CITY REDI

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

The UK in a Changing Europe

The Economic Impacts of Brexit on the UK, its Regions, its Cities and its Sectors

West Midlands Regional Participatory Workshop

university of groningen

ERASMUS UNIVERSITEIT ROTTERDAM

Sheffield University Management School.

PBL Netherlands Environmental Assessment Agency

Housekeeping

Twitter: **#brexitregionalimpact**

Presenters: 10 minutes presentations

Audience: Introduce yourself when asking questions

Don't forget to fill in the:
Feedback assessment form!!

The Economic Impacts of Brexit on the UK, its Regions, its Cities and its Sectors

Welcome Address

Professor Raquel Ortega-Argilés, University of Birmingham
Professor Daniel Wincott, The UK in a Changing Europe
Lloyd Broad, Birmingham City Council

The Economic Impacts of Brexit on the UK, its Regions, its Cities and its Sectors

Welcome Address

Professor Raquel Ortega-Argilés, University of Birmingham

The research team

Raquel Ortega-Argilés
(Project leader, City-REDI Institute, University of Birmingham),
Chloe Billing and Deniz Sevinc (City-REDI Institute, University of Birmingham),
Philip McCann (University of Sheffield),
Wen Chen, Pieter IJtsma and Bart Los (Groningen University),
Nicola Cortinovis and Frank van Oort (Erasmus University Rotterdam),
Mark Thissen (PBL Dutch Government Environmental Agency)

The partners

CITY REDI

UNIVERSITY OF BIRMINGHAM

centreforcities

Department for Business, Energy & Industrial Strategy

Policy Scotland

Scottish Government
Riaghaltas na h-Alba
gov.scot

RESPUBLICA
society · prosperity · virtue

IPPR North

Erasmus Universiteit Rotterdam

Sheffield University Management School.

university of groningen

PBL Netherlands Environmental Assessment Agency

Significance of the research

Funded by the Economic and Social Research Council, "The Economic Impacts of Brexit on the UK, its Regions, its Cities and its Sectors" project started in April 2017 and is part of a series of 25 projects funded by ESRC to support the initiative **The UK in a Changing Europe** coordinated by Professor Anand Menon at King's College London.

The project aims to examine in detail the **likely impacts of Brexit on the UK's sectors, regions and cities** by using the most detailed regional-national-international trade and competition datasets

Interest and engagement at this stage

- Annual Northern Ireland Economic Conference 2017
- Regional Studies Association
- **Houses of Parliament**
- **HM Treasury**
- **BEIS Department**
- **Foreign Commonwealth Office**
- West Midlands All Party Parliamentary Group
- EU Committee of the Regions
- Birmingham Post-Brexit Commission
- Managing Partners' Forum – Professional and Business Services lobbying group
- European Parliament

How the recommendations have been taken up and by whom until now

Report contributions and mentions:

- Brexit: Local and Devolved Government, UKICE
- EU Referendum: One year on, UKICE
- Article 50 one year on, UKICE
- State of the North 2017: The Millennial Powerhouse, IPPR North
- Will the unit of the 27 crack?, Centre for European Reform
- Preparing for Brexit, Cambridge Econometrics
- Brexit - What We Know Now, Tony Blair's Institute for Global Change
- Wikipedia inclusion: Brexit
- UK Parliament
- Assessing the exposure of EU27 regions and cities to the

UK's withdrawal from the European Union, CoR Committee of the Regions

The analysis

- **Trade** related **effects:** Input-Output analysis; intermediate and final goods; global fragmentation of the value chains – local GDP, regional labour income
- **Competitiveness**: FDI, Trade and Knowledge
- **Governance**: regional stakeholder workshops and regional and sectoral case studies
- **Extent:** EU countries, UK and EU regions, sectors, jobs, occupations
- **New indicators and data**

Regional Stakeholder Participatory Workshops

Devolved Administrations	Scotland, Edinburg, 4th May 2018
West Midlands	Birmingham, 11th May 2018
Greater London	London, 18th May 2018
North of England	Leeds, 21st May 2018

Welcome Address

Professor Daniel Wincott, The UK in a Changing Europe

The Economic Impacts of Brexit on the UK, its Regions, its Cities and its Sectors

Welcome Address

Lloyd Broad, Birmingham City Council

Regional Impacts of Brexit: West Midlands

Professor Philip McCann, University of Sheffield
Charlie Hopkirk, Black Country Consortium
Nicola Hewitt, West Midlands Growth Company
David Hearne, BCU, Centre for Brexit Studies

Regional Impacts of Brexit: West Midlands

Professor Philip McCann, University of Sheffield

The Continental Divide?
Economic Exposure to Brexit in Regions and Countries on Both Sides of the Channel

Wen Chen, Bart Los, Philip McCann, Raquel Ortega-Argilés, Mark Thissen and Frank van Oort
Papers in Regional Science, 97.1, 25-54

"Exposure to Brexit in Regions on Both Sides of the Channel", 2017, VoxEU, 19 December, See: http://voxeu.org/article/exposure-brexit-regions-both-sides-channel

How?

- Simple measures of gross exports and imports tell us very little about the potential impacts of Brexit on a nation or region, because both the back-and-forth trade in raw materials, parts and components and business services (often within the boundaries of multinational enterprises) typical of global value-chains obscures the links between local value-added and trade (Baldwin, 2016).

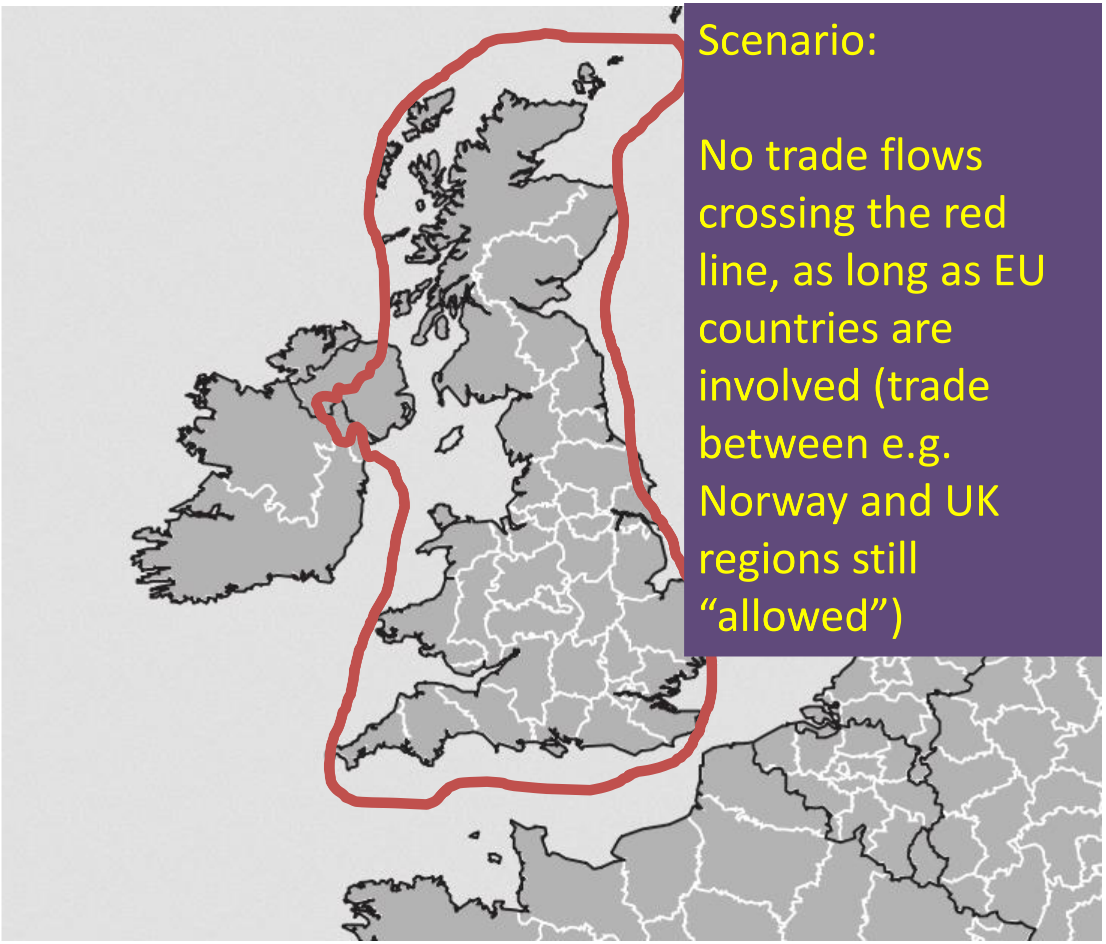
Data construction

- Two types of sources:
- The World Input-Output tables of the WIOD 2013 release containing 40 countries (accounting for about 85% of world GDP, including all EU27) plus a composite ‘super-country’ labelled 'Rest of the World' are represented (Timmer et al., 2015).
- Second type of data, from regional sources: Eurostat’s regional economic accounts, a number of survey-based regional supply and use tables or input-output tables produced in a subset of countries, and estimates of interregional goods and services trade based on freight and airline business passenger statistics (Thissen et al., 2013).
- The merging of the information contained in these data sources allows us to:
- Incorporate regional details regarding <u>production structure and trade</u> at the NUTS2-level for <u>all major EU-countries in global input-output tables for 2000-2010.</u>
- 245 NUTS2 European regions are represented and 14 industries can be identified for all regions and countries.

How?

- We develop a measure of regional exposure to Brexit building upon a flourishing strand of literature using global input-output tables to link trade to value-added (Johnson and Noguera, 2012; Timmer et al., 2013; Koopman et al., 2014).
- We use a bilateral version of the Domestic Value Added in Exports (DVAiX) indicator proposed by Koopman et al. (2014).

Input-Output Data



Scenario:

No trade flows crossing the red line, as long as EU countries are involved (trade between e.g. Norway and UK regions still “allowed”)

IO-tables allow for mapping of trade to labor income and value added

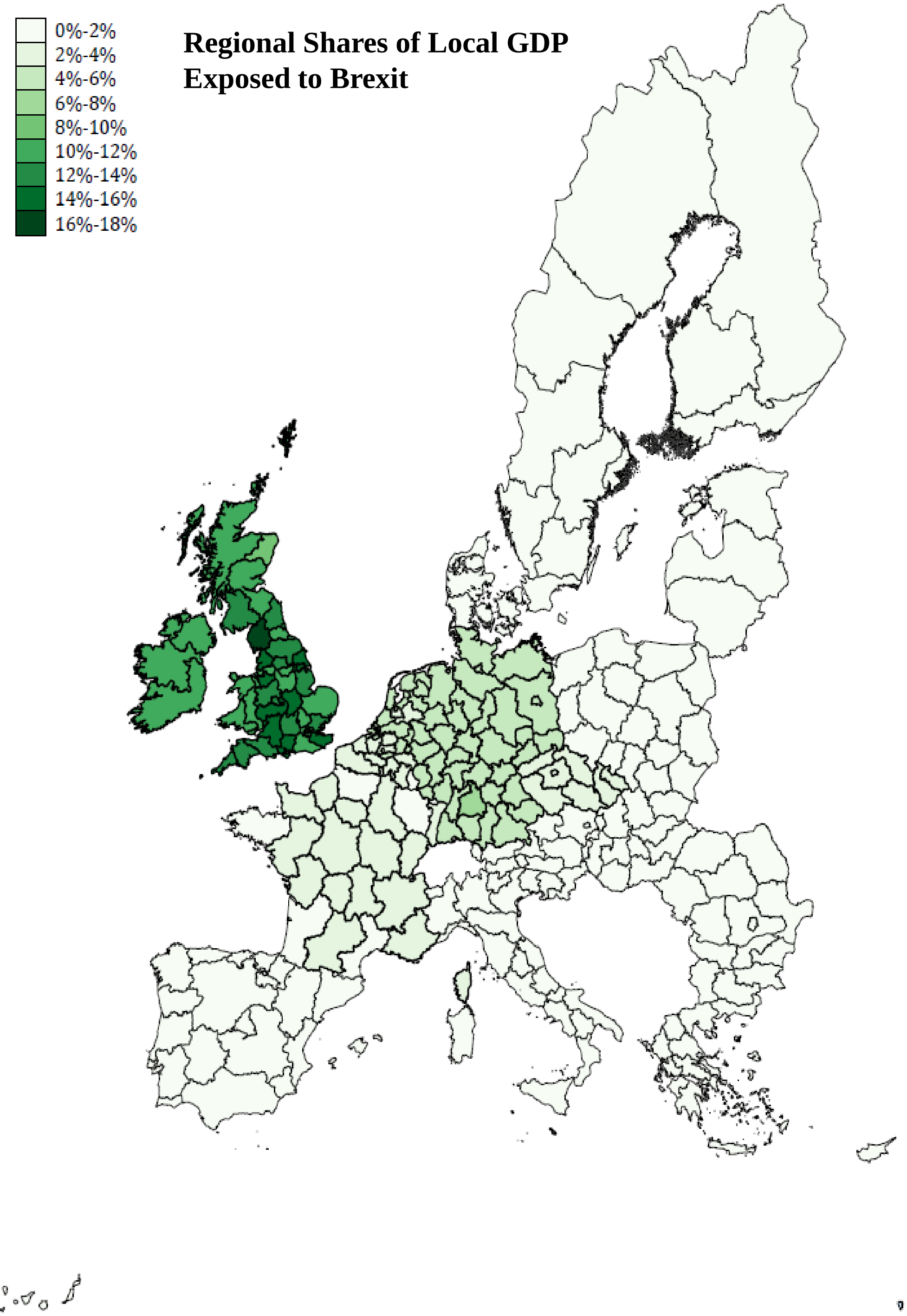
“Regional GDP exposed to Brexit”: Difference between actual GDP and GDP without EU-UK trade

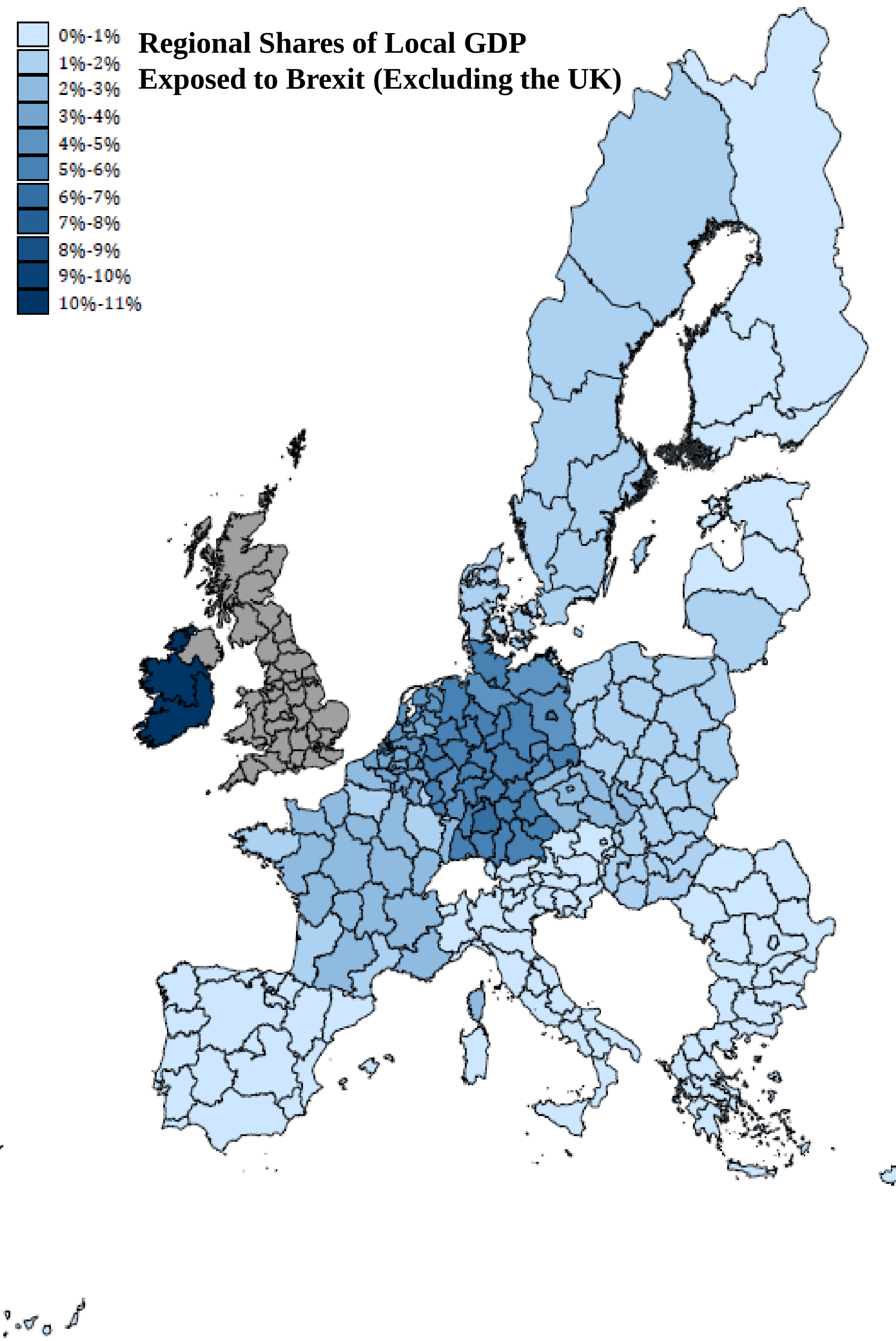
Research Question

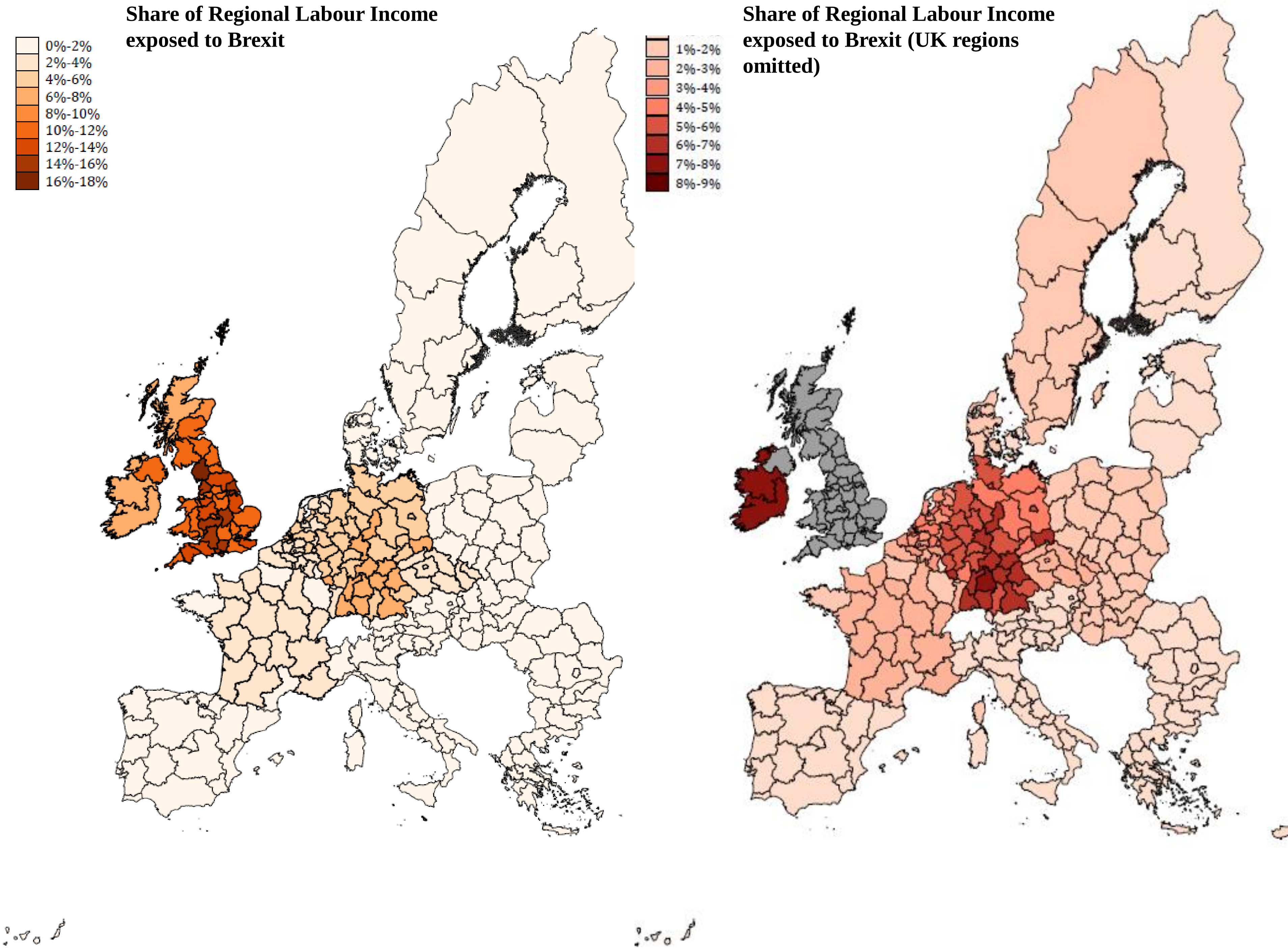
- *“Which shares of regional Labor Income and regional GDP are at risk as a consequence of future Brexit-related trade barriers?”*
- (which is <u>not</u> identical to:
- “Which shares of regional LI and GDP will be lost as a consequence of Brexit?”)
- *How big are the required structural and economic adjustments?*

Brexit Exposure Risk

- For UK regions:
  - direct trade linkages (export, import, re-export, re-import)
  - indirect trade linkages via other UK regions
  - third country demand mediated via EU value-chains
- For EU regions:
  - direct trade linkages (export, import, re-export, re-import)
  - indirect trade linkages via other EU regions
  - third country demand mediated via UK value-chains
- Exclude UK-EU and EU-UK demand linkages mediated via third countries


0%-2%
2%-4%
4%-6%
6%-8%
8%-10%
10%-12%
12%-14%
14%-16%
16%-18%
Regional Shares of Local GDP Exposed to Brexit


0%-1%
1%-2%
2%-3%
3%-4%
4%-5%
5%-6%
6%-7%
7%-8%
8%-9%
9%-10%
10%-11%
Regional Shares of Local GDP Exposed to Brexit (Excluding the UK)



Share of Regional Labour Income exposed to Brexit
0%-2%
2%-4%
4%-6%
6%-8%
8%-10%
10%-12%
12%-14%
14%-16%
16%-18%
Share of Regional Labour Income exposed to Brexit (UK regions omitted)
1%-2%
2%-3%
3%-4%
4%-5%
5%-6%
6%-7%
7%-8%
8%-9%

National Brexit Exposure Risk

- UK regions →10%-17% of regional GDP
- Irish regions → 10% of regional GDP
- German regions → 4.5%-6.4% of regional GDP
- Dutch regions → 3.5%-5% of regional GDP
- Belgian regions → 2.8%-4% of regional GDP
- French regions → 1.8%-2.7% of regional GDP
- Italian, Spanish, Greek → < 1% of GDP
- UK Brexit risk exposure = 12.2% of UK GDP
- EU Brexit risk exposure = 2.64% of EU GDP
- UK Brexit exposure risk is 4.6 times higher than the EU

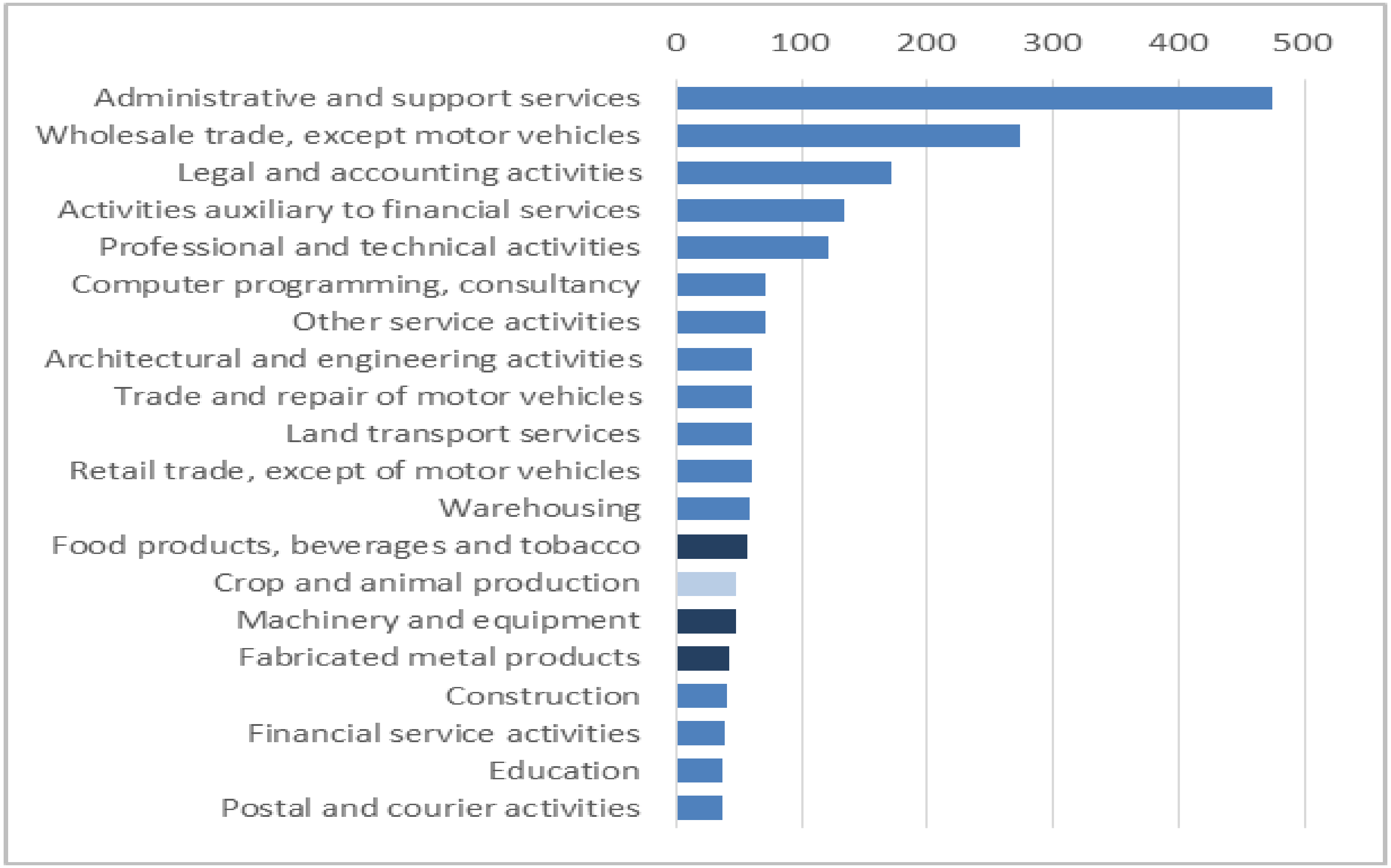
Sectoral Brexit Exposure Risk

- City-REDI Policy Briefing Series, December 2017

- “An Assessment of Brexit Risks for 54 Industries: Most Services Industries are also Exposed”
- Bart Los, Wen Chen, Philip McCann and Raquel Ortega-Argilés

- https://blog.bham.ac.uk/cityredi/wp-content/uploads/sites/15/2017/12/City-REDI-Briefing-Template_Sectoral-Analysis-2.pdf

UK Sectoral Risk Exposure



UK Sectoral Risk Exposure

- In the UK as a whole, more than 2.5 million jobs are exposed to the trade effects of Brexit
- Annually, almost £140 billion pounds of UK economic activity is directly at risk because of Brexit
- Professional, scientific and technical activities, activities auxiliary to financial services and wholesale trade.
- Financial services are only exposed to 8% of the sector's GDP - consistent with the estimates for City job relocation to rest of the EU – and the aggregate effect on the UK economy of their exposure is only 0.33% of UK GDP

UK Sectoral Risk Exposure

- Many important manufacturing and primary industries are highly exposed to Brexit, but so are many services industries (and not just the financial services industry)
- These services are not only exported directly to EU countries, but also sell intensively within domestic supply chains to UK manufacturing firms exporting to the EU
- Workers in the jobs at risk are on average slightly more productive than the average British worker – Brexit is likely to exacerbate the UK's productivity problems

Regional Impacts of Brexit: West Midlands

Charlie Hopkirk, Black Country Consortium

Black Country Consortium

Economic Intelligence Unit

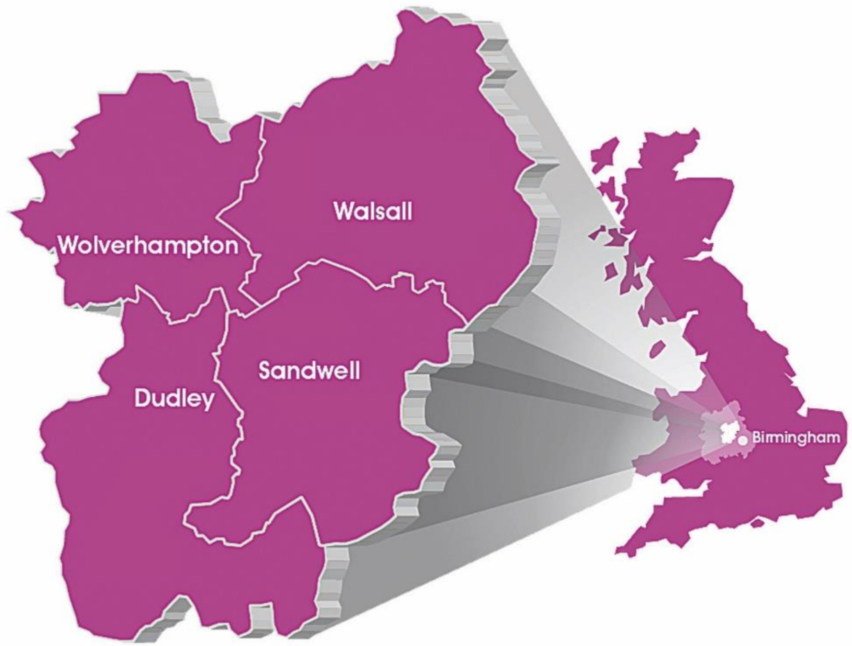
Black Country LEP Brexit Activity & Findings

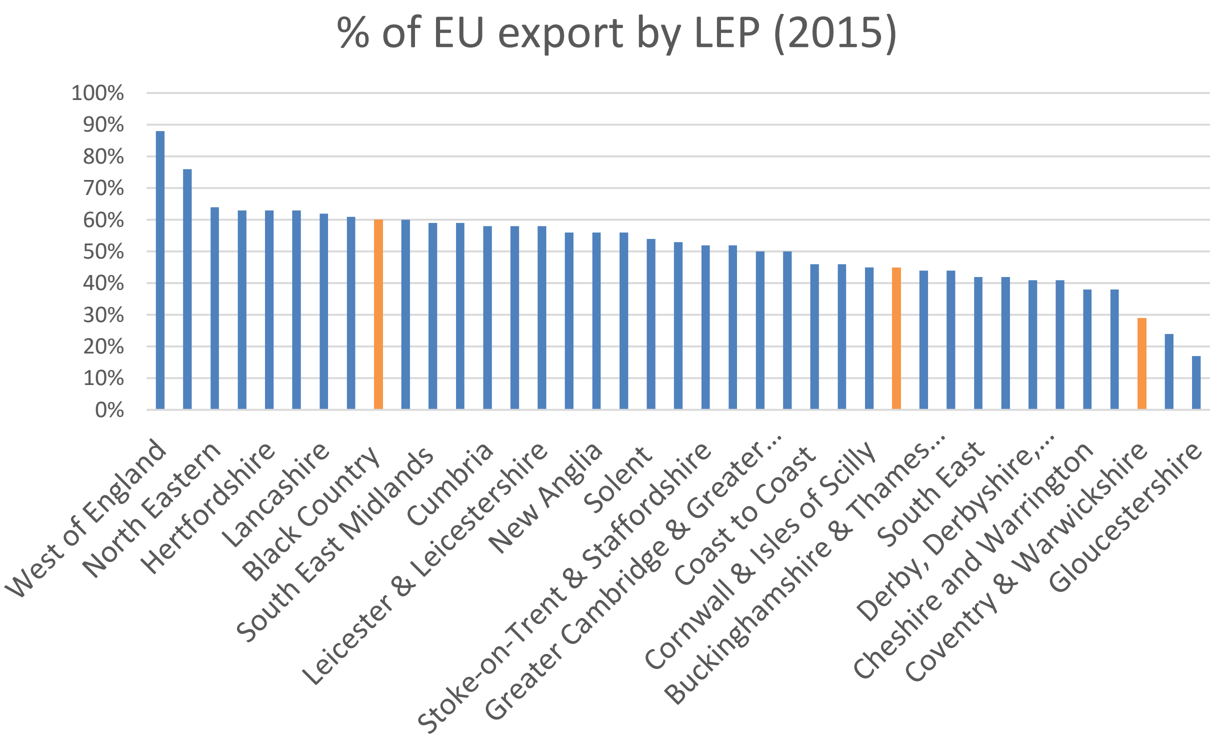
May 2018

Black Country *LEP*

- Black Country LEP
- Context
- LEP Brexit Group Approach
- Findings from business engagement, themes of:
    - trade
    - labour
    - funding
- Black Country ‘Asks’ on Brexit
- Next Steps and Conclusion

Black Country *LEP*




% of EU export by LEP (2015)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
West of England
North Eastern
Hertfordshire
Lancashire
Black Country
South East Midlands
Cumbria
Leicester & Leicestershire
New Anglia
Solent
Stoke-on-Trent & Staffordshire
Greater Cambridge & Greater…
Coast to Coast
Cornwall & Isles of Scilly
Buckinghamshire & Thames…
South East
Derby, Derbyshire,…
Cheshire and Warrington
Coventry & Warwickshire
Gloucestershire

Source: HMRC

Sectoral Groups and Brexit: Impact on Exports

	Scenario 1: EEA	Scenario 2: FTAs with EU and FTA67	Scenario 3: FTA with EU	Scenario 4: No Deals	Scenario 5: FTAs with FTA67 and ROW
	Percentage change in the value of exports				
Food processing	-6.9	-24.7	-26.2	-38.4	-33.7
Textiles, apparel and footwear	-8.4	-16.5	-17.8	-33.5	-29.7
Wood, paper and printing	-9.2	-14.8	-17.1	-20.2	-13.0
Chemicals and pharmaceuticals	-6.6	-14.4	-15.8	-21.3	-14.6
Rubber and plastic	-4.4	-9.9	-10.8	-17.4	-13.4
Metals and non-metallic minerals	-6.7	-12.6	-21.2	-25.5	-7.1
Electronic and scientific	-4.0	-9.2	-9.8	-11.9	-9.1
Electrical	-5.3	-11.6	-12.6	-16.7	-11.0
Machinery	-3.3	-7.3	-8.3	-10.7	-6.0
Transport	-3.0	-8.7	-9.8	-14.2	-9.1
Other	-3.7	-8.3	-9.0	-11.1	-8.2

Source: University of Sussex

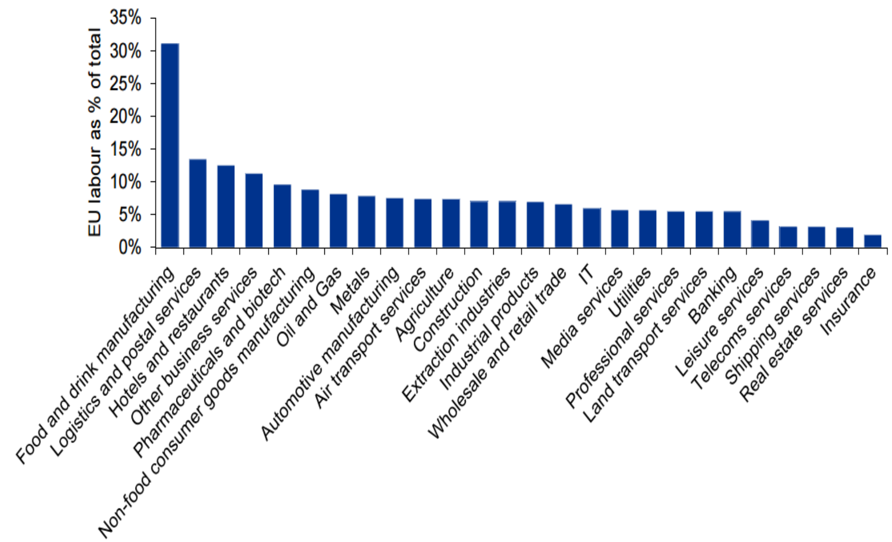
Sectors most exposed to post-Brexit trade

Free labour	
Metals	74
Oil and Gas	72
Automotive manufacturing	71
Industrial products	65
Pharmaceuticals and Biotech	63
Food and drink manufacturing	62
Non-food consumer goods manufacturing	61
Banking	52
Business services	49
Agriculture	49
Transport and storage services	48
Extraction industries	45
IT, media and telecoms	44
Insurance	41
Hotels and restaurants	39
Wholesale and retail trade	37
Leisure services	35
Utilities	30
Construction	13

Source: KPMG

Average manufacturing workforce:

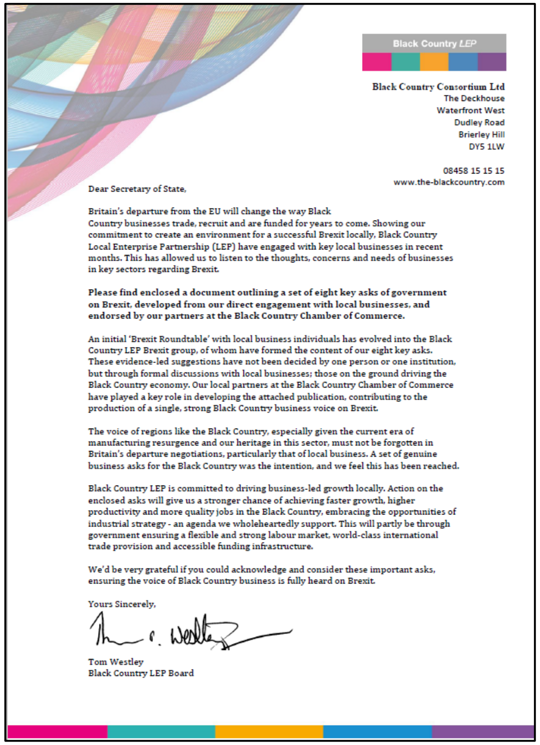
Source: EEF (2017) Your Workforce & Brexit



Source: KPMG

- Initial roundtable with local businesses in August 2017
- Objective to understand business concern on Brexit
- Selection was cross-sectoral & with a focus on a high share of exports
- Supplemented by 'Potential Impacts' document

- Further discussions followed
- Group evolved to be in partnership with Black Country Chamber & attended by BEIS
- Ambition of the group became more strategic
- Letter and key 'asks' document sent to Greg Clark in January 2018



Black Country LEP

Black Country Consortium Ltd
The Deckhouse
Waterfront West
Dudley Road
Brierley Hill
DY5 1LW

08458 15 15 15
www.the-blackcountry.com

Dear Secretary of State,

Britain's departure from the EU will change the way Black Country businesses trade, recruit and are funded for years to come. Showing our commitment to create an environment for a successful Brexit locally, Black Country Local Enterprise Partnership (LEP) have engaged with key local businesses in recent months. This has allowed us to listen to the thoughts, concerns and needs of businesses in key sectors regarding Brexit.

Please find enclosed a document outlining a set of eight key asks of government on Brexit, developed from our direct engagement with local businesses, and endorsed by our partners at the Black Country Chamber of Commerce.

An initial 'Brexit Roundtable' with local business individuals has evolved into the Black Country LEP Brexit group, of whom have formed the content of our eight key asks. These evidence-led suggestions have not been decided by one person or one institution, but through formal discussions with local businesses; those on the ground driving the Black Country economy. Our local partners at the Black Country Chamber of Commerce have played a key role in developing the attached publication, contributing to the production of a single, strong Black Country business voice on Brexit.

The voice of regions like the Black Country, especially given the current era of manufacturing resurgence and our heritage in this sector, must not be forgotten in Britain's departure negotiations, particularly that of local business. A set of genuine business asks for the Black Country was the intention, and we feel this has been reached.

Black Country LEP is committed to driving business-led growth locally. Action on the enclosed asks will give us a stronger chance of achieving faster growth, higher productivity and more quality jobs in the Black Country, embracing the opportunities of industrial strategy - an agenda we wholeheartedly support. This will partly be through government ensuring a flexible and strong labour market, world-class international trade provision and accessible funding infrastructure.

We'd be very grateful if you could acknowledge and consider these important asks, ensuring the voice of Black Country business is fully heard on Brexit.

Yours Sincerely,

Tom Westley
Black Country LEP Board

- Trade

- Labour

- Funding

- Lack of certainty affecting confidence
- Some hostility reported from EU customers
- Smooth customs arrangement seen as vitally important, particularly for component manufacturing
- Not enough DIT advisers working locally
- Concern for smaller firms, and ease of UK-EU trade taken for granted
- Low pound has been useful in the short-term

“Since the referendum, some EU customers have discontinued their interest in doing business”

Medium-sized Black Country component manufacturer

- Reduction of EU workers identified, with a “trickle” leaving the UK
- More assurances need to be made on the status of EU workers here
- Huge concern over loss of labour
- UK skills system not producing enough quality candidates
- Immigration processes seem to be getting harder over time
- Not doing enough to make EU citizens welcome
- Opportunity for focused skills system for the long-term

“Without EU labour we wouldn’t have grown as much as we have in the past decade”

Medium-sized Black Country manufacturer

- Many projects locally have been heavily reliant on EU funding in the past, particularly through structural funds
- WM received €400m and €372m from the ERDF and ESF respectively in 2007-13
- Concerns over the detail of the UK Prosperity Fund
- Criticism of the accessibility of EU funding to SMEs
- Need for more innovative funding models for small business lending

1. Clarify your expectations of future trading relationships and trading conditions.

2. Give greater practical support from government resources (e.g. BEIS personnel) to the Black Country.

3. Minimise the impact of non-tariff barriers and logistical delays via a smooth customs arrangement with the EU.

4. Revamp and expand the role of DIT within local economies to reverse a lack of confidence in exporting worldwide.

5. Provide guarantees on the equal rights of EU labour in the UK.

6. For when the supply of a permanent vacancy clearly meets the demand of a non-UK worker, develop a more seamless system for employers to recruit from overseas.

7. Announce further detail on the replacement of EU funds post-Brexit.

8. Develop a strategic focus on building a stronger domestic workforce and on driving the growth of re-shoring.

Westminster Roundtable Session

- With Chamber (June/July)
- Will provide a unified BC business voice

Add to Evidence Base

- To strengthen our messaging
- More quantitative evidence

Continue to Represent BC Business

- Working in partnership
- Seamless as possible transition

- The LEP is working with partners to understand concerns among businesses on Brexit

- Group discussions have revealed concerns within major themes of trade, labour and funding

- Combination of qualitative and quantitative data aiding our understanding, but this to be extended

- LEP/Chamber have voiced the ‘asks’ of Black Country businesses, and plans to extend this with Westminster trip

- We’ll continue to work to provide the voice of business and ensure a successful post-Brexit transition

Regional Impacts of Brexit: West Midlands

Nicola Hewitt, West Midlands Growth Company

MAKE YOUR MARK

Future Perspectives

Friday 11 May 2018

West Midlands Growth Company

Future Perspectives

Current Strengths

- West Midlands Combined Authority **banking and finance sector is worth £4.5bn a year**
- 61% of investments were FDI and created **34,129 new jobs for the region**
- West Midlands is the **3rd highest exporter in the UK** providing 40% of UK's car exports
- GBSLEP and Coventry and Warwickshire LEP are ranked **#1 and #2 for automotive employment in the UK**

West Midlands Growth Company

Future Perspectives

- A drop in performance for transport equipment, industrial equipment and business services in 2016
- Manufacturing footprints are changing globally
- More complex value chains with production activities likely to become scattered over geographies
- Uncertainty surrounding cross-border supply chains
- Trade agreements are critical for the automotive and manufacturing sectors

West Midlands Growth Company

Internet of Things

The Fourth Industrial Revolutio

Data and digital skills are becoming intrinsically important to all sectors.

This new revolution gives the WMCA a chance to highlight its strengths in:

- Innovation
- Research
- Development
- Talent Pool
- Manufacturing

West Midlands Growth Company

Internet of Things
The Fourth Industrial Revolution

From	To
Economies of Scale Standard parts re-used across multiple products driving low unit costs	**Lower Minimum Economic Scale** Lower barriers to entry for new competition
Multi-tier Supply Chains Complex supply chains with many tiers of suppliers and sub-contractors	**Fewer Tiered Supply Chains** Simpler supply chains with fewer intermediate tiers of sub-contractors
Global Supply Chains Combining global demand while pursuing opportunities for cost efficiencies and arbitrage	**Localised Manufacturing** Re-distribution of world's manufacturing to be more regional and local

West Midlands
Growth Company

Impact of Brexit

Immediate effects

- The fall in the value of GBP increased investment interest
- High levels of uncertainty surrounding trade conditions
- Investment in core sectors slowed by 30% from 2015 to 2016
- Companies delaying or cancelling investment decisions

West Midlands
Growth Company

West Midlands
Growth Company

Opportunities

West Midlands
Growth Company

Growth Company

Regional Impacts of Brexit: West Midlands

David Hearne, Centre for Brexit Studies, Birmingham City University

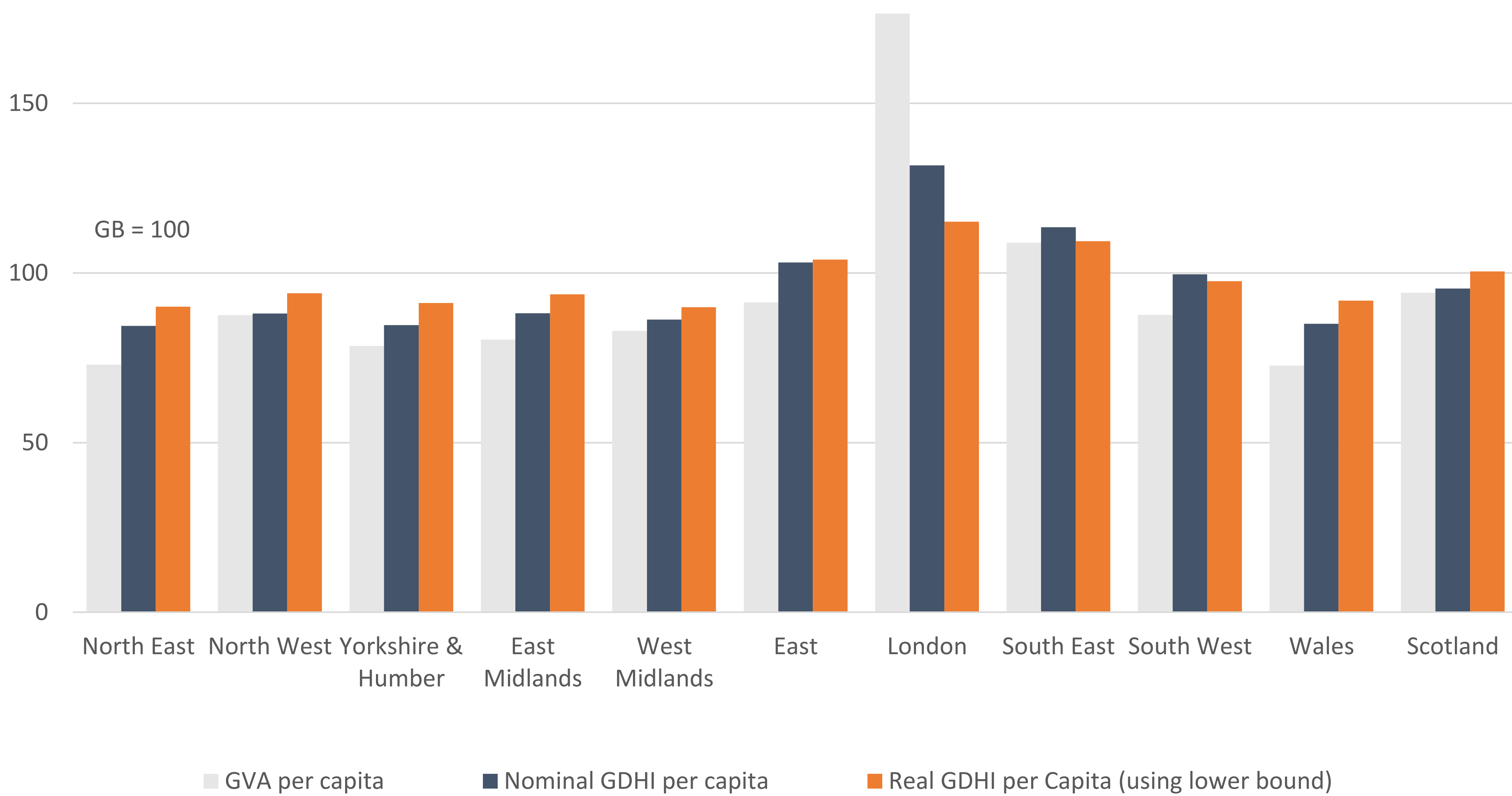
Regional Disparities: The Need For New Measures

David Hearne

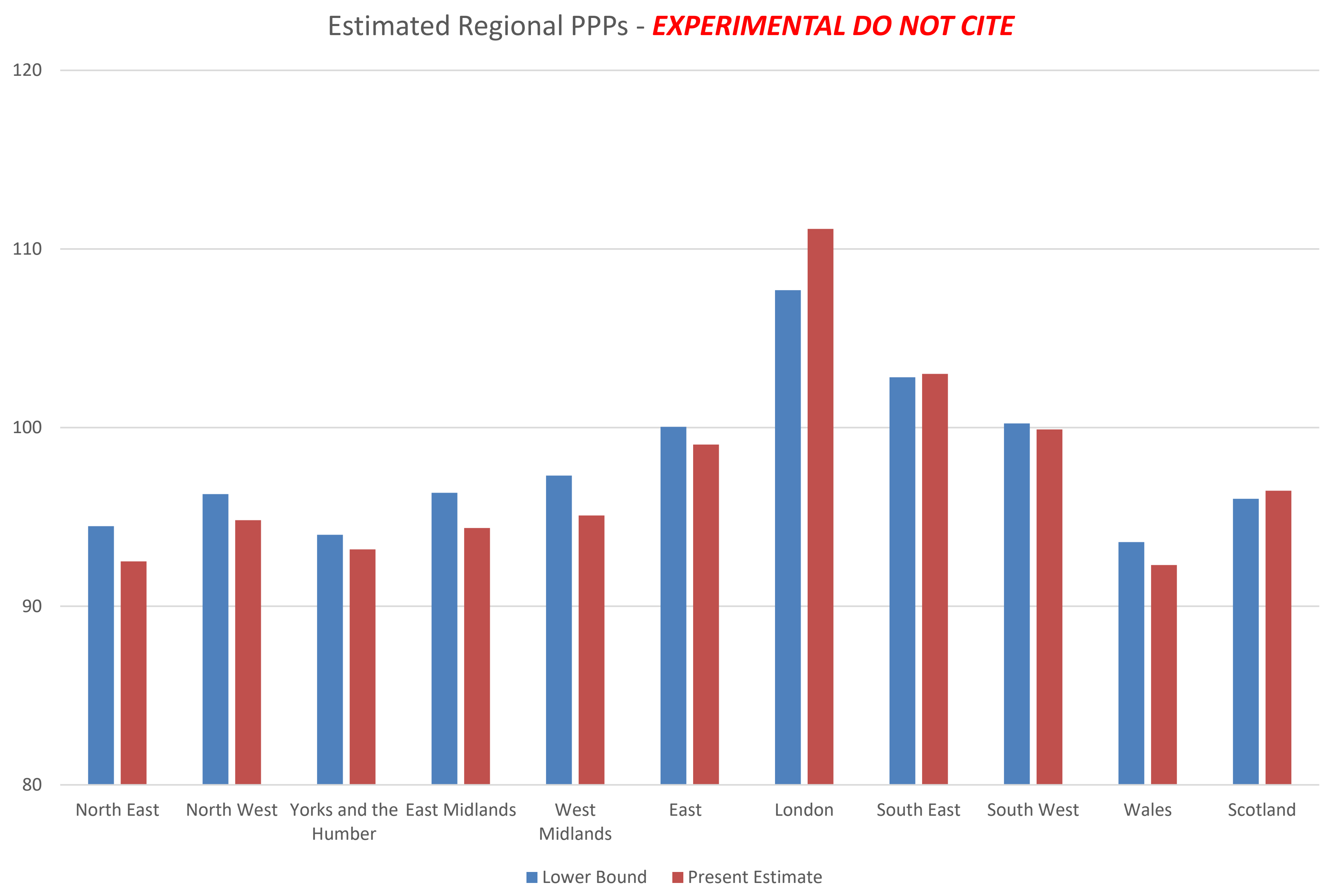
Birmingham City University,
Centre for Brexit Studies

BIRMINGHAM CITY University
Centre for Brexit Studies

Living Standards in Great Britain (2016)



BIRMINGHAM CITY
University
Centre for Brexit Studies



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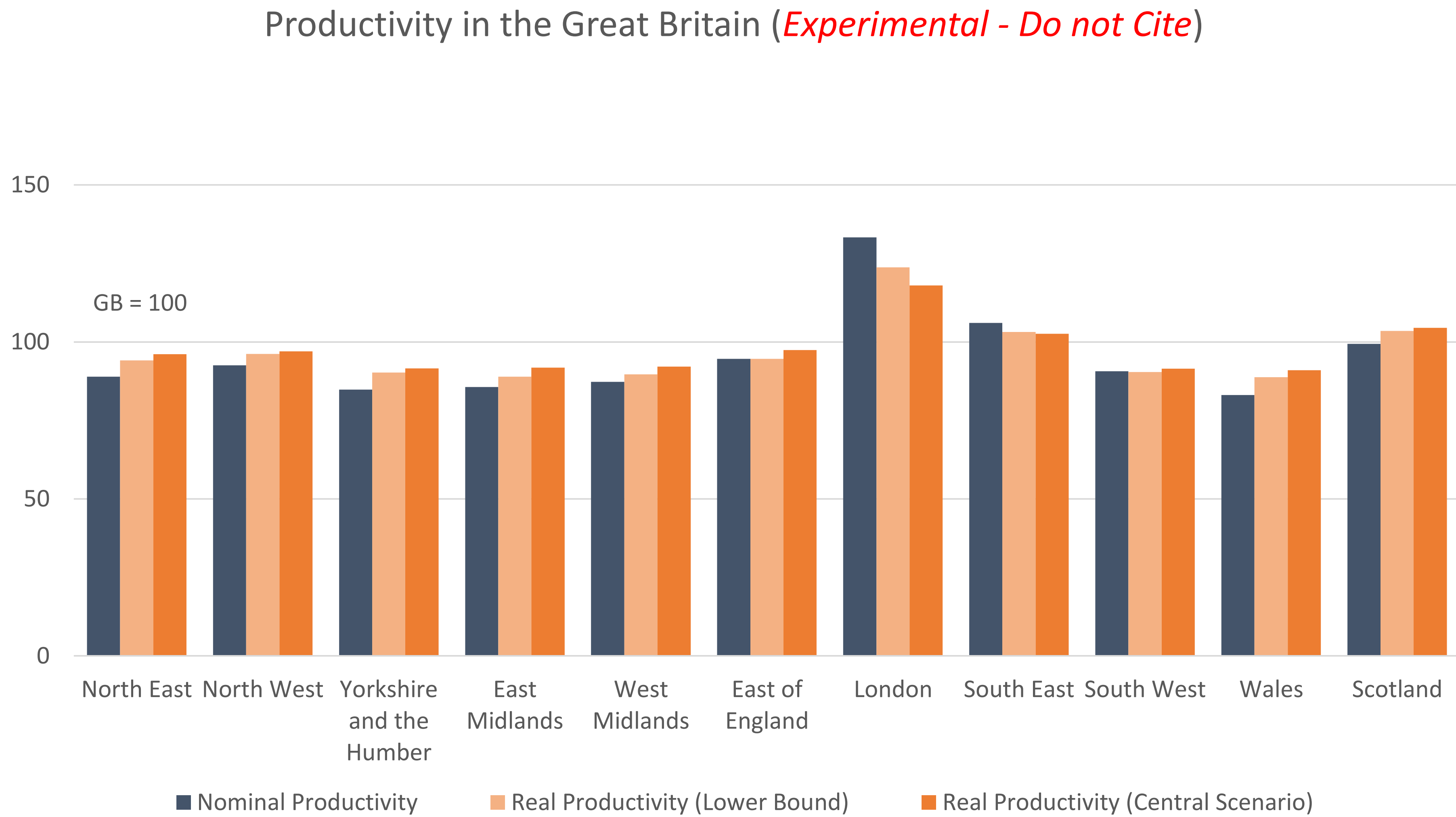

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Centre for Brexit Studies

West Midlands and Advanced Manufacturing: competitiveness challenges

Professor Frank van Oort, Erasmus University Rotterdam
Professor David Bailey, Aston University
Justin Benson, KPMG Automotive
Professor Nigel Driffield, Warwick University

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Erasmus School of Economics

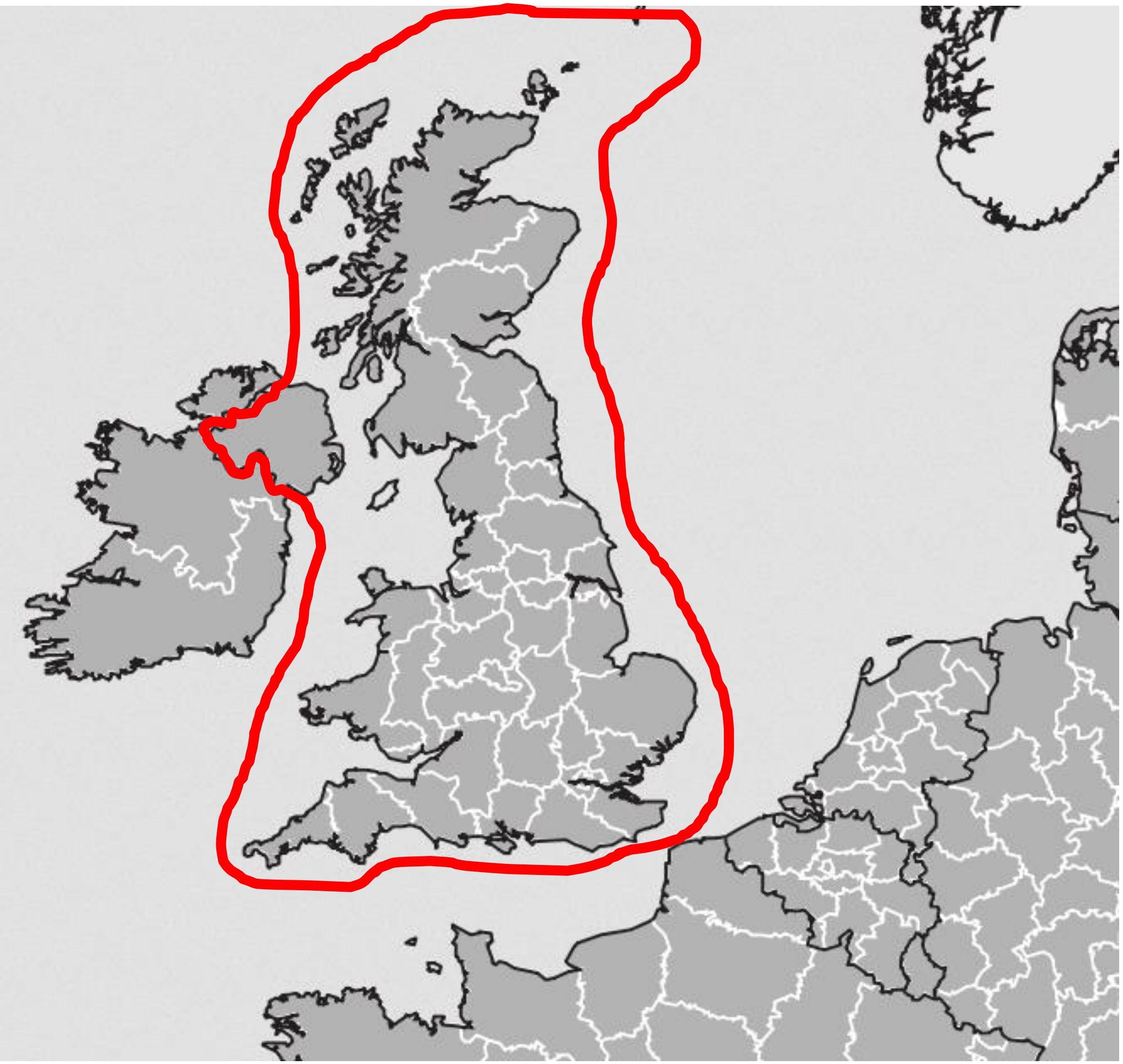
PBL Netherlands Environmental Assessment Agency

Competitiveness challenges of Brexit

Brexit West Midlands

Frank van Oort, Mark Thissen & Nicola Cortinovis

Exposure analysis versus Regional and sectoral production cost analysis of Brexit



Scenario Exposure analysis:

No trade flows crossing the red line, as long as EU countries are involved

Interregional Value chain IO-model for mapping of trade changes to labor income and value added:

$$x = Ax + F \longrightarrow x = (I - A)^{-1} F$$

Scenario production costs analysis:

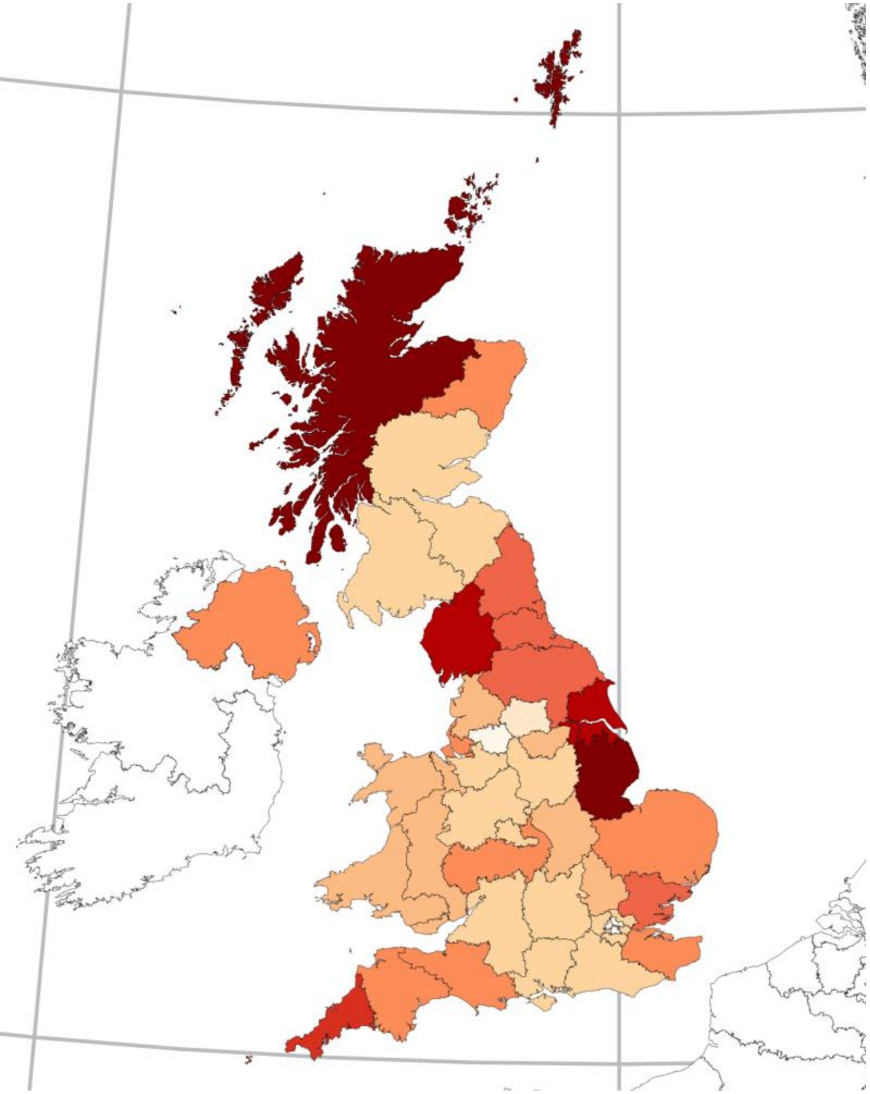
Barriers (non tariff and tariff) to trade following the red line and based on Dhingra et al. (2017).

Interregional Cost chain price-model to determine the effect on the costs:

$$p' = p'A + v' \longrightarrow p = (I - A')^{-1} v$$

v are prices for labor and capital; tariffs on the A matrix.

Competitiveness loss:
Production cost increase



production cost increase:

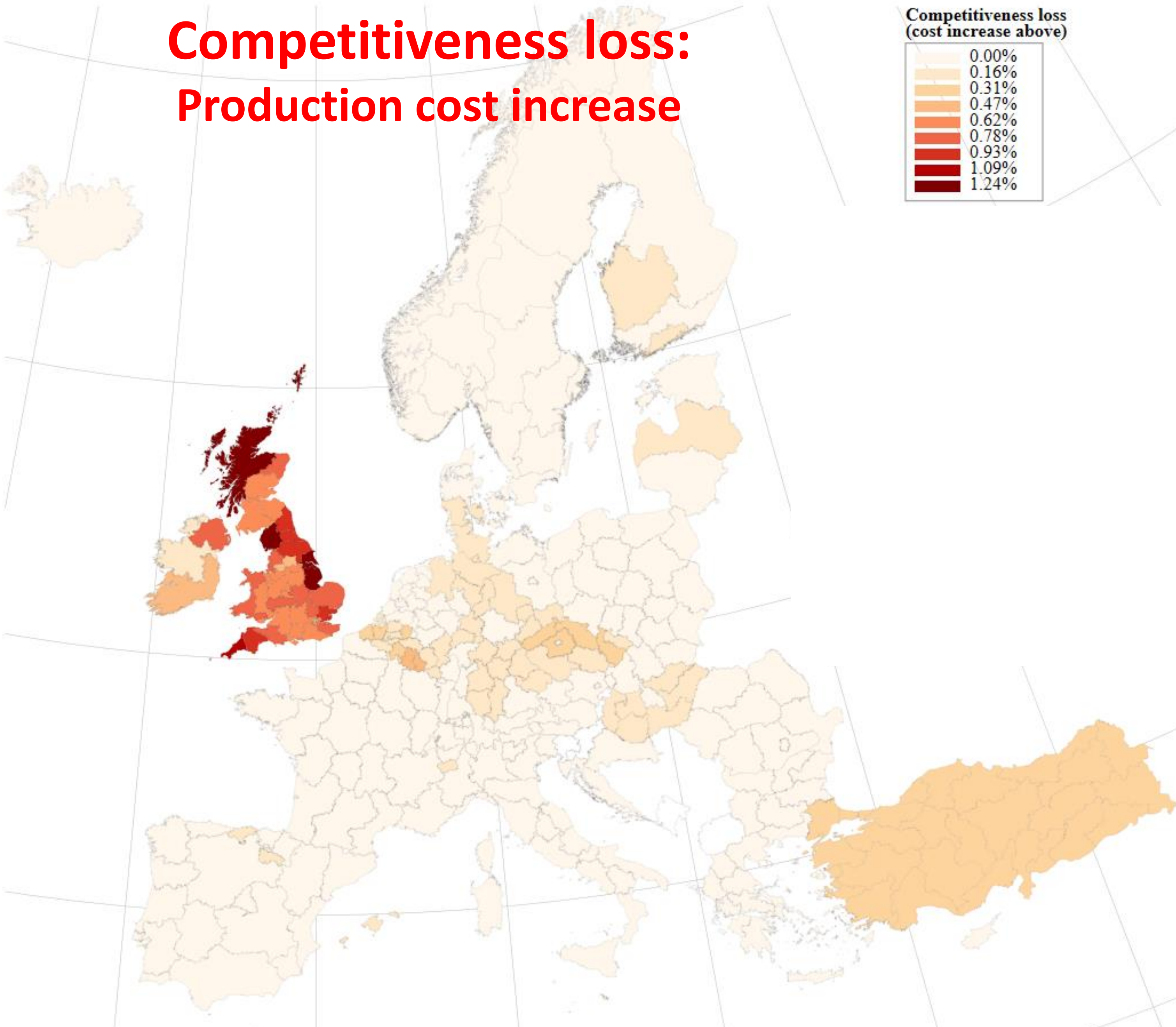
Large regional variation with:
- Minimum of 0.46% (Inner London)
- Maximum of 1.33% (Highlands and Islands)

Reason for regional variation:

- Production structure (indirect dependence\exposure to trade with the continent)
- Sector composition (higher impact on agriculture and manufacturing than on services)

- We use measure of interregional dependence introduced by Johnson and Noguera (JIntE, 2012)
- Data: Regionally disaggregated global input-output tables for **2013**

Competitiveness loss:
Production cost increase



Region and sector specific production cost increases
(preliminary results)

Average regional cost Increase	UKG2	UKG3	UKH1
Crop and animal production, hunting and related service activities	hropshire and Staffordshir	West Midlands	East Anglia
Forestry and logging	0,70%	0,66%	0,93%
Mining of coal and lignite	3,7%	4,0%	5,5%
Fishing and aquaculture	3,4%	3,5%	4,6%
Manufacture of wood and of products of wood and cork, except furniture; manufa	2,2%	3,4%	3,3%
Manufacture of food products	2,8%	2,8%	3,8%
Manufacture of textiles	1,8%	2,7%	2,4%
Printing and reproduction of recorded media	1,7%	2,5%	3,0%
Manufacture of paper and paper products	2,5%	2,2%	2,9%
Manufacture of chemicals and chemical products	2,1%	2,0%	2,8%
Manufacture of coke and refined petroleum products	2,0%	2,0%	2,7%
Manufacture of basic metals	1,8%	1,9%	1,8%
Manufacture of rubber and plastic products	1,3%	1,4%	1,8%
Manufacture of other non-metallic mineral products	1,5%	1,4%	1,5%
Manufacture of fabricated metal products, except machinery and equipment	1,5%	1,4%	2,0%
Manufacture of machinery and equipment n.e.c.	1,1%	1,3%	1,7%
Manufacture of electrical equipment	1,3%	1,2%	1,6%
Manufacture of basic pharmaceutical products and pharmaceutical preparations	1,2%	1,2%	1,7%
Manufacture of motor vehicles, trailers and semi-trailers	1,2%	1,2%	1,6%
Manufacture of computer, electronic and optical products	1,4%	1,2%	1,6%
Wholesale and retail trade and repair of motor vehicles and motorcycles	1,1%	1,1%	1,3%
Manufacture of furniture	1,0%	1,1%	1,3%
Repair and installation of machinery and equipment	0,4%	1,0%	1,2%
Manufacture of other transport equipment	1,0%	0,9%	1,7%
Electricity, gas, steam and air conditioning supply	0,7%	0,9%	1,7%
Sewerage	0,9%	0,9%	1,3%
Water collection, treatment and supply	0,9%	0,8%	0,9%

The competitiveness challenge:

- From exposure to cost increase of +2% on average (given scenario's on tariffs in Brexit); arguably more in agricultural and industrial regions; region and sector specific; focused policies seem expedient.

- Can productivity be impacted locally more than +2%, outperforming competitive advantages vis-à-vis other regions?

Which other regions (for West-Midlands)?

West-Midlands (Birmingham)									
		Total	**Total**	**Materials & production**	**Modern production**	**Energy**	**Finance**	**KIBS**	**Distribution***
EU Competitors are:		Potential	Winning	Winning	Winning	Winning	Winning	Winning	Winning
		Dublin	London	Stuttgart	Dublin	Rotterdam	Edinburgh	London	Milan
		Paris	Cardiff	Munich	MW Ireland	Eindhoven	Sheffield	Glasgow	Utrecht
		Milan	Dublin	Köln	Tübingen	Gothenborg	Bristol	Edinburgh	reading
		Düsseldorf	Düsseldorf	Düsseldorf	Milan	Stockholm	Manchester	Cardiff	Glasgow
		Barcelona	Munich	Dortmund	Wurzburg	Paris	Cardiff	Madrid	Düsseldorf
		Frankfurt	Stuttgart	Cardiff	Budapest	Liverpool	London	Rome	Cheshire
		MW Ireland	Reading	Karlsruhe	Thuringen	Dublin	Gent	N-Ireland	Kent
		Luxemburg	Barcelona	Tübingen	Dresden	Düsseldorf	Aberdeen	Manchester	Warsaw
		Stuttgart	Paris	Freinburg	Stuttgart	Leeds	Barcelona	Barcelona	Toulouse
		Munich	Glasgow	Berlin	Lyon	Copenhagen	Kent	Düsseldorf	Manchester
Location factors compared to competitors:									

Competing locally on what?

- Productivity (TFP)
- Agglomeration (density, clusters)
- Connectivity (physical, networked)
- Knowledge infrastructure (R&D, patents, educated)
- Labour market (matching, skills, education)
- Structural change opportunities (relatedness, adaptation, resilience)
- Institutions (housing)
- Amenities (living environment, fun)

Prioritising how?

- Productivity (TFP)
- Agglomeration (density, clusters)
- Connectivity (physical, networked)
- Knowledge infrastructure (R&D, patents, educated)
- Labour market (matching, skills, education)
- Structural change opportunities (relatedness, crossovers, adaptation, resilience)
- Institutions (housing)
- Amenities (living environment, fun)

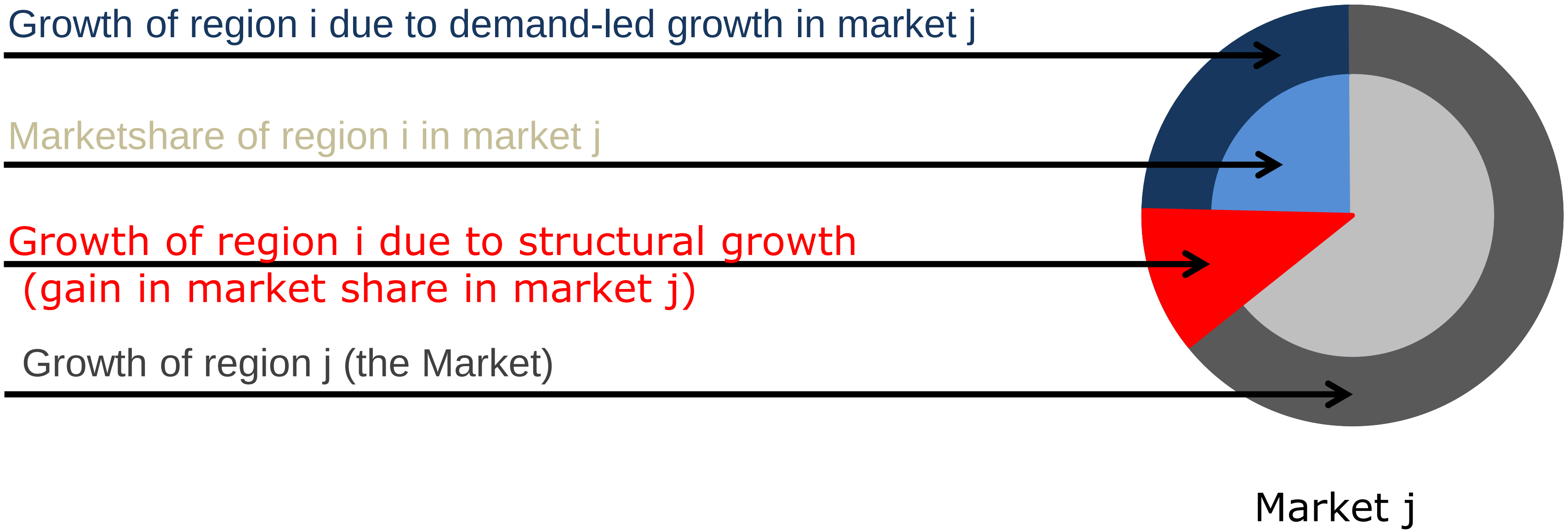
Diagnostics:

Not an easy job, as crucial local factors do not impact favourably at the moment already compared to competing regions…

West-Midlands (Birmingham)									
		Total	Total	Materials & production	Modern production	Energy	Finance	KIBS	Distribution*
EU Competitors are:		Potential	Winning	Winning	Winning	Winning	Winning	Winning	Winning
		Dublin	London	Stuttgart	Dublin	Rotterdam	Edinburgh	London	Milan
		Paris	Cardiff	Munich	MW Ireland	Eindhoven	Sheffield	Glasgow	Utrecht
		Milan	Dublin	Köln	Tübingen	Gothenborg	Bristol	Edinburgh	reading
		Düsseldorf	Düsseldorf	Düsseldorf	Milan	Stockholm	Manchester	Cardiff	Glasgow
		Barcelona	Munich	Dortmund	Wurzburg	Paris	Cardiff	Madrid	Düsseldorf
		Frankfurt	Stuttgart	Cardiff	Budapest	Liverpool	London	Rome	Cheshire
		MW Ireland	Reading	Karlsruhe	Thuringen	Dublin	Gent	N-Ireland	Kent
		Luxemburg	Barcelona	Tübingen	Dresden	Düsseldorf	Aberdeen	Manchester	Warsaw
		Stuttgart	Paris	Freinburg	Stuttgart	Leeds	Barcelona	Barcelona	Toulouse
		Munich	Glasgow	Berlin	Lyon	Copenhagen	Kent	Düsseldorf	Manchester
Location factors compared to competitors:									
Macro-economy	GDP/capita	-	--	o	o	-	-	o	o
	Total factor productivity	o	o	o	o	o	o	o	o
Agglomeration	Total Population	-	-	o	o	o	o	o	o
	Population density	+++	+++	+++	+++	++	+++	+++	+++
Connectivity	Connectivity road	o	o	-	o	o	+	+	o
	Connectivity air	o	o	o	+	o	+	o	o
	Congestion*	--	-	--	--	-	-	--	-
	Internet	+	o	o	+	o	o	o	o
Knowledge economy	High educated	--	--	--	-	--	-	--	--
	Public R&D	+	o	-	o	o	o	o	o
	Private R&D	--	--	---	--	--	o	o	-
	Patents	--	--	--	--	--	o	o	-
Labour market	Particpation	o	-	-	o	o	o	o	o
	Unemployment	++	++	+	+	++	++	+	++
	Education quality	o	o	o	o	o	o	o	o
	Education quantity	o	o	o	+	o	o	o	o
Institutions	Government effectiveness	o	o	o	o	o	o	o	o
	Cost of Living*	+++	+++	++	++	++	++	++	+++
	Housing affordability	o	o	--	-	o	o	o	-
	Environmental quality	+	o	o	+	-	o	o	o
	Income taxes	+	o	+	o	o	o	o	o
	Total taxes	+	o	o	o	-	o	o	o
Amenities	Housing quality	--	-	o	o	-	-	-	o
	Housing environment	o	o	o	o	o	o	o	o
	Culture & restaurants	o	-	o	o	-	o	o	o
	Recreation	-	--	-	o	--	--	--	-
	Nature	o	o	o	o	o	o	o	o
		-	+	High importance		+++/---			
		-	+			++/--	Scores Birmingham		
		-	+	Low importance		+/-	vis-à-vis competitors		
		o		Distinguishing (potential)		o			

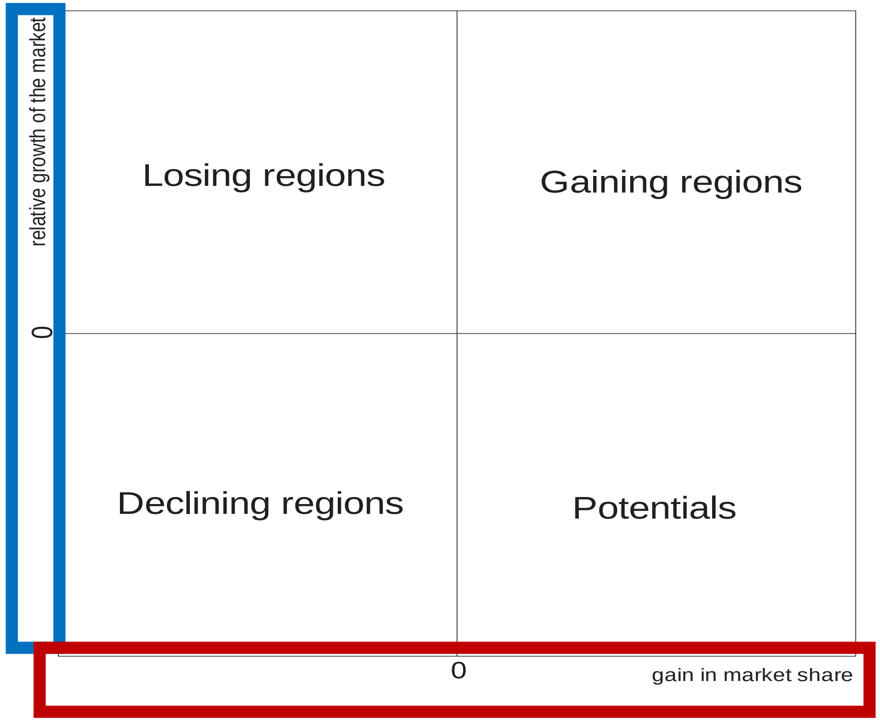
Besides, not all growth fosters competitiveness

Growth of region i: more products sold in region j



“Good growth, bad growth”

1. **Demand-led** growth (External factors): Growth by increased demand from **sales markets**



2. Structural growth (**regional policy**): Growth by increased competitiveness and gaining **market share**

Urgency of local policy responses West-Midlands to mitigate Brexit impacts:

- Exposure to Brexit large
- Asymmetrical cost-increases for firms due to Brexit
- Competitiveness impacts of crucial factors weak
- Crucial factors depend on complex variety of stakeholders
- Time needed for materialising structural change potentials
- Much demand-led growth (larger pie)
- Less structural growth (smaller pieces of pie)
- Competition for FDI & knowledge (also) fierce

West Midlands and Advanced Manufacturing: competitiveness challenges

Professor David Bailey, Aston University

Beyond Industry 4.0 & Implications for Industrial Policy

West Midlands and Advanced Manufacturing: Competitiveness challenges

David Bailey
Aston Business School

Lisa De Propris
Bimingham Business School

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MAKERS

Today:

Definitions of I4.0

MAKERS: a broader interpretation (I4.0+)

Brexit

Auto case: ICE to ACE

Implications for Industrial Policy?

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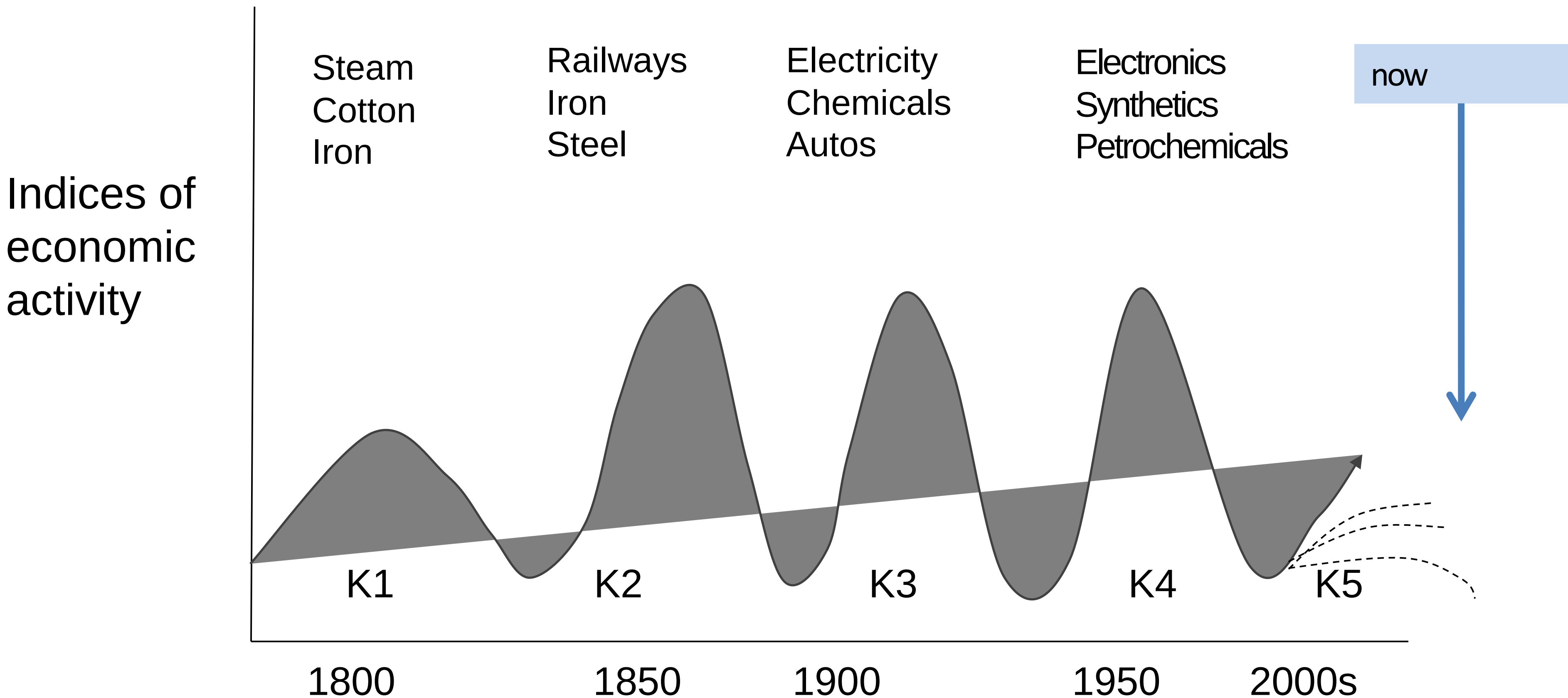
Technological change



Kondratiev's Long Waves

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4th Industrial revolution

Biotech, nanotech, neurotech, green & renewables, ICT & mobile tech, 3D, AI, Robotics, sensoring & space tech, drones

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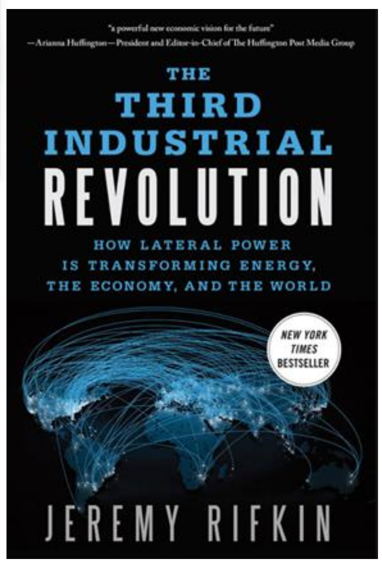
Revolution or evolution?

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Industry Agenda | Fourth Industrial Revolution | Emerging Technologies | Science & Technology

How the fourth industrial revolution is powering the rise of smart manufacturing

Woman shakes hands with a robot. Image: REUTERS/Wolfgang Rat

This article is published in collaboration with The Conversation

21 Jun 2016

Lisa De Propris
Professor of Regional Economic Development, University of Birmingham

Technology is all around us, and sometimes in us. We experience it daily in the way we stream music, in how we use an app to navigate a museum or a shopping centre, or to check our calorie burning and heart rate. This technolog is changing our lifestyle and consumption. There is, of course, a lot more technology around us that we don't see or touch at source. A wave of technological innovation has started to fundamentally alter how we make stuff. And it signals an era of huge change.

MAKERS - Sma
prosperity is a
MSCA- RISE - (

EU def of Industry 4.0

Industry 4.0 describes the organisation of production processes based on technology and devices autonomously communicating with each other along the value chain in virtual computer models.

Industry 4.0 involves a series of disruptive innovations in production and leaps in industrial processes resulting in significantly higher productivity.

Efficiency driven arguments→

- **Smart** and **webbed factories**
- Large plants
- Large firms or multi-national firms
- **Mass customisation**

- AI- IoT – robotics- automation
- Cyber-physical systems (smart ordering, scheduling, control and delivery systems, 'big data'.
- New combination capital & labour
- lower inventory upstream, in process and downstream.
- Max productivity

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MAKERS → Broader

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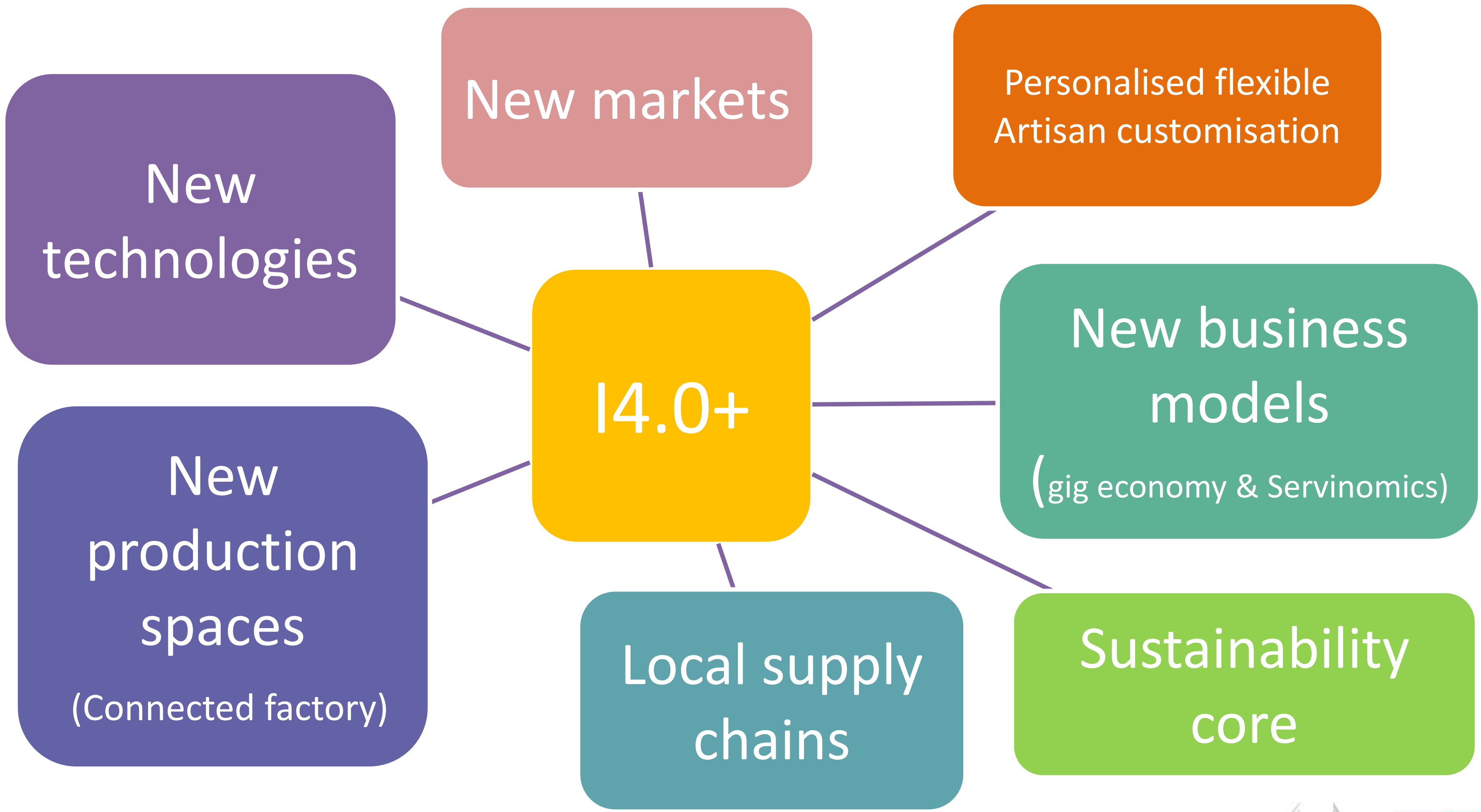
European Commission

MARIE CURIE ACTIONS

MAKERS

Industry 4.0+



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European Commission

MARIE CURIE ACTIONS

‘I4.0+’ & Auto:

- Connected devices and sensors;
- Predictive analytics, cognitive computing & AI; decisions and predictions based on real time data
- widespread adoption of mobile, touchscreen and virtual reality;
- new flexible systems of production, technologies such as 3D printing and intelligent robotics;
- connected factories

AND….

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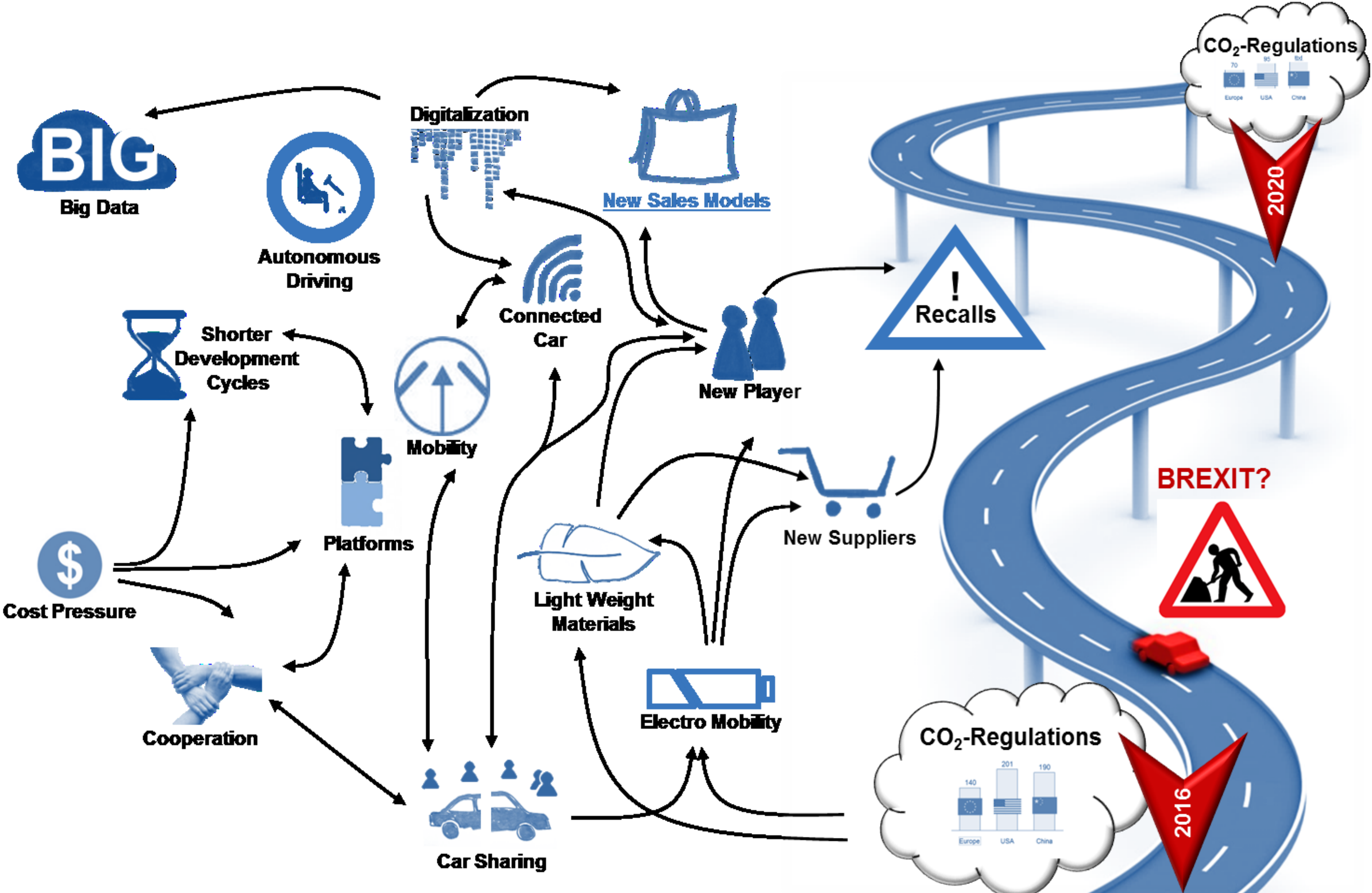
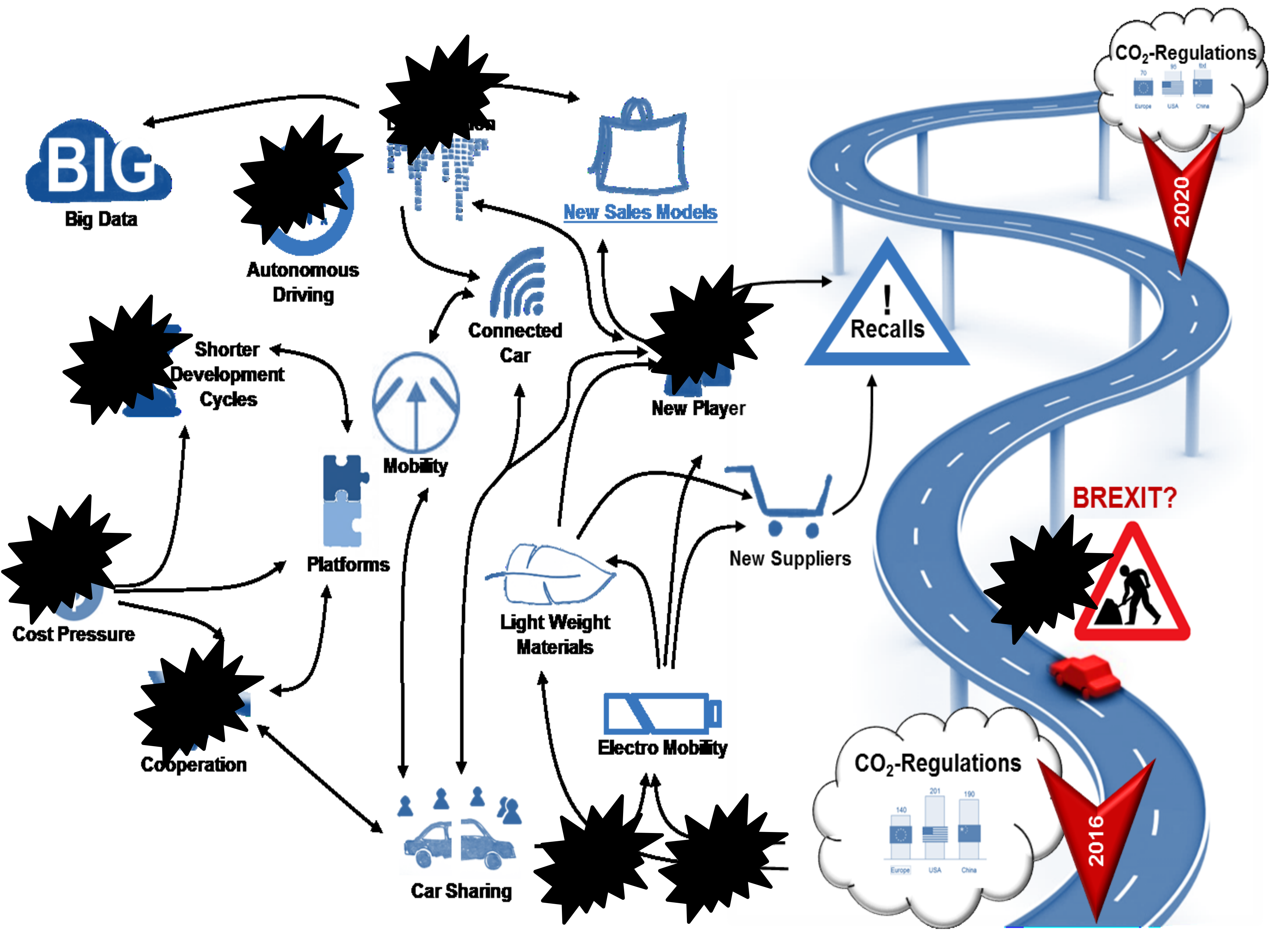
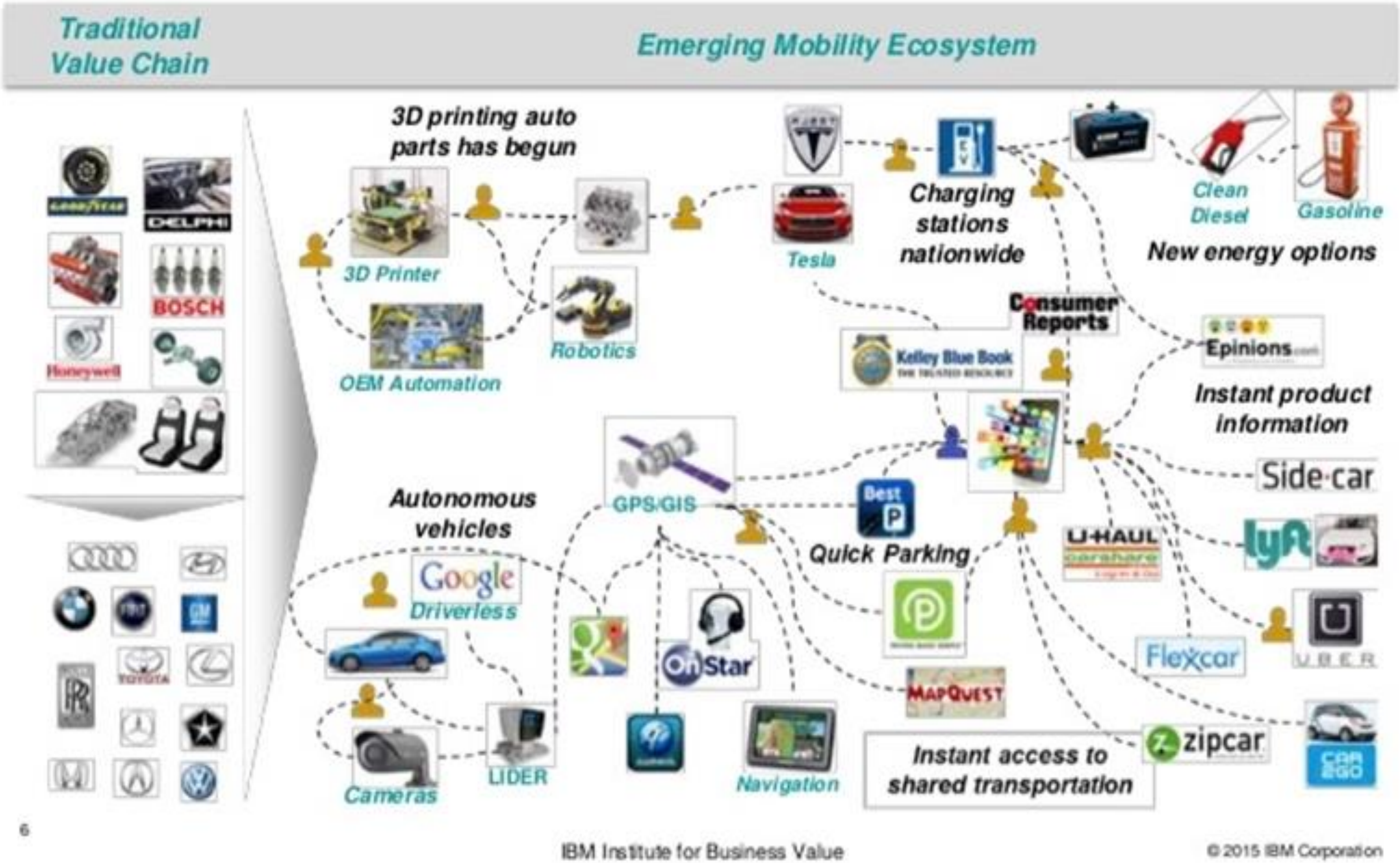


Source: **PA Consulting**, 2016. *Brexit: the impact on auto manufacturing in the UK*



Big Data
Autonomous Driving
[redacted]
New Sales Models
Connected Car
New Player
Recalls
Shorter Development Cycles
Mobility
Platforms
Cost Pressure
Co[redacted]peration
Car Sharing
Light Weight Materials
New Suppliers
Electro Mobility
BREXIT?
CO_2-Regulations
Europe
USA
China
2020
CO_2-Regulations
140
201
190
Europe
USA
China
2016


Traditional Value Chain
Emerging Mobility Ecosystem
3D printing auto parts has begun
3D Printer
OEM Automation
Robotics
Tesla
Charging stations nationwide
Clean Diesel
Gasoline
New energy options
Consumer Reports
Kelley Blue Book
Epinions
Instant product information
Side car
lyft
UBER
Flexcar
zipcar
Instant access to shared transportation
U-HAUL
MapQuest
Quick Parking
GPS/GIS
OnStar
Navigation
Autonomous vehicles
Google Driverless
Cameras
LIDER
6
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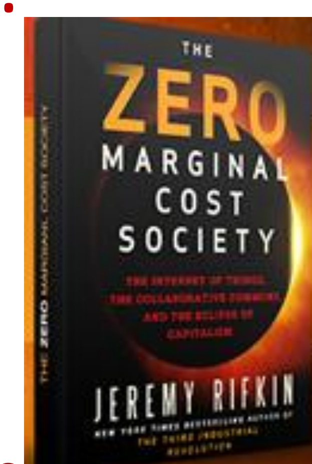
'ICE to ACE'

MAKERS

Key issues

- Co-creation
- New ways of consuming, using, accessing…
- Servitising consumption and sourcing
- Downscaling: Q: economies of scale?
- Shorter value chains?
- Rethinking products and processes from an ecological perspective



European Commission

MARIE CURIE ACTIONS

Pinch points?

- **Lack of information**
- **Vested interests**
- **Resistance to change**
- **Risk and uncertainty**
- **Delusion about the inevitable supremacy of services**
- **Belief that businesses & market know better**

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Implications for industrial policy 1

- **Political understanding of scale of change → information and education**
- **Design clear and communicated vision → shared vision, commitment**
- **Promote technology adoption and application→ join tech with sectors**
- **Join national with regional scales →multi-level**

→ regional industrial policy

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Implications for industrial policy 2

- Skills, training and retraining (lessons? Devo!)
- Infrastructure; eg 5G, charging infrastructure…
- Firm access to I4.0+ technologies (finance, funding, support)
- 'Platform sharing': enabling technologies. join technology, sector, place (Eg digital innovation hubs)
- Open innovation approaches ? (implications for eg challenge funding)

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Implications for industrial policy 3

- **GVC Repositioning? reshoring? Recoupling innovation and manufacturing?**
- **New GVCs: servitisation opportunities**
- **Place-based dimension of niche development (transitions lit: MLP): role of place!**
- **Modern forms of IP: *process* of discovery of tacit knowledge, identify opps, challenges and how to overcome → National & regional.**

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Brexit: some priorities to consider:

- Impact of Brexit on UK industry could be felt via: economic growth, investment delays, shifting cost bases, export disruption (and policy measures).

Need?:

- Prioritise Single Market in negotiating position with the EU or at least Customs Union +;
- Being able to hire skilled workers from EU;
- Exploiting opportunities on reshoring and the technological revolution underway: needs a much stronger industrial policy for auto & manufacturing.

What's to be done?

- Eliminate uncertainty over trade position as soon as possible
- Make the most of **opportunities** to export and reshore components supply
- Boost capital allowances rather than general cut to corporation tax?
- 'Re-boot' industrial policy and funding:

  More to rebuild supply chain – *reverse previous mistakes*

  Skills and finance – **devolution to regions.**

  Support for exporters

  Attracting tier 1 suppliers? Segments of supply chain.

  Innovation eg 'phoenix industry' linked to open innovation

  More holistic approach to encouraging the shift to EVs

  Energy costs? Proper compensation scheme.

Need to join up sectoral industrial policy and technology policies with place based approaches at regional level.

Thank you

d.bailey@aston.ac.uk

l.depropris@bham.ac.uk

www.makers-rise.org

Q&A

MAKERS - Smart Manufacturing for EU growth and prosperity is a project funded by the Horizon 2020-MSCA- RISE - Grant agreement number 691192.

West Midlands and Advanced Manufacturing: competitiveness challenges

Justin Benson, KPMG Automotive

KPMG

Brexit impacts for Automotive

11th May 2018

The UK automotive market - Brexit is a big deal

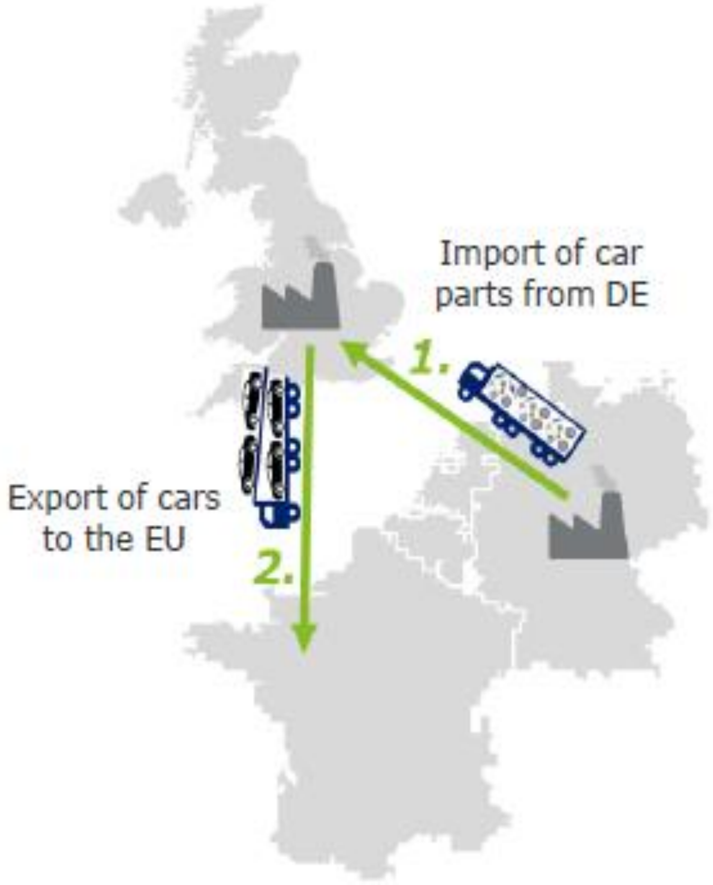
Why will Brexit have a large impact on the automotive market?

- 4% of GDP (Circa £70Bn)
- Employs >800,000 people (Circa 170,000 directly in manufacturing)
- Manufactured >1.7m vehicles (2016) and >2.6m engines
- Nissan and JLR account for >1.1m vehicles
- Over 75% of vehicles manufactured in the UK are exported
- 37% (£33Bn) components sourced in UK, circa 35% from EU, remaining from ROW
- Over 2,400 companies in UK Auto sector
- 15 NSC's in UK of which 8 manufacture in UK
- 8 of the 10 F1 teams are based in UK

But…. Brexit is killing investment

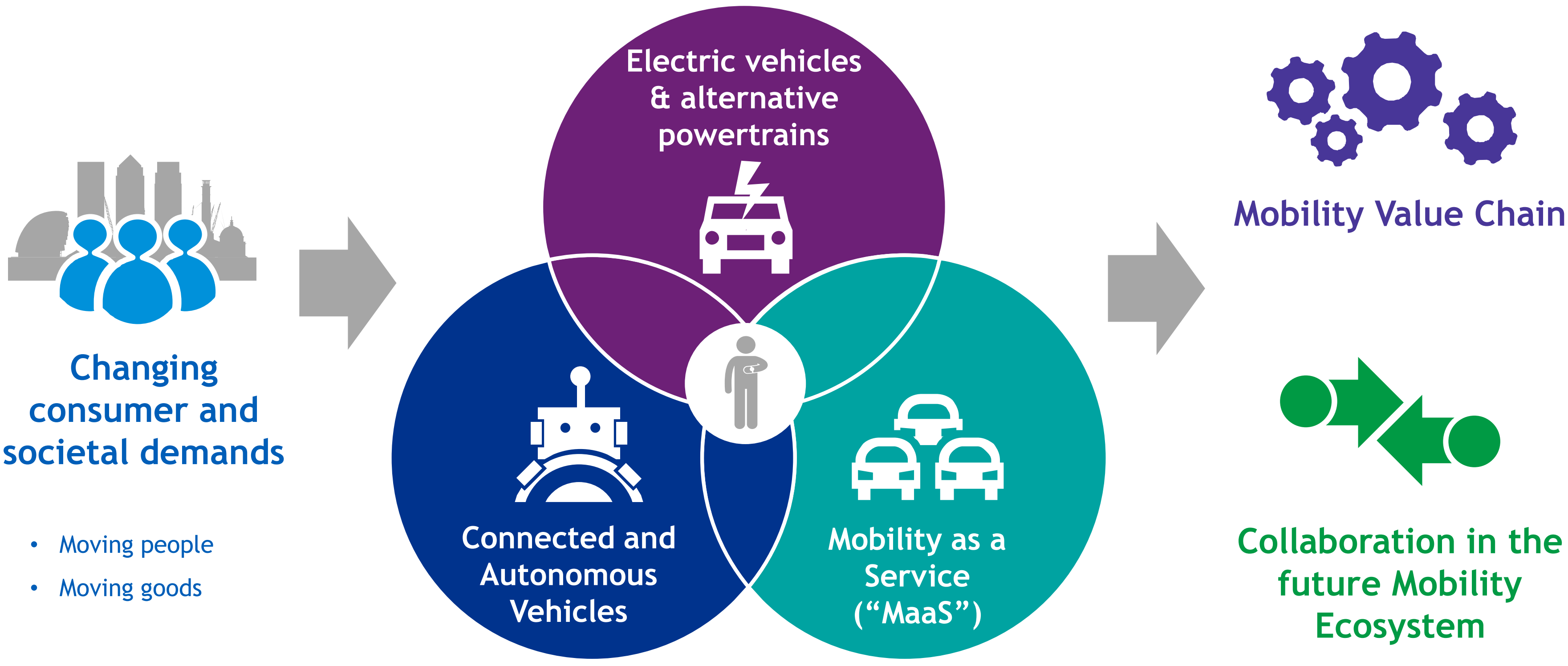
UK Auto investment
£2.6bn in 2015;
£1.1Bn in 2017

Impact on other side of channel: Consider Germany



- **The majority of the >1.7 million cars produced in the UK contain parts from German suppliers**
- **44% of the vehicles fitted with German parts are exported to EU**
- **German suppliers located in the UK generate circa Euros2.7 billion**
- **Germany is largest exporter of car parts to the UK at Euros4.6 billion**

… but there is more going on in automotive than Brexit….Three main disruptive forces will fundamentally transform how people and goods move in the future



Brexit will drive decisions in two key areas:

- **Model investment**
- **Supply chain**

Consider new model investment decisions….

	FACTORY LOCATION CHOICES LIKELY TO HAVE BEEN MADE			DECISIONS YET TO BE MADE				
	2017	2018	2019	2020	2021	2022	2023	2024
HONDA	CIVIC/ CR-V						CIVIC	
VAUXHALL					ASTRA		MPV	
MINI		COUNTRY MAN				CLUBMAN	MINI	
TOYOTA		AURIS/ AVENSIS				AURIS		
NISSAN	LEAF/ JUKE	NOTE		QASHQAI	INFINITY Q30			
JAGUAR	XJ				F-TYPE	XF/XE	F-PACE	XJ/XJR
LAND ROVER		EVOQUE	NEW DEFENDER	RANGE ROVER SPORT		DISCOVERY SPORT		EVOQUE/ DISCOVERY

…and the new model investment process…(up to 4 + 7 years)

Step 1: Model design sign-off

Step 2: EU sales forecast

Step 3: EU plant capacity options

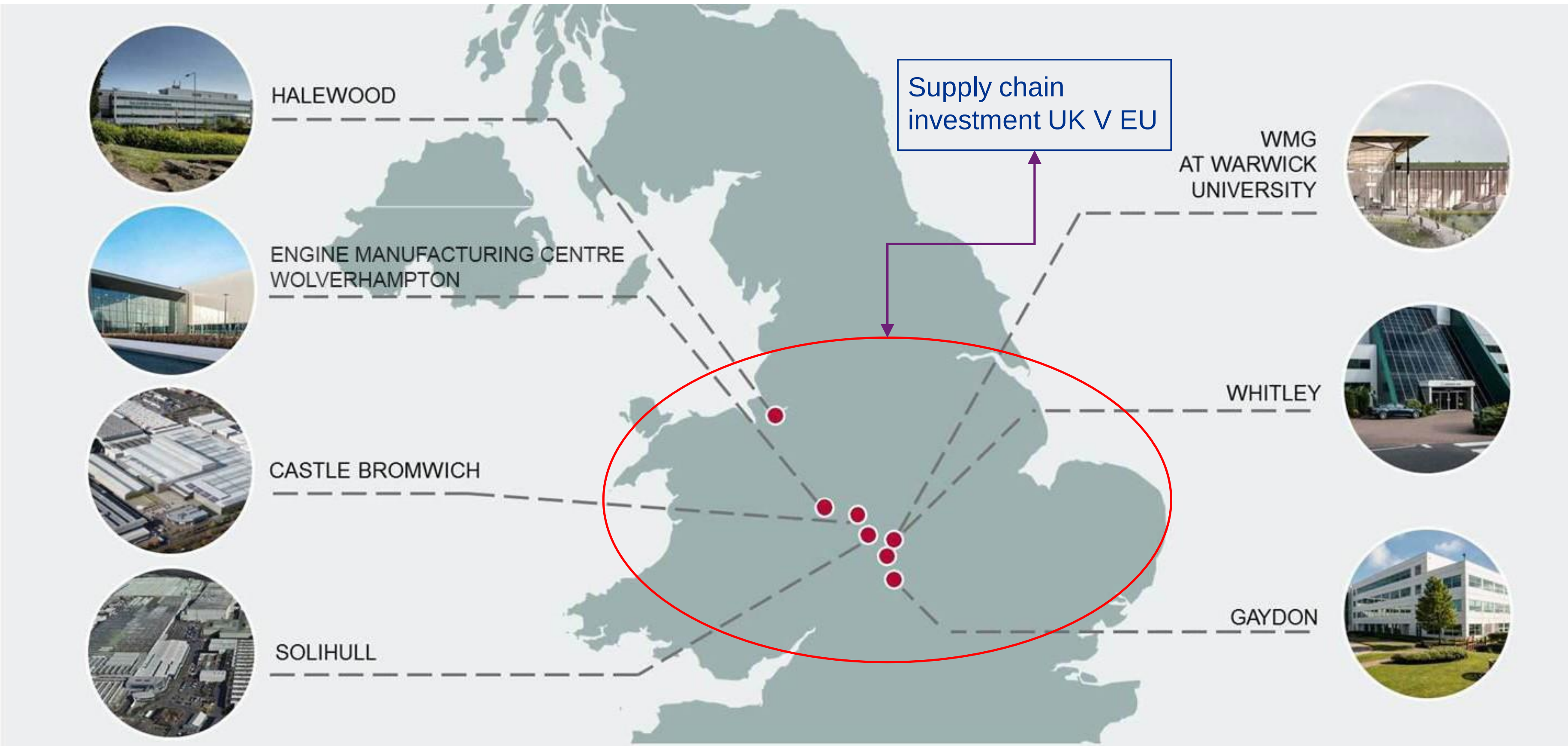
Step 4: Plant business case submissions

Criteria: NPV of total landed cost

Step 5: Plant award made

OEM Case study – supply chain investment decisions

Manufacturing and Product Development Facilities



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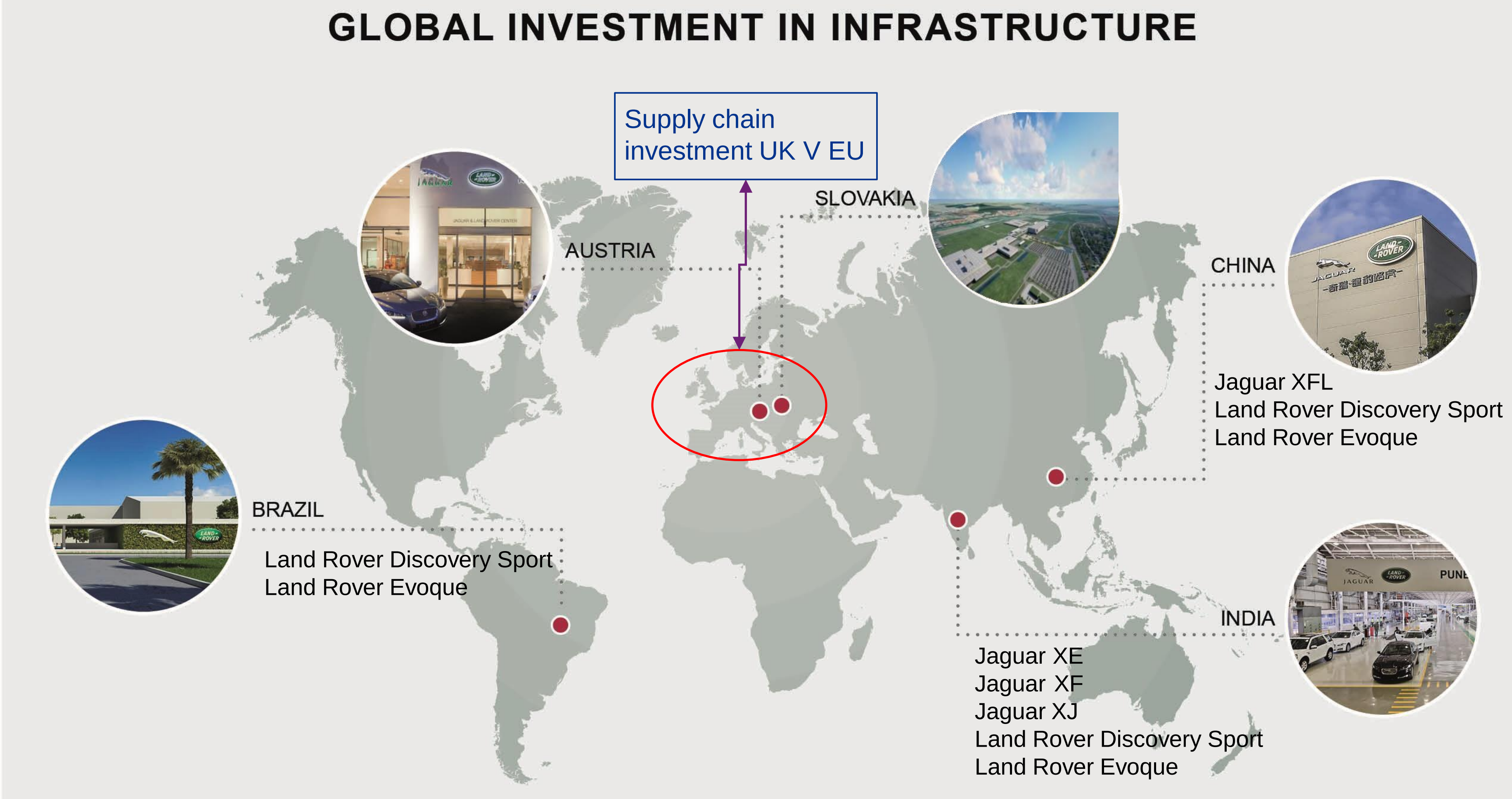
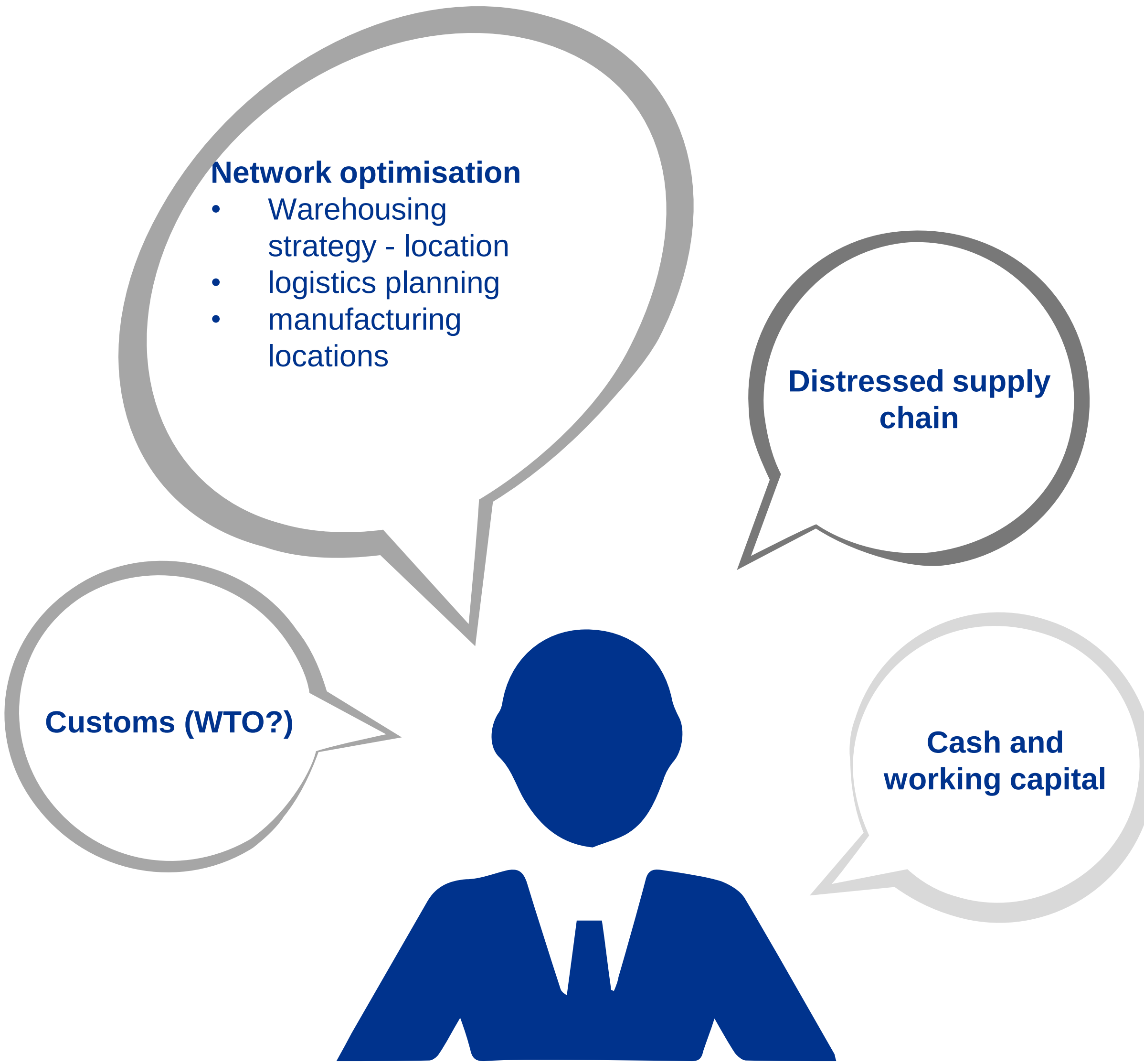
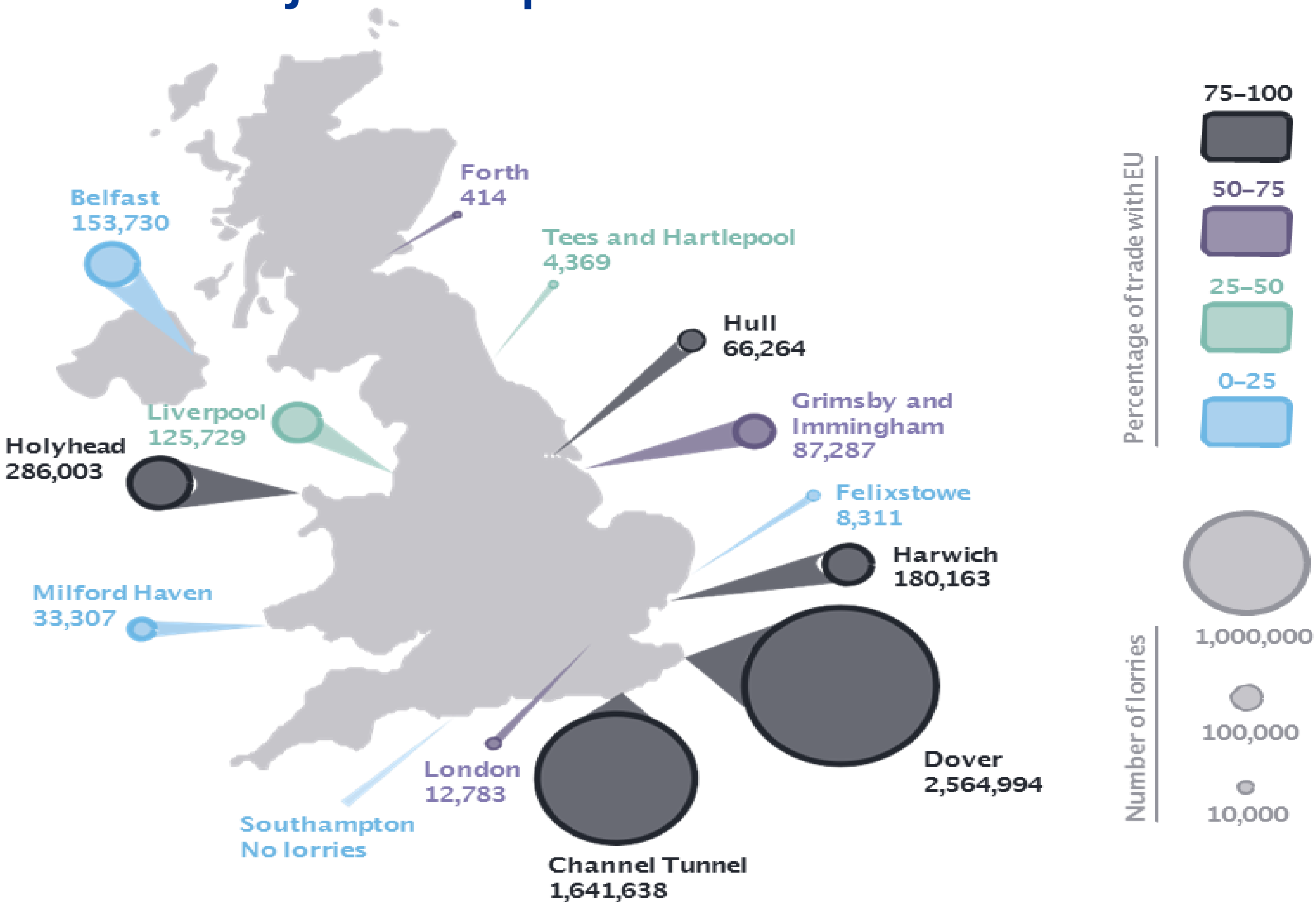
OEM Case study – supply chain investment decisions



Supply chain risk



Annual lorry traffic and EU share of trade for selected major UK ports in 2015



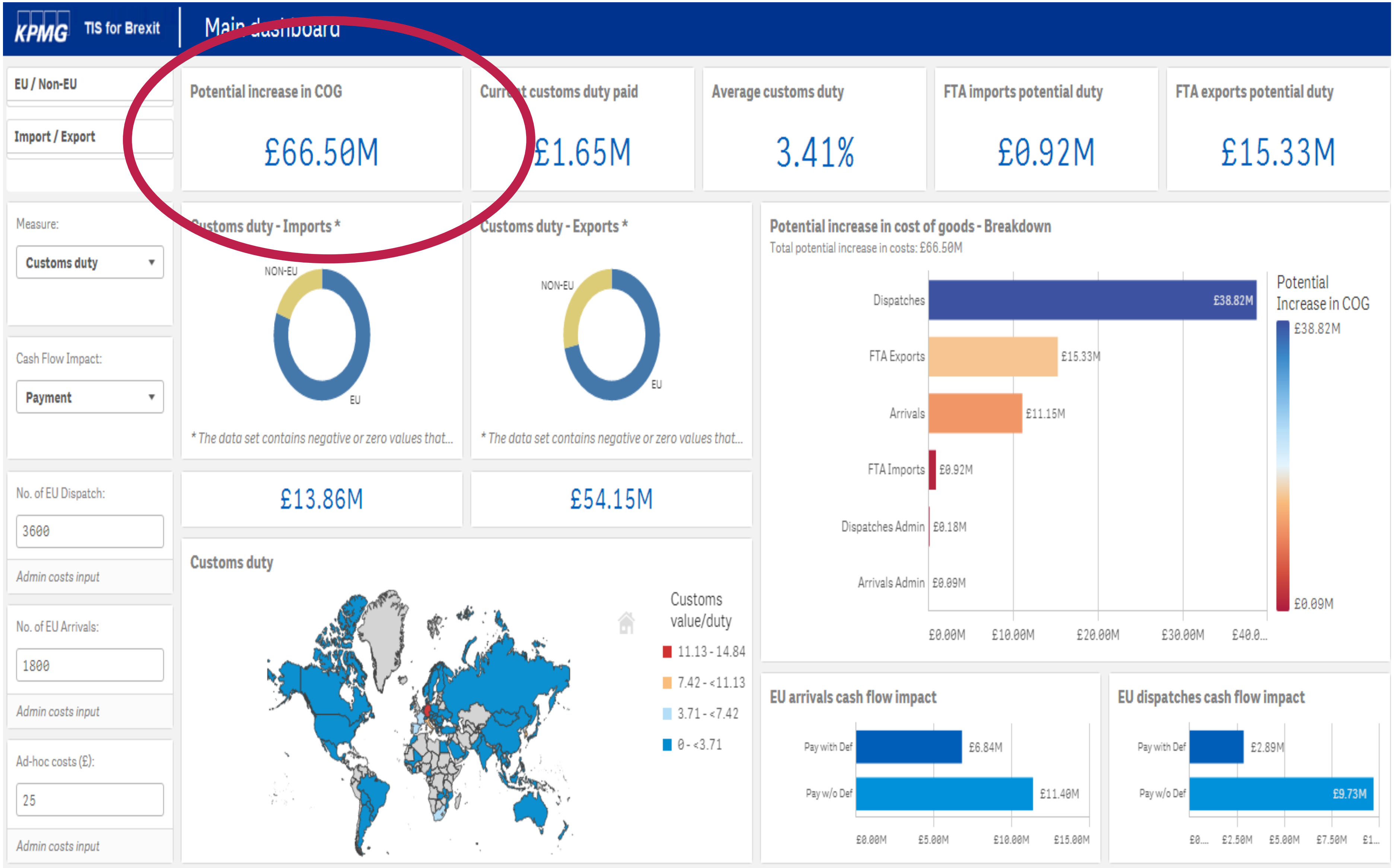
Source: Department for Transport: Maritime and Shipping Statistics

Customs

UK:

- 180,000 new importers/exporters
- From 55m to 300m declarations
- £4bn - admin costs
- Over 4m lorries pa
- 3,000-5,000 additional staff
- 5 to 8 years implementation

OEM Case study – impact of WTO



OEM Case study – starting to mitigate impact

KPMG TIS for Brexit | Analysis of potential increase in cost of goods (COG)

Potential increase in COG

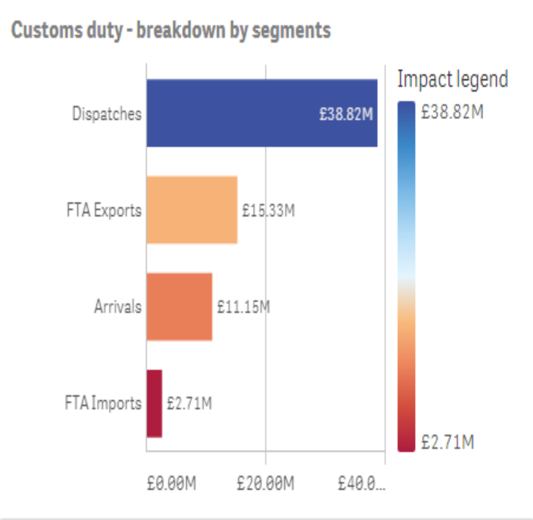
£66.50M

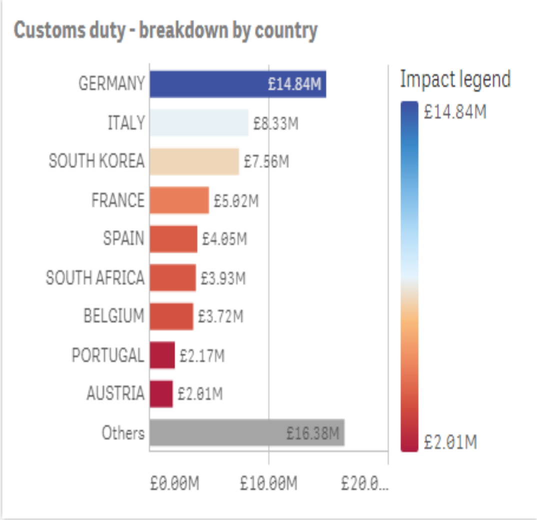
Customs value

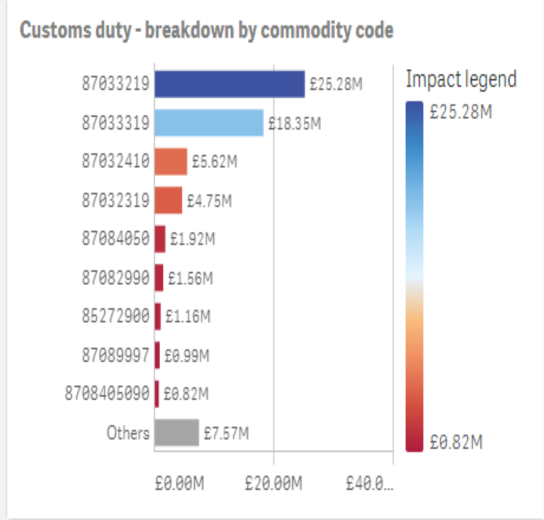
£1,995.44M

Measure:

Increase in COG ▾

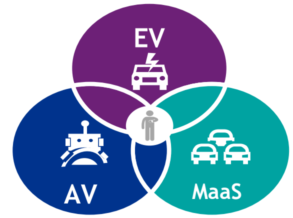




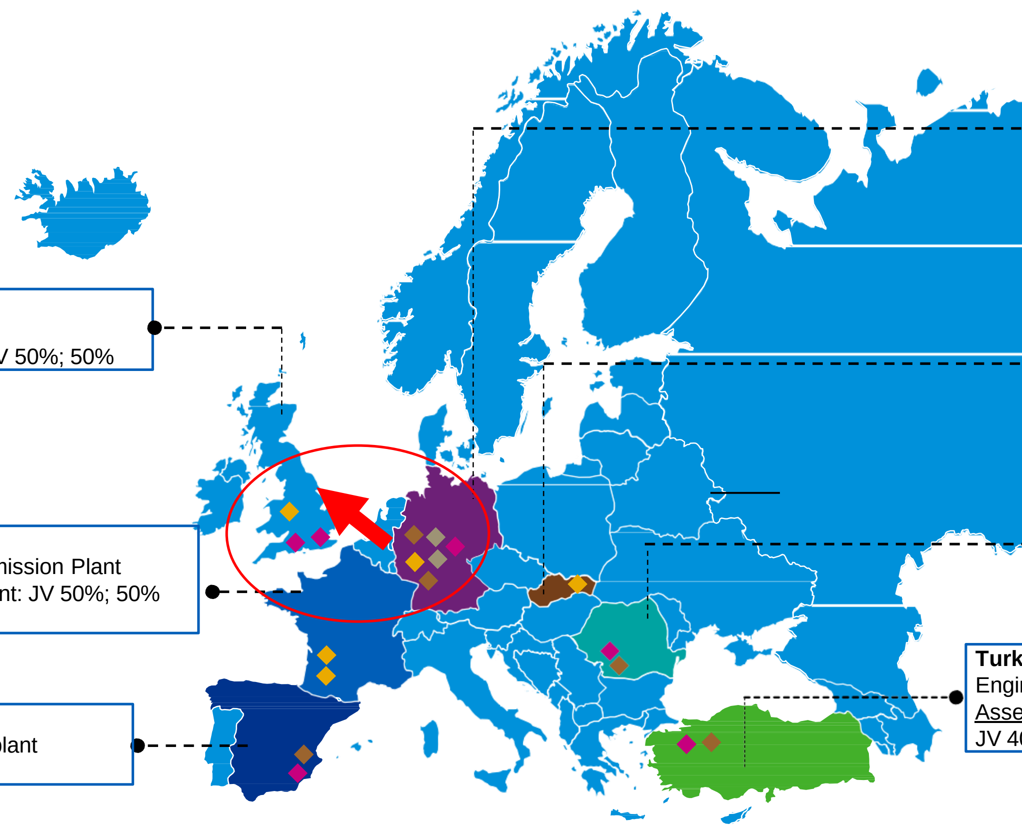


Type of trade	Country name	Commodity code	Category	Customs value	Current customs duty	Potential duty rate	Potential duty increase
Dispatches	ITALY	87033219	Motor cars and other motor vehicles principally designed for the transport of	£56,515,354.00	£0.00	10.00	£5,651,535.40
Dispatches	GERMANY	87033219	Motor cars and other motor vehicles principally designed for the transport of	£43,791,530.00	£0.00	10.00	£4,379,153.00
Dispatches	GERMANY	87033319	Motor cars and other motor vehicles principally designed for the transport of	£38,033,586.00	£0.00	10.00	£3,803,358.60
Exports	SOUTH KOREA	87032410	Motor cars and other motor vehicles principally designed for the transport of	£45,708,445.64	£0.00	8.00	£3,656,675.65
Dispatches	BELGIUM	87033219	Motor cars and other motor vehicles principally designed for the transport of	£24,248,643.00	£0.00	10.00	£2,424,864.30
Totals				£1,995,438,995.77	£1,787,953.31	-	£66,225,840.80

OEM example: Plants in Europe



Legends: ◆ **Transmission** ◆ **Assembly** ◆ **Forging** ◆ **Stamping** ◆ **Engine**



UK
Engine plant x2
Transmission Plant: JV 50%; 50%

France
Automatic Transmission Plant
Transmission Plant: JV 50%; 50%

Spain
Body and Assembly plant
Engine plant

Germany
Engine plant
Transmission Plant:
JV: 50%; 50%
Forging - Tool and Die x2
Assembly
Body and Assembly plant x2

Slovakia
Transmission plant
Transmission Plant: JV 50%; 50%

Romania
Engine Plant
Assembly plant

Turkey
Engine and Transmission plant
Assembly
JV 40%; 40%; Government: 20%

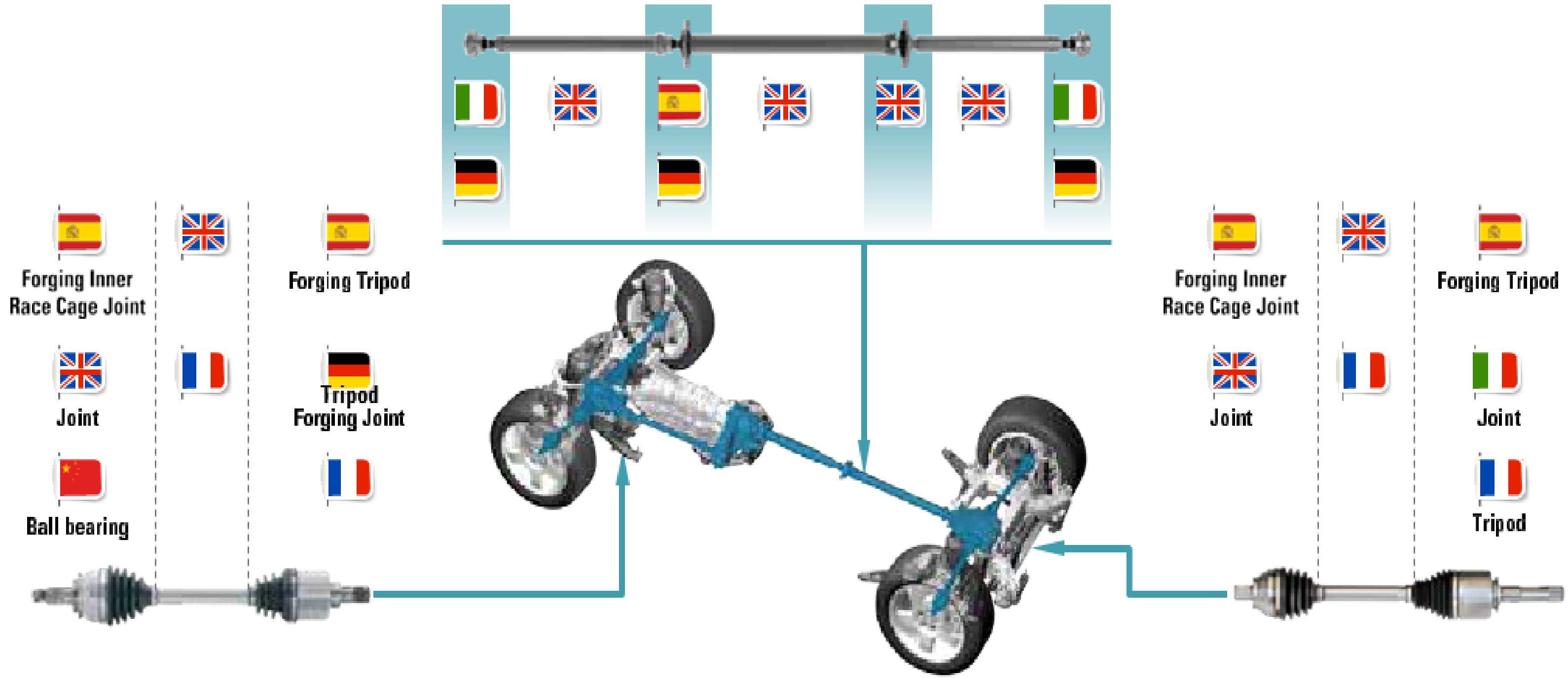
Impact of tariffs on integrated supply chain – Tier 1

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.



West Midlands and Advanced Manufacturing: competitiveness challenges

Professor Nigel Driffield, Warwick University

Brexit, inward investment and the local economy

Nigel Driffield, Warwick Business School

Employment implications of inward investment

- inward investment is going to fall post brexit

Most (but not all!) inward investment is linked to EU membership

Ease of movement, supply chains etc.

We therefore need a different value proposition for inward investors both locally and nationally.

What can we do about this ?

1. Focus inward investment efforts on sectors where free trade with the EU is less important.

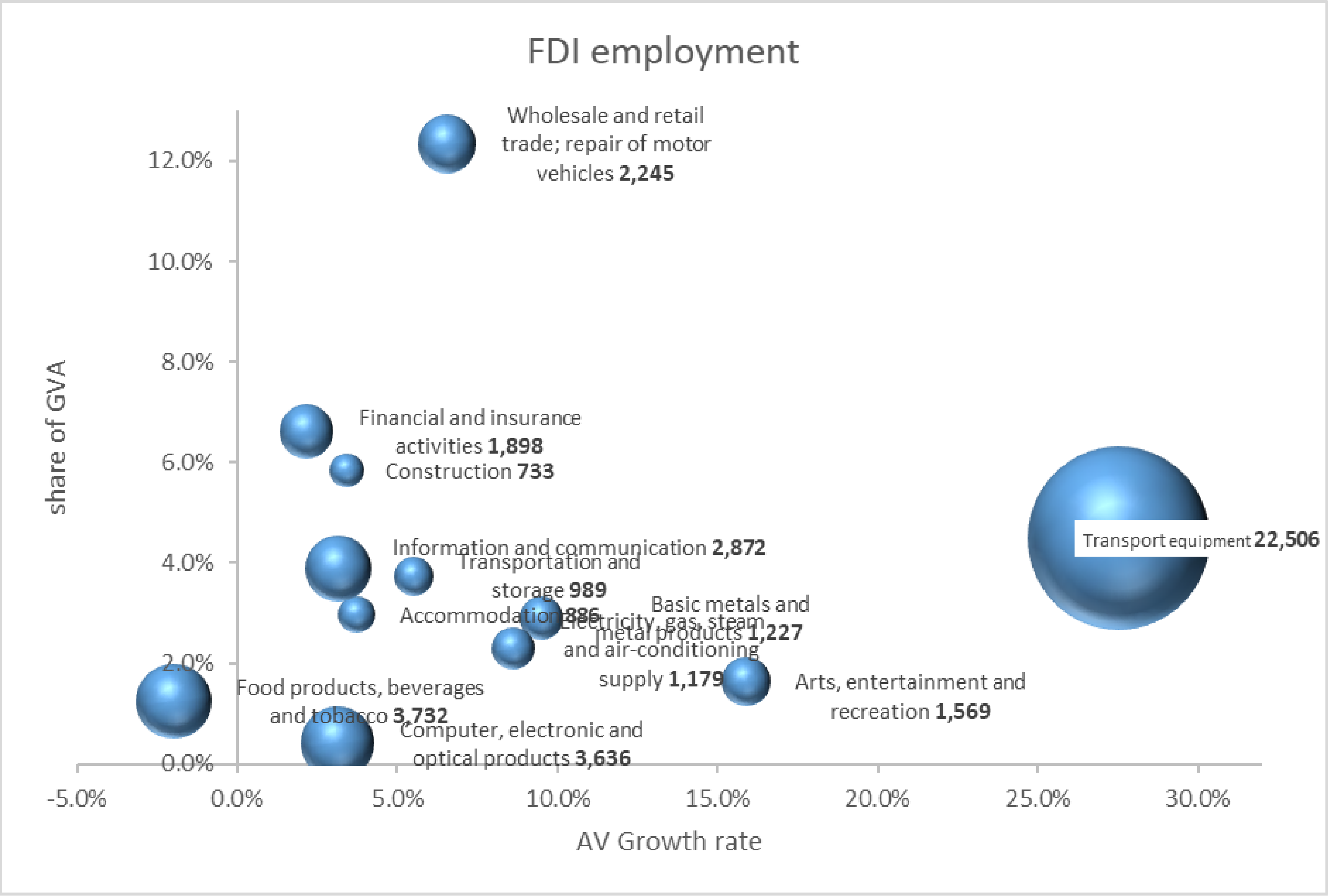
Eg seeking to maximise the benefits of HS2, and other infrastructure projects

2. Developing our inward investment strategy through greater understanding of why firms seek to invest in our region.

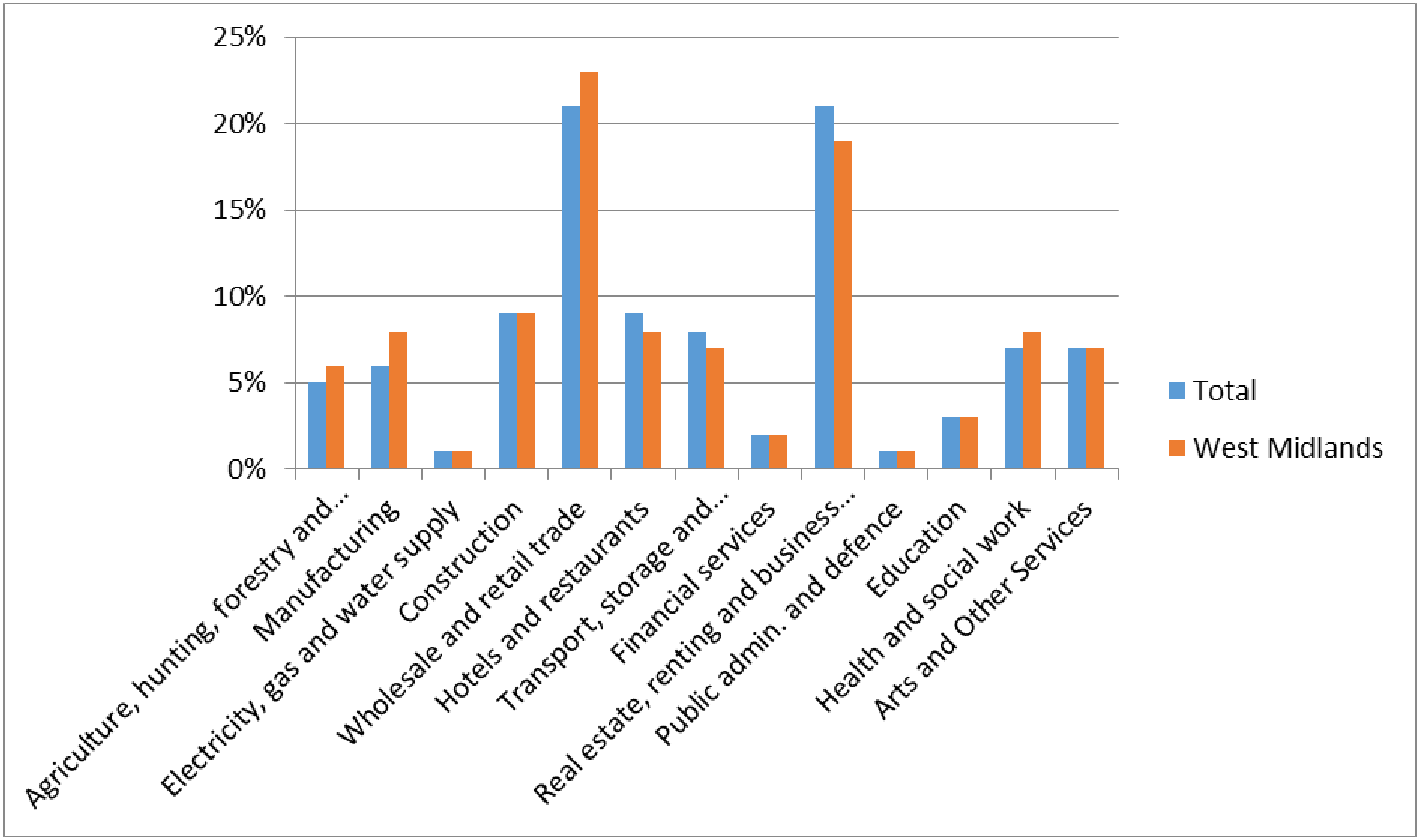
3. In order to understand how policy levers in this space can be applied, one has to understand the strategic decisions that lead to FDI, its motivation, and importantly financing. (look to maximise benefits of inward investment not volume of it).

4. Single market / customs union ?

Importance of inward investmentby sector



Skill Shortages by sector



Linking inward investment, productivity and employment

Sectors that generate employment	Sectors that generate productivity growth	Sectors that generate both
Transportation and storage	Information and communication	Financial and insurance activities
Construction	Computer, electronic and optical products	Transport equipment
Arts, entertainment and recreation	Electricity, gas, steam and air-conditioning supply	
Food products, beverages and tobacco		

Build supply chains that are robust

fix the blockages:

Skills

Transport

Access to finance

Innovation

Exporting

Higher skills – eg commercialisation

This has to be done at a local level

If firms have local accountability and people near to them, they can solve this.

If its vertical policy in Whitehall then they cant

Policy round table: Brexit challenges

Lloyd Broad, Birmingham City Council
Professor Simon Collinson, City-REDI – University of Birmingham
Professor Paul Forrest, West Midlands Economic Forum

The Economic Impacts of Brexit on the UK, its Regions, its Cities and its Sectors

Closing Speech

Professor Raquel Ortega-Argiles, City-REDI – University of Birmingham
R.Ortega-Argiles@bham.ac.uk