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# LOSING PREFERENTIAL ACCESS TO THIRD COUNTRIES AFTER BREXIT – WHAT IS AT STAKE?

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# LOSING PREFERENTIAL ACCESS TO THIRD COUNTRIES AFTER BREXIT - WHAT IS AT STAKE?

## Summary

This article takes a closer look into the pending question of how the UK might be affected by losing preferential access to Third Countries in the wake of Brexit. Although, as the formal date of divorce comes closer possibilities of losing these beneficial trade terms are not very present in the public debate. This is puzzling since as an EU member the UK has 40 trade agreements with over 70 non-European countries, covering about 15 % of its trade but legally those contracts are only valid for EU members and leaving the EU while retaining the status quo enshrined in the trade agreements would contradict with the MFN principle. Simulations of a 'hard' and a 'soft' Brexit scenario with a CGE model reveal that the additional loss in GDP is due to these changing trade relations with Third Countries are in the range of 2.5 % and 7.8% % of the total loss. Since most of the loss is associated with a changing trade environment with EFTA and Turkey the UK - if it aims to continue these deals - should focus its negotiation resources on these regions first. On the other hand the EU losses of a Brexit would be lower if the UK and Third Countries impose new tariffs on their trade flows since this would redirect trade flows toward the EU.

## Keywords

Brexit, trade policy, CGE analysis, MFN tariffs, NTM, trade agreement

## 1 Introduction

With the re-election of David Cameron as prime minister in 2015 it became clear that he will hold a referendum that questions the current status of the UK as an EU member. This has immediately triggered a lot of research about the possible economic consequences of a British exit (Brexit) from the EU. In March 2017 Theresa May, who followed David Cameron, has formalised the exit by invoking Article 50 of the Treaty of the EU. The negotiations, which started in June 2017 have, however, proven to be difficult due to widely divergent requests of both parties. That is why we still lack knowledge about the precise conditions of a Brexit, implying that in order to simulate the economic effects of a Brexit, assumptions about the negotiations outcomes have to be made. In a nutshell most Brexit studies assume the following options: a "hard" and/or a "soft" version of the Brexit. The former implies imposition of Most Favoured Nations (MFN) tariffs between the UK and the EU countries whereas the latter assumes some sort of Trade Agreement (TA), see e. g. AICHELE and FELBERMAYR (2015), BOULANGER and PHILIPPIDES (2015), ROJAS-ROMAGOSA (2016), FREUND et al. (2017), DHINGRA et al. (2017), YU et al. (2017), FELBERMAYR et al. (2017), Vanzetti (2017) and BELLORA et al. (2017).

A pending question concerns the UK's future status of TAs that have been negotiated between the EU and Third Countries. Legally those contracts are only valid for EU members and leaving the EU while retaining the status quo enshrined in the TAs would contradict with the MFN principle. This is true as long as the UK decides either to treat all WTO countries equally or ceases to be a WTO member. In order to retain TAs, the UK will have to re-negotiate these trade deals - a difficult task given that the EU has negotiated 36 TAs with 58 different countries. In a similar vein the UK would also legally be excluded from EU's Generalized System of Preferences (GSP), where the EU unilaterally opens its markets for about 90 developing countries, see e.g. MOLINUEVO (2017). In this regard, looking at potential

effects of changing trade relations between the UK and Third Countries seems to be a scenario worth looking at, which has not drawn so much attention in the literature so far. Exemptions are AICHELE and FELBERMAYR (2015), FELBERMAYR et al. (2017), VANZETTI (2017) and YU et al (2017), who also impose MFN tariffs between the UK and Third Countries in their “soft” and “hard” Brexit scenarios. However, since the authors include third-country MFN tariffs in all of their Brexit scenarios, it is not possible to delineate the single effect of losing preferential access to Third Countries negotiated under the auspices of the EU. This paper contributes to this discussion by specifying appropriate scenarios that allow to disentangle these effects. This is important since we lack an understanding of how significant these effects might be relative to the changing trade environment vis-à-vis the EU. Additionally, there might be interesting trade diversion effects. For example, it could be beneficial for the United States (no TA with EU) if the UK and Canada (TA with EU) impose MFN tariffs on each other’s imports as a consequence of the Brexit.

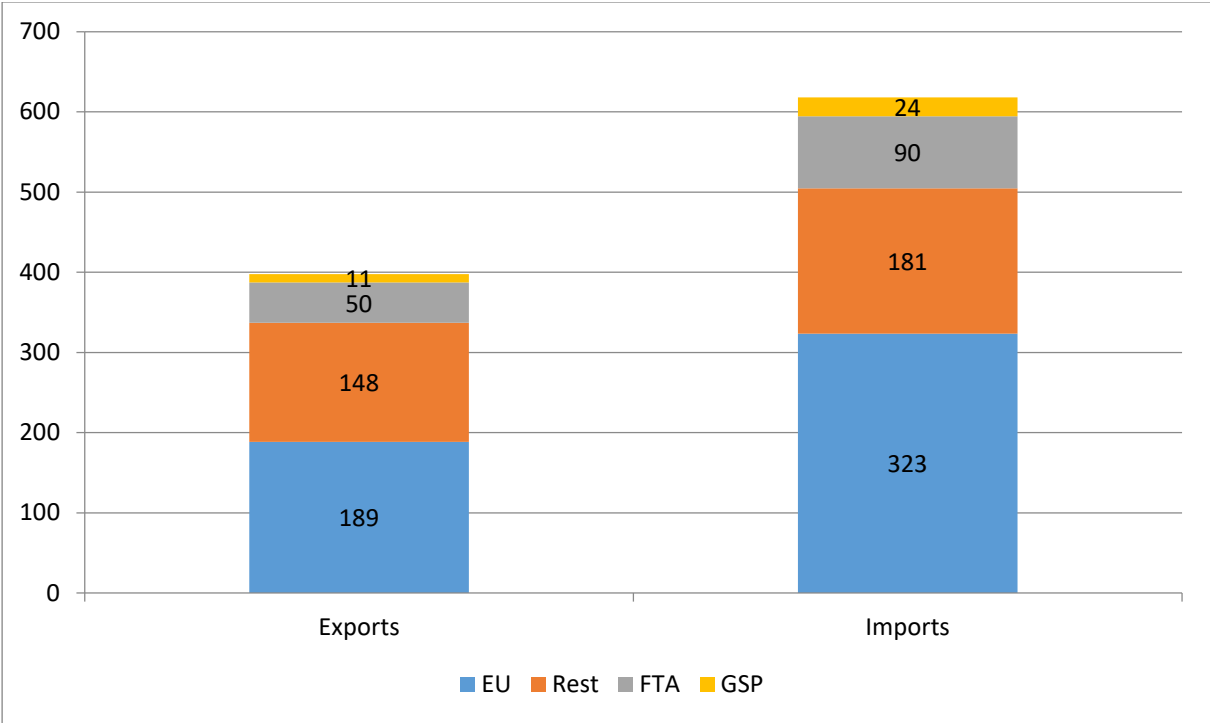
The paper is structured as follows: In chapter 2 the UKs current trade flows with Third Countries where the EU has a TA and of EUs GSP beneficiaries are described. A scenario description and the model set-up are located in chapter 3 whereas the results are discussed in chapter 4. The paper closes with a conclusion in chapter 5.

## **2 Descriptives**

In the following we will consider changes in UKs trade policy both with the EU and Third Countries and vice versa. To get an idea about the potential impact of such changes on the UK and its trading partners recent trade volumes of those countries with the UK are shown first. To put the different types of trade partners in perspective we start with a graph of UKs trade flows distinguished by EU, FTA partners, GSP countries and the rest of the world respectively. Overall the UK is a net importer as can be seen from Figure 1. The EU is by far the largest trade partner of the UK with import and export shares larger than 50%. Also trade with countries where the EU has a trade agreement is quite large with imports of 90 billion US-\$ and exports of 50 billion US-\$. The imports with GSP countries amount to 24 billion US-\$ and exports amount to 11 billion US-\$.

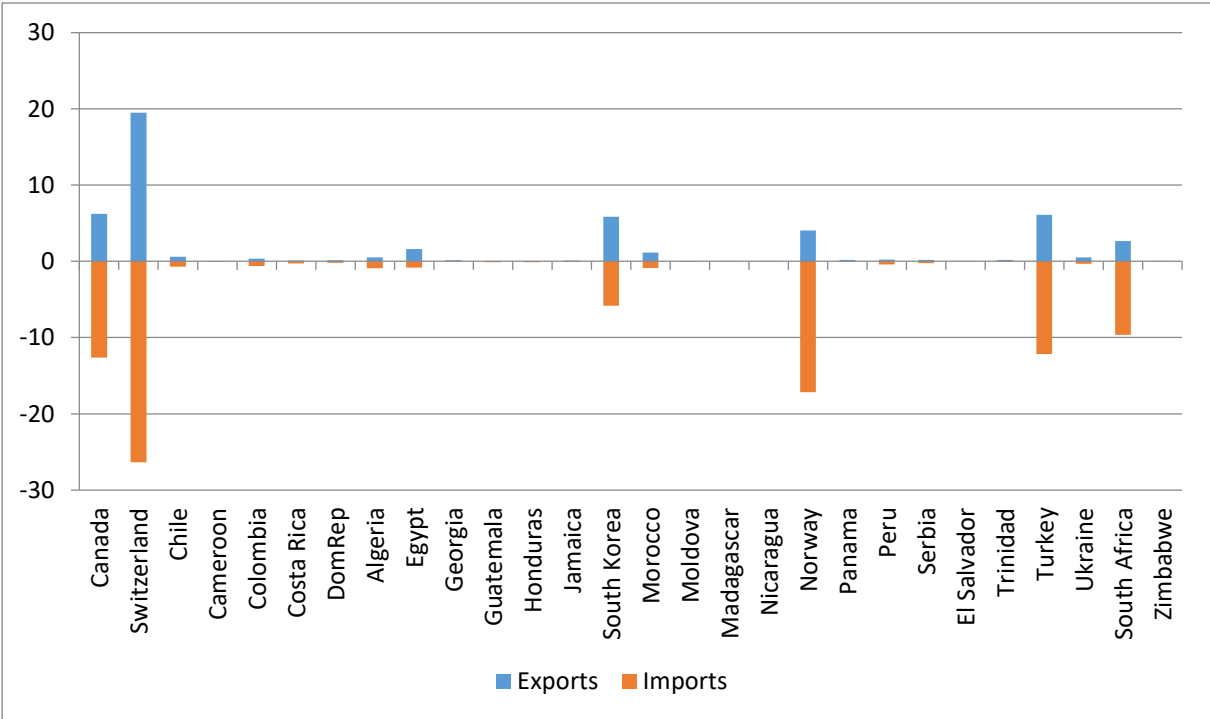
To give a more detailed picture of UKs trade with Third Countries where the EU has a trade agreement imports and exports are shown by trade partner in Figure 2. As can be seen large trade flows are prevalent in countries that are close to the UK like NAFTA countries Norway and Switzerland and Turkey where the EU has a Customs Union. Also Countries where the EU has a Deep and Comprehensive Free Trade Agreement, i.e. Canada and South Korea trade is relatively large. With the other predominantly small countries trade figures are not that large, however.

**Figure 1: UKs trade in perspective, 2016, in bn US-\$**



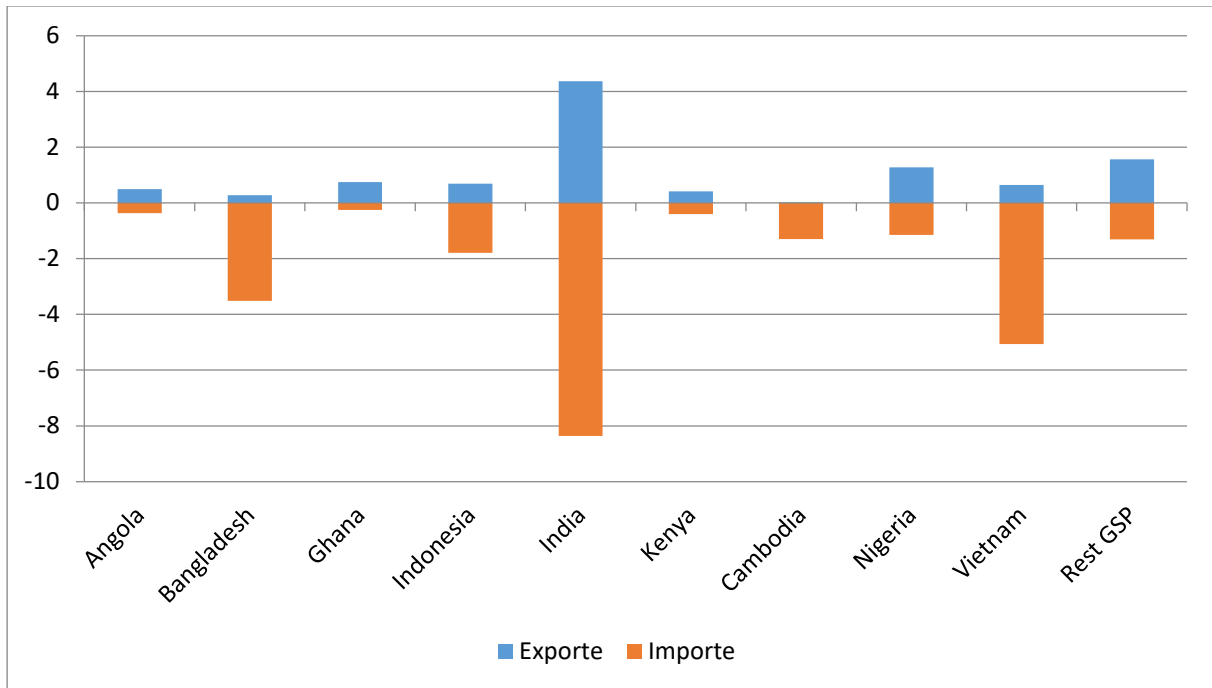
Source: Comtrade (2018)

**Figure 2: UKs trade with Third Countries where the EU has a trade agreement, 2016, in bn US-\$**



Source: Comtrade (2018)

**Figure 3: UKs trade with GSP countries, 2016, in bn US-\$**



Source: Comtrade (2018)

In terms of trade value the most important GSP trade partners of the UK are depicted in Figure 3. The UKs largest trade flows with GSP beneficiaries are with the Commonwealth countries India and Bangladesh as well as Vietnam. With most countries the UK runs a trade deficit except for the African countries Angola, Ghana and Nigeria and with the sum of all other GSP countries.

### 3. Scenario and Model Set-up

#### 3.1 Scenario description

First, we consider a so called baseline-scenario against which all Brexit scenarios are compared. In the baseline-scenario we construct macroeconomic projections for GDP and population until the period of 2017-2027. Additionally, all currently decided trade agreements by the EU (including CETA) are sequentially introduced until the projection horizon in 2027. A Brexit is not assumed in the baseline. More information about the Thünen Baseline can be found in OFFERMANN et al. (2017).

Second, we compute several Brexit scenarios. There is of course an infinite amount of possible trade policy scenarios associated with a Brexit but the focus has been on mirroring some existing models of EU trade policy with Third Countries so far. As such, models of the Norwegian or Switzerland type have been discussed together with free trade agreements and customs union options, see e.g. SAMPSON (2017). The most disruptive option would be, of course, the fall back to WTO rules which would imply reciprocal imposition of MFN tariffs between UK and EU. If the UK strictly avoids the crossing of any red line that has been drawn during the Brexit referendum it is only left with the free trade agreement option, see GUARDIAN (2017). A very deep and comprehensive FTA option has also been proposed by the European Council as can be learnt from the most recent Brexit Guidelines that have been published by the European Council, EC(2018). Given this, we consider an EU-UK FTA

scenario as the most likely outcome of the negotiations if they are successful. Since, in the case of no agreement, the UK and EU would fall back on the WTO position we also consider this option in our scenario analysis.

As already mentioned we should also be careful about the UK's future trade policy relation with respect to Third Countries where the EU has preferential trade agreements. This includes trade agreements<sup>1</sup> as well as the EU's Generalized System of Preferences (GSP) where the EU allows tariff free access for developing countries and LDCs in many sectors. In this study we also consider scenarios where the UK and Third Countries are losing this preferential access and turn back to WTO rules with MFN tariffs. The scenario set-up is described below:

- **Soft:** “Soft” Brexit-scenario where we abstract from tariffs but assume an increase in trade costs that are associated with leaving the principles of the EU Single Market. These trade costs include administrative costs that can be attributed to rules of origin.
- **Soft+Third:** “Soft” Brexit as in Soft but the UK loses its preferential access to Third Countries and turns away from GSP.
- **Hard:** “Hard” Brexit-scenario where the UK and the EU reciprocally invoke MFN tariffs on each other's imports. Regulatory trade cost will rise due to leaving the single market in addition to MFN tariffs.
- **Hard+Third:** “Hard” Brexit as in Hard but the UK loses its preferential access to Third Countries and turns away from GSP.

This scenario set-up allows us to deduce the causal effect of the UK's loss in preferential market access to Third Countries on all variables in the model. This may be accomplished by comparing “Soft” with “Soft+Third” and “Hard” with “Hard+Third” respectively.

## 3.2 Trade policy shocks

In this subsection we are describing the trade policy shocks which consist of calculating MFN tariffs for UK-EU and UK-Third Countries as well as increasing Non Tariff Measures (NTMs) that can be associated with leaving the single market.

### 3.2.1 Tariffs

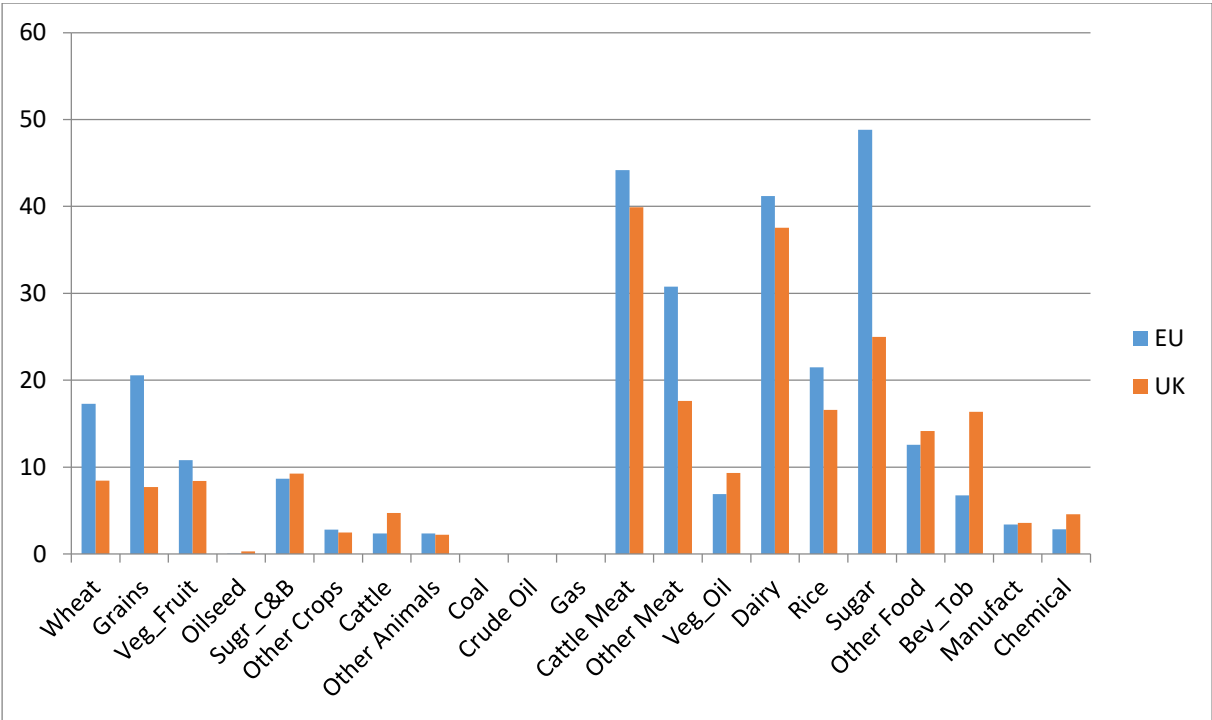
The hypothetical MFN tariffs that the UK and the EU would impose on each other's imports in a “hard” Brexit scenario are depicted in Figure 4. As can be seen the EU is generally most protective on sensitive sectors such as beef, other meat (pig and poultry), sugar and dairy. Since the EU has concluded trade agreements with most countries, it only trades with very few countries on the basis of MFN tariffs. For this analysis we create a database building on tariff information of the Market Access Map (MacMaps, 2019) with MFN tariffs. Instead of applying the bilateral tariff of the UK and its trading partners we weight bilateral imports of the UK with EU-MFN tariffs. This gives us different levels of protection at the bilateral level, because we take into account the importance of such a tariff in trade with a partner country of

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<sup>1</sup> The term Trade Agreements includes Free Trade Agreements (e.g. South Korea, Canada), Customs Unions (Turkey), Association Agreements (e.g. Ukraine) as well as Economic Partnership Agreements (e.g. ACP countries).

the UK. For all 27 EU member countries we kept the bilateral tariff rates as they are negotiated in several trade agreements.

**Figure 4: MFN tariffs between EU and UK, trade weighted, 2027, in %**



Source: Own calculations with TASTE.

Table 1 contains hypothetical MFN tariffs of a selection of countries where the EU has a Trade Agreement with. As was the case for the EU, the agriculture sectors are highly protected in most countries whereas manufacturing and chemical industries are less protected. There are also exceptional high MFN tariffs in some countries, exceeding 100%. This is for example the case for cattle meat in EFTA and Turkey or for dairy products in Canada and Turkey.

**Table 1: MFN Tariffs of selected Third Countries on UKs Exports, trade weighted, 2027, in %**

	EFTA	Canada	Ukraine	Turkey	Sub Sahara Africa
Wheat	57.0	62.8	6.7	65.0	0.7
Grains	49.6	10.5	5.0	74.4	5.9
Vegetables & Fruit	36.0	2.8	11.5	20.7	13.4
Oilseed	22.9	0.0	4.0	5.0	7.9
Sugar	2.8	0.0	15.0	14.2	0.0
Other Crops	21.9	0.9	8.7	7.7	9.7
Cattle	14.1	0.0	0.5	1.8	0.5
Other Animals	59.3	0.2	0.0	5.1	1.4
Cattle Meat	266.8	0.0	12.2	174.7	18.5
Other Meat	72.2	105.6	8.8	106.4	24.7
Vegetable Oil	32.9	6.4	12.3	7.5	11.9
Dairy	54.6	247.2	10.0	146.9	10.7
Rice	7.1	0.0	5.0	42.0	7.8
Sugar	8.3	2.6	8.4	122.3	10.8
Other Food	24.1	28.5	4.0	16.3	12.4
Beverages and Tobacco	6.8	0.6	2.8	5.5	6.2
Manufactures	0.1	1.0	5.2	4.2	9.0
Chemical	0.4	1.0	2.2	3.6	6.3

Source: Own Calculations with TASTE.



When the UK is leaving the single market they face an unavoidable increase in NTMs. Those costs arise due to regulatory divergences, loss of mutual recognition of standards etcetera. Attempts to quantify reductions in NTM costs associated with the single market have been conducted by several authors - consult FRANCOISE et al. (2005) for a literature survey. Following this literature, trade facilitation estimates of the single market, measured as ad-valorem equivalents, range between 2 % and 5 %. A more recent study by EGGER et al. (2015) identifies much larger trade facilitation estimates of about 13 %. However, given that the UK as a (former) EU member has already close alignments in regulatory issues we believe that the latter figure is too high. Therefore, we assume an increase in regulatory barriers of 5 % in the “soft” Brexit scenario plus a 4 % increase due to costs of rules of origin checks. We further assume that the regulatory costs are doubled in the “hard” Brexit scenario due to further divergence in regulations compared to the “soft” Brexit. In a “hard” Brexit there are, however, no costs of rules of origin checks.

### 3.3 Model Set-up

To quantify our scenarios, we employ the Modular Applied General Equilibrium Tool (MAGNET), a global computable general equilibrium model which is based on the GTAP9 model and database, see WOLTJER et al. (2014) and HERTEL (1997). In addition to the GTAP core it has some features relevant for agricultural modelling. This includes various imperfectly substitutable types of land, the land use allocation structure, endogenous land supply and substitution between various animal feed components. On the policy side, common agricultural policies (CAP) like production quotas and different land related payments are included as well as biofuel policy issues like capital-energy substitution and fossil fuel - biofuel substitution. On the consumption side, dynamic CDE expenditure function was implemented which allows for changes in income elasticities when purchasing power parity (PPP)-corrected real GDP per capita changes. The segmentation and imperfect mobility between agriculture and non-agriculture labour and capital is also considered. Additionally, the modular set-up allows researchers to switch on/off various modules as needed.

The core data is based on version 9 of the GTAP data, AGUIAR et al. (2016). The GTAP database contains detailed bilateral trade, transport and protection data characterizing economic linkages among regions, linked together with individual country input-output databases which account for inter-sectoral linkages. All monetary values of the data are in millions \$-US and the base year is 2011 which is updated in a baseline process until the year 2027. The results presented here are changes that are measured against the reference scenario of the baseline in 2027. All assumptions and selected results of the reference scenario are presented in OFFERMANN et al. (2018).

The initial GTAP data base was adjusted to implement some new sectors. Ethanol and biodiesel were included to represent biofuel policies in the model. These new sectors produce two products each; the main product and byproduct. The ethanol byproduct is dried distillers drains with dolubles (ddgs) and biodiesel byproduct - oilseed meals (bdbp).

In the end, we distinguish 40 regions and 34 sectors. The sectoral aggregation includes, among others, agricultural sectors that use land (e.g. rice, grains, wheat, oilseed, sugar, horticulture, other crops, cattle, pork and poultry, and milk), the petrol sector that demands fossil (crude oil, gas and coal), bioenergy inputs (ethanol and biodiesel) and biofuel production byproducts, see Table 5 in the appendix. The regional aggregation includes, amongst others, the single countries Germany, France, UK, USA, Australia, New Zealand, Brazil and other aggregates for the EU, Asia, Latin America, etc., see Table 4 in the appendix.

Tariff aggregations are implemented with TASTE, a tool to aggregate import tariffs from the detailed 6-digit level of the Harmonized System to the level of the MAGNET-model (HORRIDGE and LABORDE, 2008). For this paper a new version of TASTE has been created, which contains MFN tariffs instead of preferential tariffs on imports originating from UK. All trade agreements (e.g., CETA) implemented by the EU until 2027 are considered for the EU but not for the UK at the detailed HS level.

#### 4. Results

The consequences of the four scenarios on real and nominal GDP can be inspected in Table 2. The (selection of) regions are distinguished by type of trade policy that was prevalent before Brexit takes place. The EU and UK were very closely integrated, following the rules of the Single Market. As a member of the EU the UK is/was also part of the Trade Agreements with EFTA countries, Turkey, Canada and the Andean countries: Peru, Colombia and Chile (shown as aggregate ANDEN) as well as South Africa (which is included in SSA). Results are also shown for GSP partners like India and Least Developed Countries of Asia. Additionally, consequences of a Brexit for some WTO trade partners like USA, Australia, New Zealand and Russia are displayed in this Table. For the latter group of countries trade policy vis a vis the EU does not change, however, we expect that these countries might be indirectly affected by a Brexit.

As can be seen, the two regions that are mostly affected are of course the UK and the EU. By leaving the EU Single Market the UK would lose between 0.8 % (2.8 %) and 1.2 % (3.2 %) in terms of real (nominal) GDP depending on the scenario. In a similar vein the EU would lose 0.09 % (0.63 %) and 0.14 % (0.94 %) in terms of real (nominal) GDP. As can be expected Brexit is becoming even harder for the UK when it trades on MFN basis with preferential trade partners in addition to the EU. For the EU this scenario would be a bit less damaging, since then some trade is diverted from Third Countries towards the EU.

**Table 2: Changes in real and nominal GDP, rel. to baseline, in %**

Trade policy	Region	real GDP				nominal GDP			
		Soft	Soft Third	Hard	Hard Third	Soft	Soft Third	Hard	Hard Third
SM	UK	-0.824	-0.876	-1.165	-1.197	-2.80	-3.02	-3.72	-3.82
	EU27	-0.091	-0.089	-0.139	-0.137	-0.68	-0.63	-0.94	-0.90
TA	EFTA	0.016	0.015	0.023	0.021	-0.02	-0.06	0.08	0.04
	TUR	0.008	-0.006	0.010	-0.004	-0.03	-0.40	0.03	-0.35
	CAN	0.008	0.006	0.013	0.010	0.08	0.07	0.17	0.16
	ANDEN	-0.001	-0.004	0.001	-0.003	0.11	0.09	0.18	0.14
	SSA	-0.010	-0.013	-0.008	-0.010	0.29	0.26	0.39	0.35
GSP	IND	-0.082	-0.085	-0.079	-0.081	1.12	1.06	1.17	1.10
	LDC	0.001	-0.009	0.003	-0.007	0.66	-0.06	0.76	0.00
	ASIA								
WTO	RUS	0.033	0.030	0.038	0.035	0.57	0.58	0.63	0.64
	USA	0.001	0.002	0.002	0.003	0.01	0.04	0.09	0.12
	AUS	0.002	0.002	0.007	0.006	0.01	0.04	0.08	0.11
	NZL	0.001	0.003	0.008	0.009	-0.25	-0.22	-0.06	-0.01
	JAP	0.019	0.005	0.001	0.006	0.13	0.17	0.19	0.21

Source: Own calculations with MAGNET. Notes: SM: Single Market, TA: Trade Agreement, GSP: Generalized System of Preferences, WTO: World Trade Organization

For TA and GSP countries the picture is mixed. Depending on the scenario there are losers and gainers. Interestingly, EFTA countries and Canada would benefit, irrespective of the scenario. Even if MFN tariffs are imposed on their trade with the UK these regions show

positive GDP numbers, which is not the case for the other countries where a TA or GSP exists. This implies that for EFTA and Canada the positive effect of trade diversion created by increased EU-UK trade costs dominates the negative effect of rising trade costs between those regions and the UK. On the contrary, the SSA region and India stand to lose from any Brexit option. A reason could be that those developing and LDC countries trade different goods with the UK than the UK does with the EU. In this case there is less room for trade diversion. In any case countries with initial preferential trade status with the UK would stand to lose from reciprocal imposition of MFN tariffs on each other's imports.

The last country group consists of WTO countries where the UK trades on MFN basis before and after Brexit. In principle we would expect that those countries are also affected through the channel of trade diversion. As becomes clear by looking at Table 2 all those countries gain, although these gains are quite small. The largest gains can be expected in Russia which may be due to its relative geographic closeness compared to the other countries listed.

**Table 3: Share of GDP change that can be attributed by imposing tariffs MFN with Third Countries, in %**

	Real GDP		Nominal GDP	
	Soft	Hard	Soft	Hard
<b>UK</b>	6.21	2.70	7.83	2.48
<b>EU27</b>	-2.30	-1.44	-7.27	-4.37

Source: Own calculations with MAGNET.

In Table 3 the share of GDP change that can be attributed by imposing MFN tariffs with Third Countries is shown for the EU and the UK. This share is obviously larger in the soft Brexit scenario than in the hard Brexit scenario. This is because the policy shock in the soft Brexit is smaller which gives the MFN tariff shock with respect to Third Countries relatively more weight. In general, the consequences of a changing trade environment with Third Countries are not very large. The additional loss in nominal GDP that can be attributed to imposing MFN tariffs with Third Countries is 7.8 % with a soft Brexit and 2.5 % with a hard Brexit. For the EU the loss is decreases by 7.3 % with soft Brexit and 4.4 % with hard Brexit.

## 5. Conclusion

In this paper we try to shed some light on the impact of changing trade conditions - concerning TAs and GSP - with Third Countries following Brexit. Therefore, we simulate in addition to 'classical' soft and hard Brexit scenarios, which consider policy changes with the EU and UK only, MFN tariffs with all Third Countries as well. Based on TASTE - a tool for tariff aggregation - we calculate consistent MFN tariffs between UK and Third Countries. The UK would lose additional 7.8 % (2.5 %) with a soft (hard) Brexit by reciprocal imposition of MFN tariffs with Third Countries. On the contrary the EU loss in GDP would be lower in this case due to trade diversion from Third Countries towards the EU. Given that the bulk of GDP effects are created by changing trade environment between the EU and UK the UK should focus its negotiation efforts on the EU and not so much on Third Countries. Furthermore, trade flows with Third Country are concentrated on a few regions (like Norway and Switzerland) the UK should try to strike some deals with these countries first and negotiate with the other predominantly smaller and more remote countries in a later point of time. There are also some interesting results for Third Countries. Interestingly, developed countries like EFTA, Turkey and Canada would gain even in a scenario where MFN tariffs are imposed on their trade with the UK. This is because these countries benefits of trade diversion are high

and exceed the loss of the imposition of own tariffs. Less developed countries like India and South Africa gains from trade diversion are limited since these countries generally trade different goods with the UK than the EU does. That is why these countries stand to lose from Brexit in all scenarios. However, third Countries that trade on MFN basis before and after Brexit gain unanimously from a Brexit.

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## **LOSING PREFERENTIAL ACCESS TO THIRD COUNTRIES AFTER BREXIT - WHAT IS AT STAKE?**

### **Summary**

This article takes a closer look into the pending question of how the UK might be affected by losing preferential access to Third Countries in the wake of Brexit. Although, as the formal date of divorce comes closer possibilities of losing these beneficial trade terms are not very present in the public debate. This is puzzling since as an EU member the UK has 40 trade agreements with over 70 non-European countries, covering about 15 % of its trade but legally those contracts are only valid for EU members and leaving the EU while retaining the status quo enshrined in the trade agreements would contradict with the MFN principle. Simulations of a 'hard' and a 'soft' Brexit scenario with a CGE model reveal that the additional loss in GDP is due to these changing trade relations with Third Countries are in the range of 2.5 % and 7.8% % of the total loss. Since most of the loss is associated with a changing trade environment with EFTA and Turkey the UK - if it aims to continue these deals - should focus its negotiation resources on these regions first. On the other hand the EU losses of a Brexit would be lower if the UK and Third Countries impose new tariffs on their trade flows since this would redirect trade flows toward the EU.

### **Keywords**

Brexit, trade policy, CGE analysis, MFN tariffs, NTM, trade agreement

### **1 Introduction**

With the re-election of David Cameron as prime minister in 2015 it became clear that he will hold a referendum that questions the current status of the UK as an EU member. This has immediately triggered a lot of research about the possible economic consequences of a British exit (Brexit) from the EU. In March 2017 Theresa May, who followed David Cameron, has formalised the exit by invoking Article 50 of the Treaty of the EU. The negotiations, which started in June 2017 have, however, proven to be difficult due to widely divergent requests of both parties. That is why we still lack knowledge about the precise conditions of a Brexit, implying that in order to simulate the economic effects of a Brexit, assumptions about the

negotiations outcomes have to be made. In a nutshell most Brexit studies assume the following options: a “hard” and/or a “soft” version of the Brexit. The former implies imposition of Most Favoured Nations (MFN) tariffs between the UK and the EU countries whereas the latter assumes some sort of Trade Agreement (TA), see e. g. AICHELE and FELBERMAYR (2015), BOULANGER and PHILIPPIDES (2015), ROJAS-ROMAGOSA (2016), FREUND et al. (2017), DHINGRA et al. (2017), YU et al. (2017), FELBERMAYR et al. (2017), Vanzetti (2017) and BELLORA et al. (2017).

A pending question concerns the UK’s future status of TAs that have been negotiated between the EU and Third Countries. Legally those contracts are only valid for EU members and leaving the EU while retaining the status quo enshrined in the TAs would contradict with the MFN principle. This is true as long as the UK decides either to treat all WTO countries equally or ceases to be a WTO member. In order to retain TAs, the UK will have to re-negotiate these trade deals - a difficult task given that the EU has negotiated 36 TAs with 58 different countries. In a similar vein the UK would also legally be excluded from EU’s Generalized System of Preferences (GSP), where the EU unilaterally opens its markets for about 90 developing countries, see e.g. MOLINUEVO (2017). In this regard, looking at potential effects of changing trade relations between the UK and Third Countries seems to be a scenario worth looking at, which has not drawn so much attention in the literature so far. Exemptions are AICHELE and FELBERMAYR (2015), FELBERMAYR et al. (2017), VANZETTI (2017) and YU et al (2017), who also impose MFN tariffs between the UK and Third Countries in their “soft” and “hard” Brexit scenarios. However, since the authors include third-country MFN tariffs in all of their Brexit scenarios, it is not possible to delineate the single effect of losing preferential access to Third Countries negotiated under the auspices of the EU. This paper contributes to this discussion by specifying appropriate scenarios that allow to disentangle these effects. This is important since we lack an understanding of how significant these effects might be relative to the changing trade environment vis-à-vis the EU. Additionally, there might be interesting trade diversion effects. For example, it could be beneficial for the United States (no TA with EU) if the UK and Canada (TA with EU) impose MFN tariffs on each other’s imports as a consequence of the Brexit.

The paper is structured as follows: In chapter 2 the UKs current trade flows with Third Countries where the EU has a TA and of EUs GSP beneficiaries are described. A scenario description and the model set-up are located in chapter 3 whereas the results are discussed in chapter 4. The paper closes with a conclusion in chapter 5.

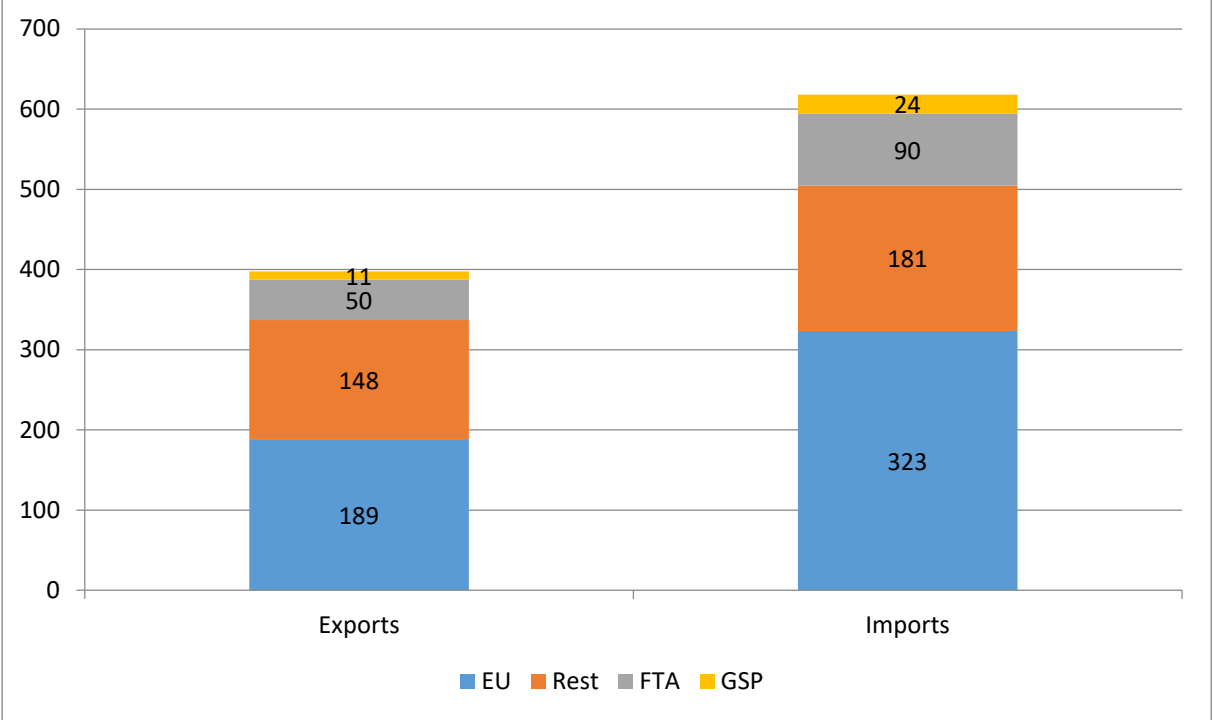
## **2 Descriptives**

In the following we will consider changes in UKs trade policy both with the EU and Third Countries and vice versa. To get an idea about the potential impact of such changes on the UK and its trading partners recent trade volumes of those countries with the UK are shown first. To put the different types of trade partners in perspective we start with a graph of UKs trade flows distinguished by EU, FTA partners, GSP countries and the rest of the world respectively. Overall the UK is a net importer as can be seen from Figure 1. The EU is by far the largest trade partner of the UK with import and export shares larger than 50%. Also trade with countries where the EU has a trade agreement is quite large with imports of 90 billion US-\$ and exports of 50 billion US-\$. The imports with GSP countries amount to 24 billion US-\$ and exports amount to 11 billion US-\$.

To give a more detailed picture of UKs trade with Third Countries where the EU has a trade agreement imports and exports are shown by trade partner in Figure 2. As can be seen large trade flows are prevalent in countries that are close to the UK like NAFTA countries Norway and Switzerland and Turkey where the EU has a Customs Union. Also Countries where the

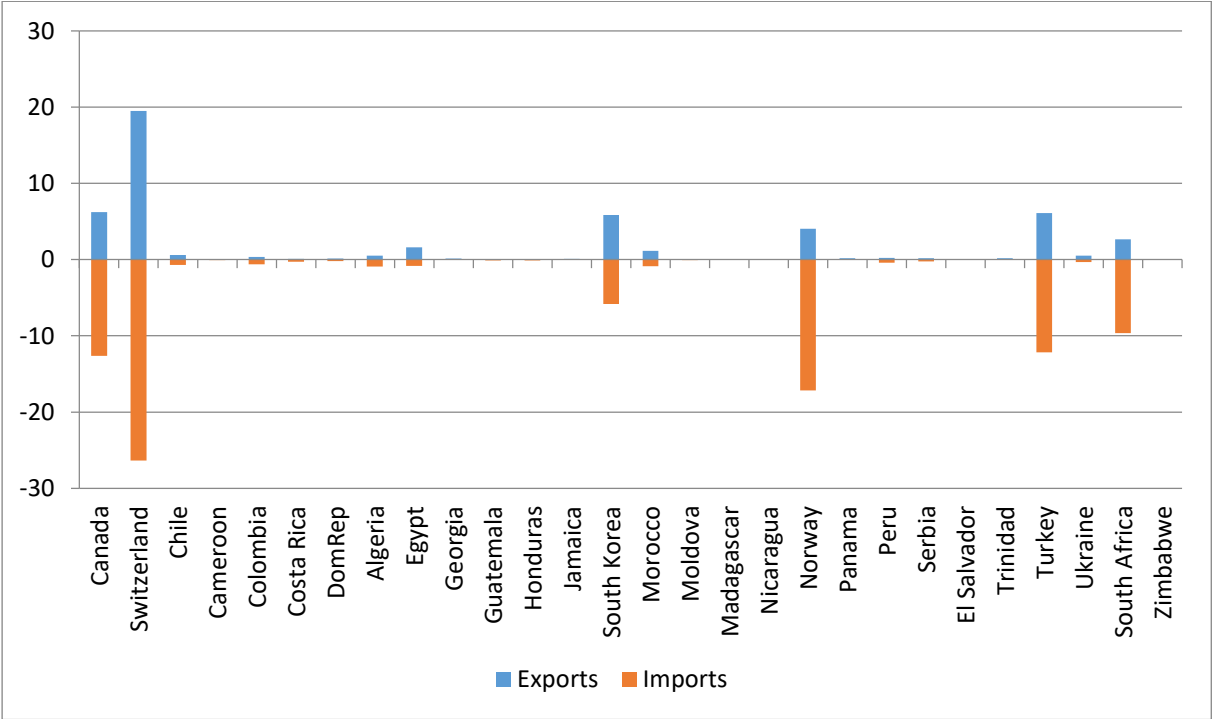
EU has a Deep and Comprehensive Free Trade Agreement, i.e. Canada and South Korea trade is relatively large. With the other predominantly small countries trade figures are not that large, however.

**Figure 2: UKs trade in perspective, 2016, in bn US-\$**



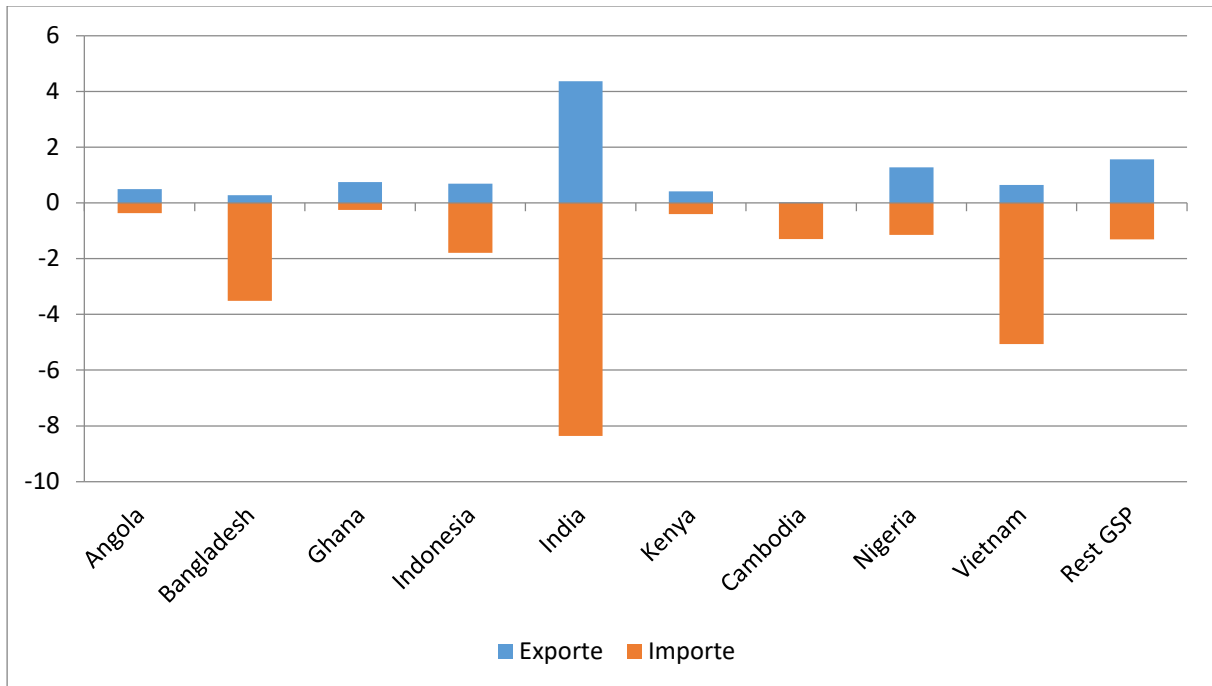
Source: Comtrade (2018)

**Figure 2: UKs trade with Third Countries where the EU has a trade agreement, 2016, in bn US-\$**



Source: Comtrade (2018)

**Figure 3: UKs trade with GSP countries, 2016, in bn US-\$**



Source: Comtrade (2018)

In terms of trade value the most important GSP trade partners of the UK are depicted in Figure 3. The UKs largest trade flows with GSP beneficiaries are with the Commonwealth countries India and Bangladesh as well as Vietnam. With most countries the UK runs a trade deficit except for the African countries Angola, Ghana and Nigeria and with the sum of all other GSP countries.

### 3. Scenario and Model Set-up

#### 3.1 Scenario description

First, we consider a so called baseline-scenario against which all Brexit scenarios are compared. In the baseline-scenario we construct macroeconomic projections for GDP and population until the period of 2017-2027. Additionally, all currently decided trade agreements by the EU (including CETA) are sequentially introduced until the projection horizon in 2027. A Brexit is not assumed in the baseline. More information about the Thünen Baseline can be found in OFFERMANN et al. (2017).

Second, we compute several Brexit scenarios. There is of course an infinite amount of possible trade policy scenarios associated with a Brexit but the focus has been on mirroring some existing models of EU trade policy with Third Countries so far. As such, models of the Norwegian or Switzerland type have been discussed together with free trade agreements and customs union options, see e.g. SAMPSON (2017). The most disruptive option would be, of course, the fall back to WTO rules which would imply reciprocal imposition of MFN tariffs between UK and EU. If the UK strictly avoids the crossing of any red line that has been drawn during the Brexit referendum it is only left with the free trade agreement option, see GUARDIAN (2017). A very deep and comprehensive FTA option has also been proposed by the European Council as can be learnt from the most recent Brexit Guidelines that have been published by the European Council, EC(2018). Given this, we consider an EU-UK FTA



scenario as the most likely outcome of the negotiations if they are successful. Since, in the case of no agreement, the UK and EU would fall back on the WTO position we also consider this option in our scenario analysis.

As already mentioned we should also be careful about the UK's future trade policy relation with respect to Third Countries where the EU has preferential trade agreements. This includes trade agreements<sup>2</sup> as well as EU's Generalized System of Preferences (GSP) where the EU allows tariff free access for developing countries and LDCs in many sectors. In this study we also consider scenarios where the UK and Third Countries are losing this preferential access and turn back to WTO rules with MFN tariffs. The scenario set-up is described below:

- **Soft:** “Soft” Brexit-scenario where we abstract from tariffs but assume an increase in trade costs that are associated with leaving the principles of the EU Single Market. These trade costs include administrative costs that can be attributed to rules of origin.
- **Soft+Third:** “Soft” Brexit as in Soft but the UK loses its preferential access to Third Countries and turns away from GSP.
- **Hard:** “Hard” Brexit-scenario where the UK and the EU reciprocally invoke MFN tariffs on each other's imports. Regulatory trade cost will rise due to leaving the single market in addition to MFN tariffs.
- **Hard+Third:** “Hard” Brexit as in Hard but the UK loses its preferential access to Third Countries and turns away from GSP.

This scenario set-up allows us to deduce the causal effect of UK's loss in preferential market access to Third Countries on all variables in the model. This may be accomplished by comparing “Soft” with “Soft+Third” and “Hard” with “Hard+Third” respectively.

## 3.2 Trade policy shocks

In this subsection we are describing the trade policy shocks which consist of calculating MFN tariffs for UK-EU and UK-Third Countries as well as increasing Non Tariff Measures (NTMs) that can be associated with leaving the single market.

### 3.2.1 Tariffs

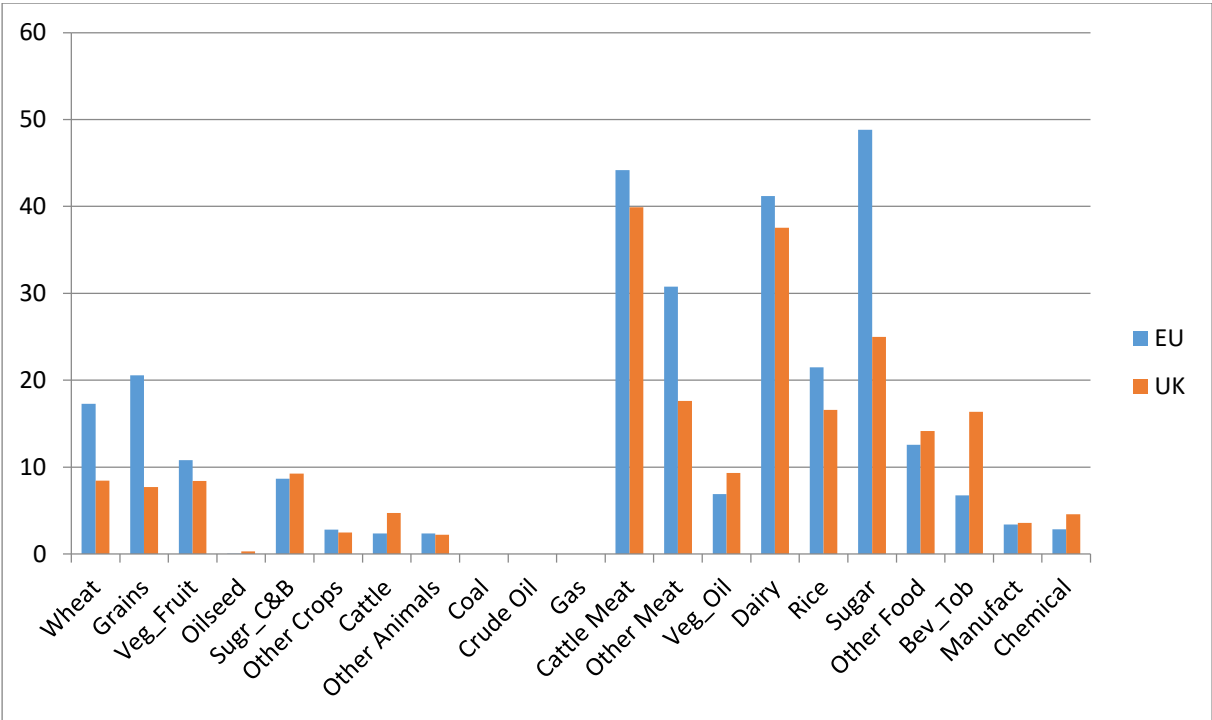
The hypothetical MFN tariffs that the UK and the EU would impose on each other's imports in a “hard” Brexit scenario are depicted in Figure 4. As can be seen the EU is generally most protective on sensitive sectors such as beef, other meat (pig and poultry), sugar and dairy. Since the EU has concluded trade agreements with most countries, it only trades with very few countries on the basis of MFN tariffs. For this analysis we create a database building on tariff information of the Market Access Map (MacMaps, 2019) with MFN tariffs. Instead of applying the bilateral tariff of the UK and its trading partners we weight bilateral imports of the UK with EU-MFN tariffs. This gives us different levels of protection at the bilateral level, because we take into account the importance of such a tariff in trade with a partner country of

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<sup>2</sup> The term Trade Agreements includes Free Trade Agreements (e.g. South Korea, Canada), Customs Unions (Turkey), Association Agreements (e.g. Ukraine) as well as Economic Partnership Agreements (e.g. ACP countries).

the UK. For all 27 EU member countries we kept the bilateral tariff rates as they are negotiated in several trade agreements.

**Figure 4: MFN tariffs between EU and UK, trade weighted, 2027, in %**



Source: Own calculations with TASTE.

Table 1 contains hypothetical MFN tariffs of a selection of countries where the EU has a Trade Agreement with. As was the case for the EU, the agriculture sectors are highly protected in most countries whereas manufacturing and chemical industries are less protected. There are also exceptional high MFN tariffs in some countries, exceeding 100%. This is for example the case for cattle meat in EFTA and Turkey or for dairy products in Canada and Turkey.

**Table 4: MFN Tariffs of selected Third Countries on UKs Exports, trade weighted, 2027, in %**

	EFTA	Canada	Ukraine	Turkey	Sub Sahara Africa
Wheat	57.0	62.8	6.7	65.0	0.7
Grains	49.6	10.5	5.0	74.4	5.9
Vegetables & Fruit	36.0	2.8	11.5	20.7	13.4
Oilseed	22.9	0.0	4.0	5.0	7.9
Sugar	2.8	0.0	15.0	14.2	0.0
Other Crops	21.9	0.9	8.7	7.7	9.7
Cattle	14.1	0.0	0.5	1.8	0.5
Other Animals	59.3	0.2	0.0	5.1	1.4
Cattle Meat	266.8	0.0	12.2	174.7	18.5
Other Meat	72.2	105.6	8.8	106.4	24.7
Vegetable Oil	32.9	6.4	12.3	7.5	11.9
Dairy	54.6	247.2	10.0	146.9	10.7
Rice	7.1	0.0	5.0	42.0	7.8
Sugar	8.3	2.6	8.4	122.3	10.8
Other Food	24.1	28.5	4.0	16.3	12.4
Beverages and Tobacco	6.8	0.6	2.8	5.5	6.2
Manufactures	0.1	1.0	5.2	4.2	9.0
Chemical	0.4	1.0	2.2	3.6	6.3

Source: Own Calculations with TASTE.

When the UK is leaving the single market they face an unavoidable increase in NTMs. Those costs arise due to regulatory divergences, loss of mutual recognition of standards etcetera. Attempts to quantify reductions in NTM costs associated with the single market have been conducted by several authors - consult FRANCOISE et al. (2005) for a literature survey. Following this literature, trade facilitation estimates of the single market, measured as ad-valorem equivalents, range between 2 % and 5 %. A more recent study by EGGER et al. (2015) identifies much larger trade facilitation estimates of about 13 %. However, given that the UK as a (former) EU member has already close alignments in regulatory issues we believe that the latter figure is too high. Therefore, we assume an increase in regulatory barriers of 5 % in the “soft” Brexit scenario plus a 4 % increase due to costs of rules of origin checks. We further assume that the regulatory costs are doubled in the “hard” Brexit scenario due to further divergence in regulations compared to the “soft” Brexit. In a “hard” Brexit there are, however, no costs of rules of origin checks.

### 3.3 Model Set-up

To quantify our scenarios, we employ the Modular Applied General Equilibrium Tool (MAGNET), a global computable general equilibrium model which is based on the GTAP9 model and database, see WOLTJER et al. (2014) and HERTEL (1997). In addition to the GTAP core it has some features relevant for agricultural modelling. This includes various imperfectly substitutable types of land, the land use allocation structure, endogenous land supply and substitution between various animal feed components. On the policy side, common agricultural policies (CAP) like production quotas and different land related payments are included as well as biofuel policy issues like capital-energy substitution and fossil fuel - biofuel substitution. On the consumption side, dynamic CDE expenditure function was implemented which allows for changes in income elasticities when purchasing power parity (PPP)-corrected real GDP per capita changes. The segmentation and imperfect mobility between agriculture and non-agriculture labour and capital is also considered. Additionally, the modular set-up allows researchers to switch on/off various modules as needed.

The core data is based on version 9 of the GTAP data, AGUIAR et al. (2016). The GTAP database contains detailed bilateral trade, transport and protection data characterizing economic linkages among regions, linked together with individual country input-output databases which account for inter-sectoral linkages. All monetary values of the data are in millions \$-US and the base year is 2011 which is updated in a baseline process until the year 2027. The results presented here are changes that are measured against the reference scenario of the baseline in 2027. All assumptions and selected results of the reference scenario are presented in OFFERMANN et al. (2018).

The initial GTAP data base was adjusted to implement some new sectors. Ethanol and biodiesel were included to represent biofuel policies in the model. These new sectors produce two products each; the main product and byproduct. The ethanol byproduct is dried distillers drains with dolubles (ddgs) and biodiesel byproduct - oilseed meals (bdbp).

In the end, we distinguish 40 regions and 34 sectors. The sectoral aggregation includes, among others, agricultural sectors that use land (e.g. rice, grains, wheat, oilseed, sugar, horticulture, other crops, cattle, pork and poultry, and milk), the petrol sector that demands fossil (crude oil, gas and coal), bioenergy inputs (ethanol and biodiesel) and biofuel production byproducts, see Table 5 in the appendix. The regional aggregation includes, amongst others, the single countries Germany, France, UK, USA, Australia, New Zealand, Brazil and other aggregates for the EU, Asia, Latin America, etc., see Table 4 in the appendix.

Tariff aggregations are implemented with TASTE, a tool to aggregate import tariffs from the detailed 6-digit level of the Harmonized System to the level of the MAGNET-model (HORRIDGE and LABORDE, 2008). For this paper a new version of TASTE has been created, which contains MFN tariffs instead of preferential tariffs on imports originating from UK. All trade agreements (e.g., CETA) implemented by the EU until 2027 are considered for the EU but not for the UK at the detailed HS level.

#### 4. Results

The consequences of the four scenarios on real and nominal GDP can be inspected in Table 2. The (selection of) regions are distinguished by type of trade policy that was prevalent before Brexit takes place. The EU and UK were very closely integrated, following the rules of the Single Market. As a member of the EU the UK is/was also part of the Trade Agreements with EFTA countries, Turkey, Canada and the Andean countries: Peru, Colombia and Chile (shown as aggregate ANDEN) as well as South Africa (which is included in SSA). Results are also shown for GSP partners like India and Least Developed Countries of Asia. Additionally, consequences of a Brexit for some WTO trade partners like USA, Australia, New Zealand and Russia are displayed in this Table. For the latter group of countries trade policy vis a vis the EU does not change, however, we expect that these countries might be indirectly affected by a Brexit.

As can be seen, the two regions that are mostly affected are of course the UK and the EU. By leaving the EU Single Market the UK would lose between 0.8 % (2.8 %) and 1.2 % (3.2 %) in terms of real (nominal) GDP depending on the scenario. In a similar vein the EU would lose 0.09 % (0.63 %) and 0.14 % (0.94 %) in terms of real (nominal) GDP. As can be expected Brexit is becoming even harder for the UK when it trades on MFN basis with preferential trade partners in addition to the EU. For the EU this scenario would be a bit less damaging, since then some trade is diverted from Third Countries towards the EU.

**Table 5: Changes in real and nominal GDP, rel. to baseline, in %**

Trade policy	Region	real GDP				nominal GDP			
		Soft	Soft Third	Hard	Hard Third	Soft	Soft Third	Hard	Hard Third
SM	UK	-0.824	-0.876	-1.165	-1.197	-2.80	-3.02	-3.72	-3.82
	EU27	-0.091	-0.089	-0.139	-0.137	-0.68	-0.63	-0.94	-0.90
TA	EFTA	0.016	0.015	0.023	0.021	-0.02	-0.06	0.08	0.04
	TUR	0.008	-0.006	0.010	-0.004	-0.03	-0.40	0.03	-0.35
	CAN	0.008	0.006	0.013	0.010	0.08	0.07	0.17	0.16
	ANDEN	-0.001	-0.004	0.001	-0.003	0.11	0.09	0.18	0.14
	SSA	-0.010	-0.013	-0.008	-0.010	0.29	0.26	0.39	0.35
GSP	IND	-0.082	-0.085	-0.079	-0.081	1.12	1.06	1.17	1.10
	LDC	0.001	-0.009	0.003	-0.007	0.66	-0.06	0.76	0.00
	ASIA								
WTO	RUS	0.033	0.030	0.038	0.035	0.57	0.58	0.63	0.64
	USA	0.001	0.002	0.002	0.003	0.01	0.04	0.09	0.12
	AUS	0.002	0.002	0.007	0.006	0.01	0.04	0.08	0.11
	NZL	0.001	0.003	0.008	0.009	-0.25	-0.22	-0.06	-0.01
	JAP	0.019	0.005	0.001	0.006	0.13	0.17	0.19	0.21

Source: Own calculations with MAGNET. Notes: SM: Single Market, TA: Trade Agreement, GSP: Generalized System of Preferences, WTO: World Trade Organization

For TA and GSP countries the picture is mixed. Depending on the scenario there are losers and gainers. Interestingly, EFTA countries and Canada would benefit, irrespective of the scenario. Even if MFN tariffs are imposed on their trade with the UK these regions show

positive GDP numbers, which is not the case for the other countries where a TA or GSP exists. This implies that for EFTA and Canada the positive effect of trade diversion created by increased EU-UK trade costs dominates the negative effect of rising trade costs between those regions and the UK. On the contrary, the SSA region and India stand to lose from any Brexit option. A reason could be that those developing and LDC countries trade different goods with the UK than the UK does with the EU. In this case there is less room for trade diversion. In any case countries with initial preferential trade status with the UK would stand to lose from reciprocal imposition of MFN tariffs on each other's imports.

The last country group consists of WTO countries where the UK trades on MFN basis before and after Brexit. In principle we would expect that those countries are also affected through the channel of trade diversion. As becomes clear by looking at Table 2 all those countries gain, although these gains are quite small. The largest gains can be expected in Russia which may be due to its relative geographic closeness compared to the other countries listed.

**Table 6: Share of GDP change that can be attributed by imposing tariffs MFN with Third Countries, in %**

	Real GDP		Nominal GDP	
	Soft	Hard	Soft	Hard
<b>UK</b>	6.21	2.70	7.83	2.48
<b>EU27</b>	-2.30	-1.44	-7.27	-4.37

Source: Own calculations with MAGNET.

In Table 3 the share of GDP change that can be attributed by imposing MFN tariffs with Third Countries is shown for the EU and the UK. This share is obviously larger in the soft Brexit scenario than in the hard Brexit scenario. This is because the policy shock in the soft Brexit is smaller which gives the MFN tariff shock with respect to Third Countries relatively more weight. In general, the consequences of a changing trade environment with Third Countries are not very large. The additional loss in nominal GDP that can be attributed to imposing MFN tariffs with Third Countries is 7.8 % with a soft Brexit and 2.5 % with a hard Brexit. For the EU the loss is decreases by 7.3 % with soft Brexit and 4.4 % with hard Brexit.

### 5. Conclusion

In this paper we try to shed some light on the impact of changing trade conditions - concerning TAs and GSP - with Third Countries following Brexit. Therefore, we simulate in addition to 'classical' soft and hard Brexit scenarios, which consider policy changes with the EU and UK only, MFN tariffs with all Third Countries as well. Based on TASTE - a tool for tariff aggregation - we calculate consistent MFN tariffs between UK and Third Countries. The UK would lose additional 7.8 % (2.5 %) with a soft (hard) Brexit by reciprocal imposition of MFN tariffs with Third Countries. On the contrary the EU loss in GDP would be lower in this case due to trade diversion from Third Countries towards the EU. Given that the bulk of GDP effects are created by changing trade environment between the EU and UK the UK should focus its negotiation efforts on the EU and not so much on Third Countries. Furthermore, trade flows with Third Country are concentrated on a few regions (like Norway and Switzerland) the UK should try to strike some deals with these countries first and negotiate with the other predominantly smaller and more remote countries in a later point of time. There are also some interesting results for Third Countries. Interestingly, developed countries like EFTA, Turkey and Canada would gain even in a scenario where MFN tariffs are imposed on their trade with the UK. This is because these countries benefits of trade diversion are high

and exceed the loss of the imposition of own tariffs. Less developed countries like India and South Africa gains from trade diversion are limited since these countries generally trade different goods with the UK than the EU does. That is why these countries stand to lose from Brexit in all scenarios. However, third Countries that trade on MFN basis before and after Brexit gain unanimously from a Brexit.

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