

Brexit – an economy-wide Impact Assessment looking into trade, immigration, and Foreign Direct Investment

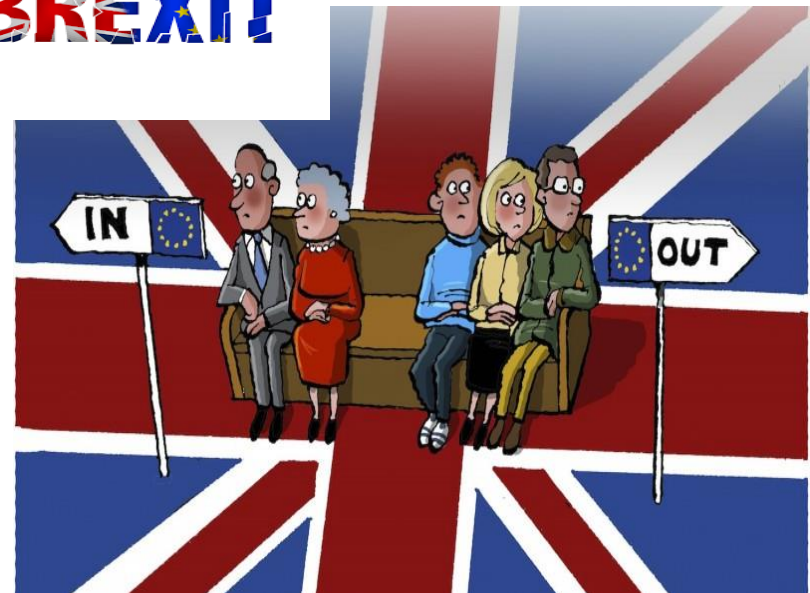
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- ❑ What does EU membership means ?
- ❑ Stylized facts/issues
- ❑ Analysis of literature
- ❑ Objectives
- ❑ Methodology
- ❑ Scenario specification
- ❑ Results

BREXIT



□ Four freedoms:

1. Free trade in **commodities**: tariff barriers eliminated; non tariff measures minimized.
 2. Free trade in **services**: provide services in countries other than the one your are established
 3. Free movement of **capital**
 4. Free movement of **natural persons**, including right to work
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- ❑ 80% of UK GDP from services
- ❑ 44% of UK exports to EU
- ❑ 53% of UK imports from EU
- ❑ Financial and other business services
~50% of UK service exports to EU

AVEs (%) of NTBs in services sectors	
	AVEs of current policies
Average	12.8
Air	25.0
Maritime	1.7
Other transport	29.7
Banking	1.5
Insurance	6.6
Communication	1.1
Distribution	1.4
Professional and business services	35.4

Significantly reduced trade cost among EU members (no tariffs, minimal NTBs).

AVEs (%) of NTBs in goods	
	Intra-EU AVEs saving
Average	12.9
Primary agriculture	25.2
Primary energy	0.0
Processed foods	48.4
Beverages and tobacco	41.8
Petrochemicals	7.9
Chemicals.	20.6
Pharmaceuticals	
Metals, fabricated metals	38.5
Motor vehicles	19.5
Electrical machinery	1.4
Other machinery	1.6
Other manufactures	5.7

- ❑ EU Single Market implies low barriers to supply services in other EU countries as part of FDI
- ❑ After US and China, UK third major recipient of FDI worldwide, half of it from other EU members
- ❑ Brexit might reduce FDI into UK for at least two reasons:
 1. UK position as hub for multinationals to EU Single Market depends on future EU-UK trade arrangements
 2. Higher cost of multinationals operating in remaining EU members, for instance to relocate staff to/from UK

- ❑ ~2.2 Mio EU migrants work in the UK (total work force 31 Mio)
- ❑ Around 1.2 million UK citizens live in other EU countries
- ❑ Key concern during the Brexit vote: impact of labour immigration on crowding out domestic labour and straining public services
- ❑ Main impacts of reduced migration:
 - ❑ Production possibility shrinks with reduced labour stock
 - ❑ Domestic demand reduced with less consumers
 - ❑ Tax income reduction

- Most discussed scenarios:
 - “**WTO option**” : Fallback to MFN rates and other default WTO rules, no further concessions with regard to the four freedoms
 - “**Norwegian option**”: comprehensive trade agreement with EU, covering all four freedoms of the European internal market.
 - “**Switzerland option**”: wide ranging trade agreement without fully free movement of labor and capital
 - “**Turkey option**” : customs union
 - “**USA option**”: TTIP
 - “**Canada option**”: CETA ,.....
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Study	Scenario	% Changes in GDP
Booth et al. (2015) CGE study	Close to WTO option	-2.2% (in 2030)
	Norwegian option + pursuing a large-scale deregulation at home	+1.6%.
Boulanger and Philippidis (2015) CGE study	FTA with the EU	+ 0.6 % (per capita)
	(1)+ 2% increase in iceberg cost	cancel out the benefit of the EU budget saving
	(1) + 5% increase in iceberg cost	-7% (per capita)
	FTA with EU and ROW + deregulation at home	+1.6%
Ottaviano et al. (2014) Gravity type model	FTA + modest decrease in NTBs	-1.1%
	WTO option + Internal EU reduction of NTMs (40%)	-3.1%
Aichele and Felbermayr (2015) Gravity type model	Soft Exit	-0.6 % (in 2030)
	Deep exit	between -1.5% and -2.8%
	Isolation	between -1.6% and -3%

Scenario	% change in GDP (short run)	% change in GDP (long run)
MFN rates are applied +restriction on immigration and capital	-5.5%	-3.5%
UK largely integrated with the EU +restrictions on immigration and capital	-3.1%	-1.2%

Note : in both scenarios the decline in GDP is mainly associated with the imposition of restrictions on immigration and on capital

Study	Scenario	% change in GDP
UK Treasury (2016a) Econometric and CGE	“WTO option”	-7.5%
	“Canada option”	-6.2%
	“Norway option”	-3.8%
UK Treasury (2016b) Econometric and CGE	“shock”: FTA+ increase in uncertainty + financial volatility	- 3.6%
	“severe shock” : “WTO option” + 50 larger increase in uncertainty compared to (1)	-6.0%
Portes and Forte (2016) Econometric	“Middle range” Brexit: EU net immigration to the UK falls by 91,000 a year	-0.6% (in 2020) -2.7% (in 2030)
	“Hard” Brexit: EU immigration cut by 150,000 a year	-0.8% (in 2020) -4.4% (in 2030)

- ❑ Previous studies looked into immigration, capital movements, tariff and non-tariff measures, but not consistently and simultaneously
 - ❑ Booth et al., 2015; Ottaviano et al., 2014; and Aichele and Felbermay 2015, among others, analyze tariffs and NTMs
 - ❑ Other studies attempted to analyze impact of changes in immigration and FDI, but ignored trade relations at sectorial levels, either using CGEs which do not consider trade in detail (PwC, 2016) or using other type of models (Oxford Economics, 2016).
 - ❑ Hosoe (2016) criticized that exiting studies neglected modern trade theory which tends to underestimate impacts from changes in tariffs and NTMs on trade.
 - ❑ Hence, we still see sufficient scope for a coherent and simultaneous assessment of different aspects of the Brexit and thus want to complement to existing literature in three dimensions
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- Impact assessment of Brexit along three dimensions:
 1. EU market access considering tariffs and NTBs
 2. Reduced immigration of EU labor to the UK
 3. Reduction in FDI
 - Impacts separated and combined
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- ❑ Basis: CGEBox (Britz and Van der Mensbrugge 2016), GAMS based CGE framework written in levels
 - ❑ Non-manufacturing sectors with perfect competition as in Standard GTAP
 - ❑ New here: Manufacturing sectors with monopolistic competition along Melitz (2003)
 - ❑ Implementation of Melitz model:
 - ❑ Mainly based on Balistreri and Rutherford (2013)
 - ❑ Extensions from Akgul et al. 2016 (GTAP-HET): different nesting for variable costs of trade and fixed costs related to industry entry and operating on a bi-lateral trade link
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- ❑ Regional household replaced by separate accounts for a representative private household and government
 - ❑ Private household receives factor returns net of factor taxes paid by firms and direct taxes, distributed to savings and final demand based on fixed value shares (CD), CDE for final demand
 - ❑ Government consumption fixed in real terms, depends on population size. Government deficit fixed in real terms, direct tax rate closes account
 - ❑ Fixed I/O coefficient, but substitution between feed in livestock and agricultural inputs in food processing
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- ❑ Differentiation between non-depreciated (vintage) capital and new one, new capital endogenously driven by investments (=savings)
 - ❑ Sluggish factor mobility between agricultural- and non-agricultural sector following Keeney and Hertel (2005, GTAP-AGR)
 - ❑ Inside these sector aggregates:
 - ❑ Newly formed capital, skilled and unskilled labor are fully mobile
 - ❑ Land sluggish
 - ❑ Vintage capital and natural resources sector specific
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- ❑ Trade in goods and services:
 - MFN tariffs between EU and UK
 - NTBs restored: half of the AVE of NTMs in goods and services currently estimated between the EU and non-EU Member countries reintroduced
 - ❑ Immigration
 - -1.1 Mio less UK's workforce
 - Assumed to imply -1.1 Mio times 1.2 less population
 - ❑ Government spent:
 - Reduction in expenditure by 25% of the relative change in population
 - Reasoning: government size (e.g. army, central administration) not fully proportional to population size, sluggishness in adjusting government
 - ❑ Drop in FDI by 25%
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- ❑ MFN rates for tariffs: smallest welfare loss with -120 USD per capita (yearly)
 - ❑ However, with additionally higher NTBs, loss increases to -370 USD p.c.
 - ❑ Reduced FDI has a considerable higher impact with -233 USD p.c.
 - ❑ Highest welfare losses with around -650 USD p.c. when solely considering labour force and population
 - ❑ GDP reduction (-3.08%) slightly exceeds reduction in population (-2.16%), reflects mainly feedback of population change on savings and thus new capital stock
 - ❑ With indirect tax income dropping by 2.8%, direct taxes need to be increased by about 6% to offset loss of tax basis (less consumption to tax due to a lower population, less labour and capital) under our assumption that UK budget deficit will not increase further
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- ❑ A yearly welfare loss of -1.300 USD per capita
 - ❑ Impact on GDP is with -4.6% quite strong
 - ❑ Total output of the UK economy decreases by about -3.36%, mainly:
 - ❑ “Business services nec” (-33%)
 - ❑ “Motor vehicles and parts” (-21.3%)
 - ❑ “construction” (5.3%), “trade” (-3.9%), “chemical, rubber and plastic prods” (-11.9%), and “metal” (-64.2%)
 - ❑ Imports of the UK drop by around -12.7%
 - ❑ Exports to the EU drop by about 27%
 - ❑ Welfare impact on remaining EU members ambiguous, but negligible small with between -2.5 USD and +3 USD per capita
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- ❑ Up to -1.300 USD per capita yearly welfare loss simulated from worse-case Brexit
 - ❑ Major impact from reduced labor force and population (tax basis loss) when assuming that government deficit can't grow
 - ❑ Relatively high impacts reflect:
 - use of Melitz model for manufacturing sectors
 - considering tariff and NTB increases
 - link between capital stock and savings, including FDI
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