light Green      | Light Red   | Important due to cost change competitors |
| Yellow           | Yellow      | Important due to political scenario      |
| Light Green      | Light Green | Not important because small sector       |
| Light Green      | Light Green | Not important because small effect       |
| Light Green      | Light Green | Not important                            |

**Explanation of the table:**  
 In the table is the change in competitiveness presented as the change in costs relative to the competitors. The change in costs for the sector in the region is presented in between brackets.  
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**Important due to political scenario** are large sectors with a large competitiveness effect and a large total change in the costs, but with a low sensitivity to tariffs in general.  
**Not important because small sector** are sectors that have a large effect on their competitiveness but they are small  
**Not important because small effect** are large sectors that have a small effect on their competitiveness  
**Not important** are all other sectors  
 The table shows only sectors with effects that can be considered important in at least two UK regions.



## Findings:

- The loss of competitiveness by international competing firms is twice as high in the UK than in the Netherlands (the second-largest Brexit-affected economy in the EU).
- Effects of Brexit at national level conceal the diversity and heterogeneity of impacts by region and sector.
- Brexit relatively strengthens the stronger and larger regional UK economies at the expense of the weaker regions.
- The competitiveness of the food industry strengthens in the UK regions, weakens in the EU.
- The competitiveness of the financial services and the automotive industry weakens in the UK, strengthens in the EU.
- Sectors like the car industry (e.g. also electronics, machinery) will be hit by Brexit independent of specific trade barriers due to large value chains.

**Thank you for your attention**