

Global Value Chains, Trade Shocks and Jobs: an Application to Brexit

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How to measure the Effects of Brexit?

Example: How to measure the Effects of Brexit for Belgium?

- Firm-level data on exports of firms to UK?
- Bilateral trade between Belgium and the UK?
- But what about the following example:
 - How much will Belgian exports of steel drop when UK leaves EU?
 - reduction in direct exports of steel from Belgium to UK
 - Reduction of Belgian steel that is used as an input in German cars made for the UK market

Introduction

- We want an approach that is comprehensive e.g.
 - it includes direct trade to the UK
 - It includes indirect trade (via “third” countries) to the UK
- It has to include **indirect** trade from Belgium to the UK e.g. exports of Belgian steel to the German car manufacturers that use this to produce the cars they sell to the UK consumer

Evaluating trade policy

- Trade shocks have effects all along the supply chain
- The Global Value Chains (GVCs) need to be taken into account when evaluating trade shocks like Brexit (Acemoglu, 2012)
- How can these GVCs be investigated?
- World Input Output Database (WIOD): WIOD contains data on global bilateral sector-level trade flows, i.e. we know how much Belgian steel was sold to the German car industry

Evaluating trade policy

- Global value chains matter when evaluating trade policy!
- Belgian steel may be included in:
 - German cars
 - French machines
 - Dutch bicycles etc.
- Taking these “indirect” shipments of to the UK into account makes our study unique and different from others

Data

- World Input Output Database (WIOD), 2016 release
- Global bilateral sector-level trade data (including intra-national flows)
- Coverage: 43 countries plus a model for the Rest of the World
- Coverage: 56 sectors classified according to ISIC rev. 4 (including services)
- Coverage: year 2000 up to 2014

Data

- Using this information, the total (direct + indirect) effect of Brexit on any country-sector's production and hence employment can be predicted
- We consider two scenarios of Brexit
 - Soft Brexit: Non Tariff Barriers (NTBs)
 - Hard Brexit: Most- Favoured Nation Tariffs (MFN) and NTBs

Scenarios

Table 1: Imposed tariffs and NTBs in both scenarios of Brexit.

	Soft Brexit	Hard Brexit
Tariff	0%	MFN tariff
Non-tariff barrier	2.77%	8.31%

Note: The scenarios are based on Dhingra et al. (2017).

Tariffs affect both goods trade and the services embedded in them

Results:

- For every sector in all EU-27 member states and the UK, we compute the losses of both a soft and hard Brexit
- The losses are obtained in value-added (\$) and employment (number of jobs)
- We first present the EU and UK aggregate losses
- Then we look at losses per EU country and UK
- Then we look at sectors most affected by Brexit

Aggregate losses from Brexit in Value added

	Soft Brexit	Hard Brexit
EU-27	-0.38%	-1.54%
GBR	-1.2%	-4.47%
Belgium	-0.58%	-2.35%

Note: % are expressed in terms of GDP (coming from WIOD data)

Aggregate Losses from Brexit in Employment

	Soft Brexit	Hard Brexit
EU-27	248 000 jobs	1 200 000 jobs
GBR	139 000	526 000
Belgium	10 000	42 000

Results at country-level

- Both in value-added and employment, the UK will be among those countries that are hit hardest in relative terms
- In addition, Ireland, Malta, Belgium and the Netherlands are most vulnerable. These are small open economies close to the UK
- The EU as a whole will experience more modest losses (0,5-1,5% of GDP)
- In absolute terms, the EU will lose more than the UK due to its size
- This is different from previous studies that find larger absolute losses for the UK

Table 8: Total loss in Value Added from Brexit

Country	Soft Brexit		Hard Brexit	
	(million \$) (1)	(% of total VA) (2)	(million \$) (3)	(% of total VA) (4)
AUT	995	0.25%	4016	0.99%
BEL	-2899	-0.58%	-11782	-2.35%
BGR	-127	-0.24%	-512	-0.97%
CYP	-67	-0.31%	-222	-1.02%
CZE	-952	-0.48%	-3985	-2.01%
DEU	-15364	-0.42%	-63699	-1.76%
DNK	-1362	-0.43%	-5283	-1.67%
ESP	-2749	-0.21%	-11902	-0.91%
EST	-68	-0.28%	-257	-1.04%
FIN	-633	-0.25%	-2348	-0.95%
FRA	-8376	-0.32%	-33190	-1.25%
GRC	-233	-0.11%	-831	-0.38%
HRV	-94	-0.18%	-355	-0.69%
HUN	-554	-0.44%	-2256	-1.78%
IRL	-3077	-1.30%	-13575	-5.74%
ITA	-5713	-0.29%	-24599	-1.23%
LTU	-157	-0.34%	-653	-1.42%
LUX	-260	-0.43%	-919	-1.51%
LVA	-91	-0.31%	-343	-1.19%
MLT	-153	-1.56%	-476	-4.86%
NLD	-5604	-0.68%	-21523	-2.59%
POL	-2110	-0.41%	-8618	-1.68%
PRT	-570	-0.26%	-2494	-1.16%
ROU	-418	-0.22%	-1775	-0.95%
SVK	-520	-0.53%	-1939	-1.99%
SVN	-115	-0.25%	-461	-1.02%
SWE	-1742	-0.33%	-6596	-1.24%
EU-27	-55004	-0.38%	-224609	-1.54%
GBR	-34012	-1.21%	-125497	-4.47%

Note: See the Appendix for a list of the country name abbreviations.

Table 9: Total loss in **Employment** from Brexit

Country	Soft Brexit		Hard Brexit	
	(1000 pers) (1)	(% of total EMP) (2)	(1000 pers) (3)	(% of total EMP) (4)
AUT	-4.12	-0.10%	-17.02	-0.40%
BEL	-10.06	-0.22%	-42.39	-0.93%
BGR	-4.02	-0.12%	-17.89	-0.52%
CYP	-0.35	-0.10%	-1.22	-0.34%
CZE	-11.14	-0.22%	-47.31	-0.93%
DEU	-69.06	-0.16%	-291.93	-0.68%
DNK	-4.11	-0.15%	-16.90	-0.61%
ESP	-15.84	-0.09%	-70.41	-0.39%
EST	-0.69	-0.11%	-2.71	-0.45%
FIN	-2.39	-0.10%	-9.08	-0.36%
FRA	-34.50	-0.13%	-141.32	-0.52%
GRC	-1.42	-0.04%	-5.57	-0.14%
HRV	-1.27	-0.08%	-4.97	-0.32%
HUN	-7.28	-0.17%	-30.75	-0.73%
IRL	-11.32	-0.58%	-50.33	-2.59%
ITA	-31.23	-0.13%	-139.14	-0.57%
LTU	-1.64	-0.12%	-7.43	-0.56%
LUX	-0.45	-0.13%	-1.63	-0.46%
LVA	-0.13	-0.03%	-0.44	-0.11%
MLT	-0.55	-0.38%	-1.75	-1.21%
NLD	-18.60	-0.21%	-73.20	-0.84%
POL	-28.42	-0.18%	-122.95	-0.78%
PRT	-6.32	-0.14%	-29.72	-0.66%
ROU	-9.39	-0.11%	-43.43	-0.50%
SVK	-4.00	-0.18%	-15.79	-0.71%
SVN	-1.03	-0.11%	-4.22	-0.45%
SWE	-5.10	-0.11%	-19.97	-0.45%
EU-27	-284.44	-0.15%	-1209.47	-0.62%
GBR	-139.86	-0.45%	-526.83	-1.71%

Note: See the Appendix for a list of the country name abbreviations.

Table 10: Most affected sector across countries: Brexit (“Hard” Brexit Scenario)

Country	Sector Nace Rev.2			
	Value Added (VA)		Employment (EMP)	
	(1)	(2)	(3)	(4)
AUT	Machinery & Equipment	C28	Metal products	C25
BEL	Food Product	C10-C12	Food Product	C10-C12
BGR	Textiles	C13-C15	Live Animals	A01
CYP	Financial Services	K64	Administrative and support act.	N
CZE	Electronics and Computers	C26	Metal products	C25
DEU	Motor vehicles	C29	Machinery & Equipment	C28
DNK	Mining and quarrying	B	Food Product	C10-C12
ESP	Food Product	C10-C12	Live Animals	A01
EST	Wood and Cork	C16	Wood and Cork	C16
FIN	Paper Products	C17	Administrative and support act.	N
FRA	Administrative and support act.	N	Administrative and support act.	N
GBR	Administrative and support act.	N	Administrative and support act.	N
GRC	Water transport	H50	Live Animals	A01
HRV	Other services	R_S	Metal products	C25
HUN	Electronics and Computers	C26	Electronics and Computers	C26
IRL	Food Product	C10-C12	Live Animals	A01
ITA	Textiles	C13-C15	Textiles	C13-C15
LTU	Petroleum Products	C19	Textiles	C13-C15
LUX	Financial Services	K64	Administrative and support act.	N
LVA	Wood and Cork	C16	Administrative and support act.	N
MLT	Other services	R_S	Other services	R_S
NLD	Wholesale trade	G46	Administrative and support act.	N
POL	Wholesale trade	G46	Live Animals	A01
PRT	Textiles	C13-C15	Textiles	C13-C15
ROU	Textiles	C13-C15	Textiles	C13-C15
SVK	Real Estate	L68	Metal products	C25
SVN	Metal products	C25	Metal products	C25
SWE	Petroleum Products	C19	Machinery & Equipment	C28

Note: See *China's Trade Shock and Its Application to Brexit*, Centre for Economic Policy Research (CEPR) working paper

Evaluating Trade Policy

- Brexit = the cost of leaving the single market for the UK
= the benefit of joining the single market for Switzerland
- Next to the **direct** shipments from any EU country to the UK, we find the **indirect** effects (trade via “third” countries) to be very important, accounting for 20% up to 50% of the total impact of Brexit
- Our study finds stronger effects of Brexit for EU-27 due to closely integrated European production networks

Conclusion

- Even a soft Brexit will lead to large losses, e.g. up to 10 000 Belgian jobs
- In the most pessimistic (hard) Brexit scenario, 1,2 million jobs will be lost in the EU and more than 0,5 million in the UK, corresponding to loss of value added of 1,5% and 4,5% of GDP respectively
- Our results for the UK are in line with other studies
- We find much larger losses for the EU, however. The reason is that we consider the production integration on the European continent and hence account for both direct and indirect effects