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# Brexit trade impacts' and Mercosur's negotiations with Europe<sup>1</sup>

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## Abstract

We estimate that a hard Brexit would reduce UK imports of agro industrial products from the EU by 50% i.e. by more than double the contraction in imports of other goods (22%). The UK Government has announced that it will substitute the CAP (Common Agricultural Policy) protectionist policies with market-oriented measures and policies that seek to protect the environment. Given Brexit, and given scarce negotiating resources, should Mercosur continue to give the same priority to negotiations with the EU as in recent years? The answer is most likely negative. For a number of reasons discussed in the text we argue that: i) negotiations with the EU are unlikely to deliver market access much in excess of what it has offered so far; ii) unlike these negotiations that have been dragging for around twenty years, there are clear circumstances indicating that an FTA with the UK could be completed in a relatively short period; iii) failing Mercosur to give these talks priority, other countries are more than likely to fill the UK trade gap triggered by Brexit; iv) if other countries do so, it is unlikely that in the future the UK would be willing to offer market access concessions as important as it is likely to do today and, v) the UK is one fifth of the EU GDP so balanced reciprocal concessions should be easier to achieve. What are the stakes at play? We offer back of the envelope estimates indicating that in value terms Mercosur could more than triple its meat exports and close to double its agro industrial exports to the UK within a time horizon that currently appears to be quite concrete and near.

## I. Introduction

The outcome of the Brexit negotiations between the United Kingdom (UK) and the European Union (EU) is still anyone's guess but under any agreement, trade flows between these partners will decline and this in turn will create opportunities and challenges for third countries<sup>2</sup>. The UK is the second largest economy in the EU with a GDP equivalent to around 20% of the other EU members<sup>3</sup>. Therefore, not surprisingly,

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<sup>2</sup> These trade effects trigger macroeconomic consequences which among several others, have been studied by HM Treasury (2016 and 2016a), and by Minford and Miller (2016). While the study by HM Treasury assumes a highly protectionist Brexit, Minford and Miller (who represent the group of "Economists for Brexit"), assume that post Brexit the UK adopts free trade policies and this in turn would increase GDP. For critical views on these studies' assumptions and results see Gudgin et. al. (2017) on the Treasury report, and Sampson et. al. (2016) and Winters (2017) on Minford's analysis.

<sup>3</sup> UK's GDP is close to the sum of the thirteen countries that joined the EU in this millennium plus the three that joined in 1995. In this sense, Brexit takes the EU back to where it was some 25 years ago.

for some of the products that the UK trades, Brexit will have quite large effects and in particular, this is the case of agro industrial products which we study here.

The bilateral trade policy that will eventually be agreed upon will fall within two extreme outcomes: i) a hard Brexit (HB) where both partners initially adopt MFN tariffs and, ii) a most liberal free trade agreement (FTA). Both extremes are unlikely. A HB would shatter trade flows to an extent that important pressure groups are opposing with strength in both the UK and the EU. On the other hand, a very open bilateral trade policy like that between the EU and EFTA (European Free Trade Association) countries, and the EU and EEA (European Economic Area) members implies that in exchange for accessing the common market they have to maintain open borders to the movement of persons, and they also have to contribute financially to the social objectives of the EU. Because both of these policies are included among the UK red lines<sup>4</sup>, the odds are also against a very liberal bilateral trade policy (Gasoriek et. al. 2016)<sup>5</sup>.

Clearly a HB is the worst case scenario and estimating its trade effects is likely to overstate the opportunities and challenges that third countries will face. Still, until a clearer picture emerges from the bilateral negotiations on trade, in the case of agro industrial products the exercise remains useful for at least three reasons: i) in contrast to the abundant number of papers that have quantified the aggregate trade effects of a HB including the study by HM Treasury (2016) and Gudgin et. al (2017), there appears to be little work focused on measuring the impact on agro industrial trade<sup>6</sup>, ii) in most of the FTAs signed by the EU, the agro industrial chapter is either non-existent or highly restrictive of temperate agricultural products<sup>7</sup> and, iii) these products are of particular export importance for the Mercosur countries which we focus on<sup>8</sup>.

Unlike most trade negotiations Brexit has concrete deadlines: March 29, 2019 for leaving the EU, and December 31, 2020 for concluding the transition period. After that, it will be the first time since 1973 when the UK joined the EU, that third countries will face close to a level playing vis a vis the EU as competing suppliers of agro industrial products to one of its former and major members.

How important is the UK agro industrial market? In 2016 the UK imported USD 43,480 million of agro industrial products from the EU and we estimate that a HB will

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<sup>4</sup> The other two UK red lines include regaining the freedom to decide its own trade policy, and becoming independent of rulings from the European Court of Justice (Gasoriek et. al. 2016).

<sup>5</sup> More to the point, in December 2017 Michael Barnier the EU chief trade negotiator concluded that given the EU red lines, "...the Canada model was the only model which the EU could offer to the UK..." (Mathews 2018, p 5). Among the FTAs that the EU is implementing, the one with Canada is quite liberal but not as much as those that characterize its arrangements with members of the EEA and EFTA countries.

<sup>6</sup> Exceptions include Mathews (2018), Bellora et. al (2017), and Yu et. al (2017).

<sup>7</sup> When assessing Mercosur export prospects from Brexit we make room for the event of a UK-EU FTA.

<sup>8</sup> In quantifying the aggregate trade effects of a HB most studies have relied on gravity equations such as HM Treasury (2016 and 2016a). This econometric methodology requires thousands of observations over time and space and its results are not necessarily more precise than simpler approaches as the one we rely on in section III. General equilibrium models have been a third way of quantifying the likely impact of Brexit (for example Bellora et. al 2017).

reduce this trade by around 50%<sup>9</sup>. This sizable contraction is the result of moving from the existing scenario of close to free intra EU trade to the very high MFN tariffs that prevail under the CAP. The UK has been quite explicit that post Brexit it will open imports to international competition either by implementing unilateral liberalization measures but probably more enthusiastically, by signing FTAs with selected partners (Department of Environment 2018).

Faced with the reality of Brexit, third country exporters like Mercosur will have to decide the priority to be given to negotiating an FTA with the UK<sup>10</sup>. We call attention to the importance of this opportunity over other negotiations such as the Mercosur-EU discussions that have been evolving for nearly two decades and still with no agreement in near sight. Regarding these trade talks, Cecilia Malmstrom the EU Commissioner for Trade, has stated that: “We are particularly careful when it comes to negotiations with partners who are strong exporters of our sensitive products. That's how we are approaching the Mercosur negotiations and the question of beef exports in particular. These countries are highly valuable trading partners for the EU, including, as I've mentioned, when it comes to many agricultural products. But let me be clear, we will not make any commitments that go further than what sensitive sectors can handle” (Malmstrom 2016). In fact, since the early millennium years when the initial exchange of market access offers took place, the EU has remained increasingly defensive particularly in template agricultural products. Below we offer some explanations of why this has been the case.

The remaining discussion is organized as follows. Section II presents a picture of the structure of UK agro industrial trade with the EU and with Mercosur while Section III offers estimates of the quantitative impact of a HB on the UK import demand for agro-industrial products in general, and few selected products in particular. Section IV calls attention to some structural economic factors that point towards a decreasing likelihood of the EU improving its market access offer to Mercosur in order to reach an agreement. Section V begins by discussing some non-economic considerations regarding a possible Mercosur-UK FTA. Also as an example, the discussion here offers estimates on Mercosur's meat and agro industrial products in general that a HB would trigger. Concluding remarks are presented in Section VI.

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<sup>9</sup>We identify agro industrial products as those contained in the first twenty-four chapters of the Harmonized System (HS).

<sup>10</sup>In emphasizing the importance of a Mercosur-UK FTA, delicate political and geo-political issues will have to be overcome. Because I am not an expert on these themes, I will not deal with them here, but will only point to the fact that there currently appears to be constructive spirits on all parts. I remind that recently on May 23, 2018 when honouring Argentina's soldiers that died in the Malvinas war, Boris Johnson UK's Chancellor said: “I wish this will be a new chapter in our relationship and a signal for strengthening trade ties after the UK leaves the EU” (author's translation from a note entitled : “Por primera vez un Canciller Británico homenajeó en la Argentina a los caídos en las Malvinas” published in *Ámbito Financiero* (2018):<http://www.ambito.com/921833-por-primera-vez-un-canciller-britanico-homenajeo-en-la-argentina-a-los-caidos-en-malvinas>

## II. UK agro industrial trade with the EU and Mercosur

The EU is by far the major trade partner of the UK but because of its growing deficit in goods, over time the relative importance of this market has shifted<sup>11</sup>. Table 1 shows that while in 2001 the EU accounted for 59% of aggregate UK exports, by 2016 this number had declined to 47%. On the import side the opposite occurred: in 2001 UK imports from this source accounted for 50% of the total but by 2016, this number had increased to 52% (table 2). During this period, the UK's aggregate trade with the Mercosur countries was relatively negligible: 0.7%-0.8%.

**Table 1:** UK aggregate and agro industrial exports to the EU, to the world and to Mercosur (million USD)

HS chapter (1)	Exports to the EU		Exports to the world		EU share (%)		Exports to the Mercosur		Mercosur's share	
	2001	2016	2001	2016	2001	2016	2001	2016	2001	2016
Agro industrial	8,843	17,503	14,520	28,884	60.9%	60.6%	312	232	2.2%	0.8%
All goods	165,648	193,563	279,425	411,463	59.3%	47.0%	2,113	3,299	0.8%	0.8%
Agro industrial share (%)	5.3%	9.0%	5.2%	7.0%	na	na	14.8%	7.0%	na	Na

na: not applicable.

Source: Data from Trademap.

**Table 2:** UK aggregate and agro industrial imports from the EU, from the world and from Mercosur (million USD)

HS chapter	Imports from EU		Imports from world		EU share (%)		Imports from Mercosur		Mercosur's share	
	2001	2016	2001	2016	2001	2016	2001	2016	2001	2016
Agro industrial	18,651	43,480	30,431	61,311	61.3%	70.9%	1,220	2,042	4.0%	3.3%
All goods	180,901	330,606	358,703	636,368	50.4%	52.0%	2,899	4,432	0.8%	0.7%
Agro industrial share (%)	10.3%	13.2%	8.5%	9.6%	na	na	42.1%	46.1%	na	Na

na: not applicable

Source: Data from Trademap.

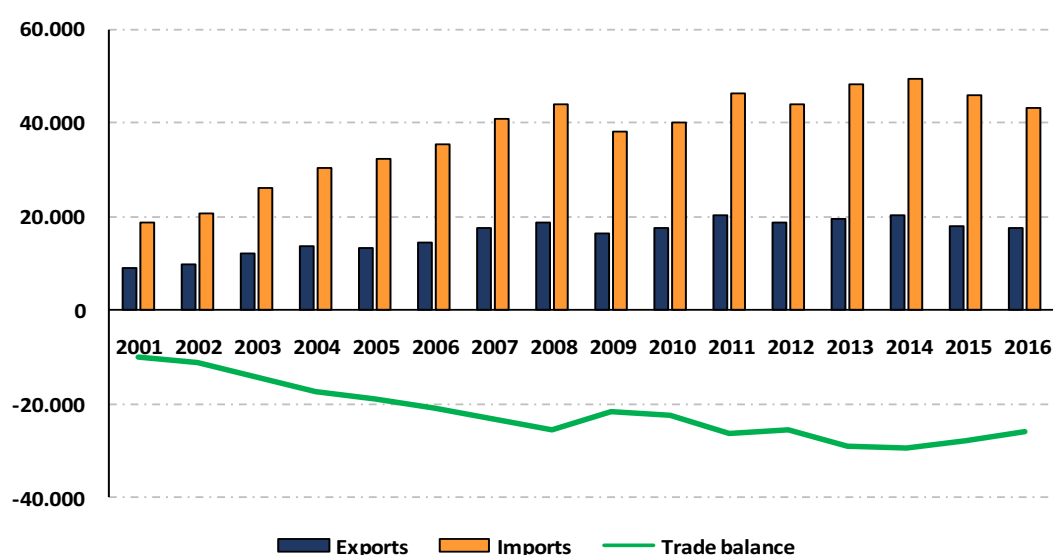
Graph 1 shows the growing deficit of the UK in its agro industrial trade with the EU. As seen, this deficit has been driven mainly by a relatively fast import growth that peaked in 2014 with nearly USD 50,000 million. Although since then these imports have declined to around USD 43,400 million in 2016, by historical standards they remain at a relatively high level. This has obvious implications on the relevance of the

<sup>11</sup> This deficit has been counterbalanced by a growing surplus in services trade: in 2016 UK's services exports and imports were USD 327,176 million and USD 198,653 million respectively.

impact of Brexit on UK trade in these products and on the export opportunities that it would offer to third countries.

The UK dependence on the EU as a source of supply of these products has increased by ten percentage points from 61% in 2001 to 71% in 2016 when total imports of agro industrial products totalled USD 61,311 million (table 2). In contrast, the share of the EU in aggregate UK exports barely increased from 50.4% in 2001 to 52% in 2016 suggesting that under prevailing protectionist policies, in these products the UK has a relative but artificial competitive disadvantage. This and related issues discussed below have led several observers as well as the UK government to call into question the so called benefits of the CAP to the development of its agricultural sector.

**Graph 1:** Exports, imports and trade balance of UK agro industrial trade with the EU (million USD)



Source: Data from Trademap.

During this period, the UK import share of agro industrial products from Mercosur declined from 4% to 3.3% (table 2) which contrast with Mercosur's participation in world agro industrial exports growing from 6.6% in 2001, to 8.1% in 2016. These low trade shares in the EU are partly the consequence of trade diversion effects<sup>12</sup>.

Table 3 shows UK's imports from the EU and from Mercosur for the five most important agro industrial chapters of the HS imported by the UK. In 2016 these imports from the EU totalled USD 20,568 million equivalent to 85% of the total that the UK imported this year (USD 24,196 million). In contrast, the share of imports from the Mercosur accounted for only 1.3%. The last column in this table shows that Mercosur's share in UK's import are well below its share in world exports.

<sup>12</sup> In some cases, the share of the EU in UK agro industrial has grown very fast. For example, between 2001 and 2015 the share of imports coming from the EU grew as follows: frozen boneless meat from 40% to 80%; chicken meat from 78% to 90%; and wine from 40% to 70%. Nogués (2017) reviews the trade diversion effects triggered by the EU on Mercosur and vice versa.

**Table 3:** UK imports from the EU and from Mercosur for five selected HS chapters: 2016 (USD million)

HS chapter	Product	UK aggregate imports	UK imports from the EU	UK imports from Mercosur	Share in UK agro industrial imports from(1)		Mercosur's share in world exports
					EU	Mercosur	
2	Meats	5,460	4,670	184	86%	3%	14.9%
4	Milk, dairy products	3,502	3,359	3	96%	0%	2.3%
19	Cereal and milk preparations	3,975	3,629	1	91%	0%	0.7%
20	Preparations of fruits and vegetables	3,409	2,860	25	84%	1%	5.7%
22	Alcoholic beverages, vinegar	7,850	6,050	105	77%	1%	1.9%
Total		24,196	20,568	318	85%	1.3%	1.8%

(1) The shares in the bottom line are in relation to the total in column 3.

Source: Data from Trademap.

### III. Impact of a HB on UK agro industrial trade

Relying on average MFN tariff rates and import elasticities at the two-digit level of the HS, Lawless and Morgenroth (2016) have estimated that a HB would reduce UK-EU aggregate trade somewhere between 22% and 31%.<sup>13</sup> In this section we use these authors' data for distinguishing between the impact of a HB on agro industrial products (first 24 HS chapters), and the rest (HS chapters 25 to 99) which we call manufactures. We also present simulations of impacts at the more disaggregated level of HS chapters.

The third column of Table 4 shows the simple average MFN tariffs for agro industrial and manufactured products while the fourth column includes the simple average proportional trade reduction effect of a HB<sup>14</sup>. The important difference

<sup>13</sup> The extent to which the methodology used by Lawless and Morgenroth (2016) offers more precise forecasts than the alternative of gravity equations that characterizes most studies, has been carefully analyzed by Gudgin et. al. (2017). Their results emphasize the reason why the study by the UK Treasury (2016) seriously overestimates the negative trade effects of a HB as it overlooked the fact that on average after joining the EU, the UK harvested lower benefits in trade in goods than other members. After adjusting for this omission and reestimating the gravity equations initially presented in HM Treasury (2016), Gudgin et. al. (2017) conclude that the aggregate impact of a HB estimated by Lawless and Morgenroth (2016) "... based solely on tariffs may thus be nearer the true impact than any estimate based on gravity models..." (p 32).

<sup>14</sup>For HS chapter  $i$  the proportional trade reduction effect of a HB is estimated by the following expression:  $\Delta M_i/M_i = t_i e_i$  where  $M$ : value of UK imports from the EU;  $t$ : EU MFN tariff rate, and  $e$ ; import demand elasticity.

between the trade impacts of a HB on both of these groups (50% vs 22%)<sup>15</sup> is to a great extent the consequence of an average MFN tariff for agro industrial products that is four times the level for manufactures (16% vs 4%). Under these assumptions, using 2016 trade figures, a HB would reduce UK agro industrial imports from the EU by USD 21,653 million. Under a HB UK's agro industrial exports to the EU would also decline by around 50%. In 2016 the UK exported agro industrial products for a total of USD 17,503 million so a HB would leave this trade at around USD 8,750 million. The resulting negative net trade effect of around USD 13,000 million is still significant.

**Table 4:** Simple averages EU MFN tariff rates and trade reduction impacts of a HB on UK imports of agro industrial and manufactured products from the EU: 2016 (million USD)

Products	HS chapters	Simple average MFN tariff	Simple average import reduction	2016 UK imports from de EU	Import reduction from 2016 level
Agro industrial	1-24	16%	49.8%	43,480	21,653
Manufactures	25-99	4%	22.3%	287,126	64,029

Source: Average MFN tariffs and import reduction effects have been inferred from Lawless and Morgenroth (2016) as explained in Appendix A. Trade data from Trademap.

Table 5 shows average MFN tariffs for the same five HS agro industrial chapters listed above in table 3. Except for alcoholic beverages, the tariffs for the other chapters are very high with meats and dairy products being the most protected. In fact, these chapters have the highest and fourth highest MFN tariffs among the 99 HS chapters computed by Lawless and Morgenroth (2016). Moving from near free trade to adoption of these high MFN tariffs would trigger a 71% reduction of UK imports of these products from the EU or by USD 14,996 at 2016 prices (from USD 21,117 million). Applying the same proportional reduction effects to the UK exports to the EU leaves a net trade deficit of around USD 9,600 million with meat and preparations of fruits and vegetables experiencing the highest negative net trade reduction effects.

Some words of caution regarding these estimates are in order. First, within each chapter there usually are several products and their individual tariff rates can be quite different than the average rate. For example, in appendix B we estimate that the MFN tariff for frozen bovine meat (HS 020230) is close to double the simple average rate corresponding to the meat chapter (HS 02). Depending on the patterns of production and trade, these differences are of consequence to different exporters.

<sup>15</sup> On the basis of table 4, the weighted average impact on UK's aggregate trade impact of a HB is 26% a number that is in the neighbourhood of estimates presented in Gudgin et. al. (2016).



**Table 5:** Average EU MFN tariff rates and trade reduction effects of a HB

HS chapter	Product	Average MFN tariff (%)	Import reduction effect (%)	Imports from EU (million 2016 USD)	Import reduction (million USD)	UK exports to UE (million 2016 USD)	Export reduction (million USD)	Net trade effect (million USD)
02	Meats	49.3	92.9%	4,670	4,338	1,592	1,479	-2,859
04	Milk, dairy products	31.3	66.7%	3,359	2,240	1,337	892	-1,358
19	Cereal and milk preparations	15.1	85.7%	3,629	3,110	1,360	1,166	-1,944
20	Preparations of fruits and vegetables	20.9	88.1%	3,409	3,003	499	440	-2,563
22	Alcoholic beverages, vinegar	3.9	38.1%	6,050	2,305	3,725	1,419	-886
na	Total	na	na	21,117	14,996	8,153	5,395	-9,601

na: not applicable.

Source: MFN tariffs and import reduction effects have been inferred from Lawless and Morgenroth (2016) as explained in Appendixes A. Trade data from Trademap.

Second, our estimates have not been adjusted for macroeconomic effects such as the depreciation of the pound that Brexit has already induced. Third, estimates have not taken into account that post Brexit UK-EU agro industrial trade may have to overcome higher non tariff barriers (NTBs) than existing. In fact, the study by Bellora et. al. (2017) indicates that for many individual agro industrial products, NTBs are of greater importance than the MFN tariffs (table 4 p 22) and a HB could make these even more costly. This is part of the reason why Bellora et. al. (2017) find an impact of a HB on agro industrial trade of 62% which is higher than our estimate of 50%<sup>16</sup>. Fourth we are also not taking into account the fact that post Brexit UK-EU trade will have to meet rules of origin and most likely some trade flows will also come to be affected by antidumping measures both of which will add further costs to bilateral trade over and above the MFN tariffs<sup>17</sup>. Fifth, our aggregate impact estimates are based on simple averages of MFN tariffs and proportional trade reduction effects but, had we worked with weighted averages numbers, the trade impacts would had been even greater<sup>18</sup>.

<sup>16</sup> This study concludes that UK-EU trade of agro industrial products face high average equivalents of the restrictive effects of NTBs. For example, for phytosanitary certification this study report tariff equivalent of 14% and 26% for EU trade of manufactures and agro industrial products respectively.

<sup>17</sup> There also are uncertainties regarding how the tariff-quotas will be divided between the EU and the UK (Revell 2017).

<sup>18</sup> For agro industrial products the weighted average trade reduction effects is 63.4% using imports from the EU and 59.8% using imports from the world. Both of these contrast with the 50% we have used in table 4.

Sixth, import elasticities could be non linear functions of the tariff height. Finally, there are the usual shortcomings associated with a partial equilibrium model.

Note that had we included the non tariff costs – such as compliance with more restrictive sanitary and phytosanitary regulations that a HB may create and with rules of origin-, the trade impact would had been even more negative than what we have reported. So other things equal, we consider our estimates to be conservative that show an important impact that a HB would have on UK-EU trade.

Finally, Brexit implies a reformulation of UK agricultural policies away from direct subsidies under the CAP to more market based incentives (section v). Eventually the new policies may improve the export opportunities of third countries but it is yet too early to tell.

#### **IV. Mercosur's trade negotiations with the EU**

Paraguay and Uruguay have long motivated Argentina and Brazil to move forward with the Mercosur trade negotiations. Nevertheless, under populist governments these countries (particularly Argentina) reversed their earlier trade liberalization programs and for a decade or so up to late 2015, its salient policy was to admit highly troubled Venezuela into the group. Populism brought not only external paralysis to the group but also and what has been more destructive, a significant retrogression within-market liberalization and flagrant violations of multilateral rules. Argentina by imposing quantitative restrictions on all imports and since early 2006, on major exportables (including bovine meat, wheat and maize), violated not only the CET (common external tariff), but also several WTO agreements, a behaviour that brought several Members to challenge such actions at the WTO dispute settlement mechanism (Nogués 2015).

Under recently appointed new governments these countries are now more sympathetic to outward-oriented policies and Mercosur is once again moving forward with its trade negotiating agenda. In addition to adding impetus and enthusiasm to the vintage-old discussions with the EU, trade talks have been initiated with UK (Euractiv 2016), Canada (Government of Canada 2018, and other countries<sup>19</sup>. The economic complementarity between the economies of Mercosur and the EU have long been noticed: Mercosur holding a strong comparative advantage in agro industrial products while the EU showing its stronghold mostly in manufactures, services and intellectual property. Despite the significance of the gains that could be achieved by an ambitious FTA between these partners, after more than fifteen years since the initial exchange of market offers took place, these negotiations remain to be completed<sup>20</sup>. On the surface and from the perspective of Mercosur, one of the salient reasons for this situation has

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<sup>19</sup> For a list of ongoing Mercosur trade negotiations see [www.sice.oas.gov](http://www.sice.oas.gov) .

<sup>20</sup> This exchange took place in 2001 at the IV Meeting of the Birregional [Negotiating Committee \(BNC, Comité Birregional de Negociaciones\)](#). Since then, the BNC has met more than twenty additional times but still to no avail.

been the EU unwillingness to offer concessions in agro industrial products of an order of magnitude that would translate into a balanced agreement<sup>21</sup>.

Since the early millennium years, it has been clear that the EU would not shock its agricultural producers in order to accommodate Mercosur's export interests. Since then, three events have reduced even more the likelihood of the EU coming closer to Mercosur's revealed market access demands. First, the trade effects of the 2004, 2007 and 2013 enlargements of the EU to central and eastern European countries many of which had comparative advantage in agro industrial products (Anderson and Swinnen 2009, and Ciain and Swinnen 2007). These enlargements increased the share of intra EU28 agro industrial trade resulting in a higher degree of self sufficiency to the detriment of competitive agricultural exporters (Drabik and others 2007 and Nogués 2018)<sup>22</sup>. Graph 2 illustrates that with ups and downs, in these products since 2001 the EU has become increasingly self-sufficient.

Second, the far reaching EU-Canada FTA (CETA for Comprehensive Economic and Trade Agreement) that entered into force in September 2017 has been characterized as ambitious in terms of the market access concessions given by the EU in agro industrial products (Government of Canada 2017, and European Commission 2017)<sup>23</sup>. This agreement has reduced the market space that the EU can offer to other efficient exporters including Mercosur. Under CETA many agro industrial tariff lines where Mercosur is competitive, have been liberalized including fresh apples, animal feed, wheat flour, and dairy products.

Also, under CETA Canada is allowed to raise its exports to the EU in stages to 50,000 tons of duty-free beef, as well as 80,000 tons of pork (Reuters 2017a). The beef quota is only 20,000 tons lower than that offered to Mercosur but while in 2016 Canada's world beef exports amounted to 309 thousand tons (fresh and frozen bovine meat HS 0201+0202), Mercosur's was 8,918 thousand tons i.e. 29 times higher than Canada's!

Finally, because as seen above Brexit will reduce EU's agro industrial exports to the UK quite significantly, the resulting excess supply will put downward pressures on continental food prices increasing the already high resistance by these farmers to further import competition<sup>24</sup>.

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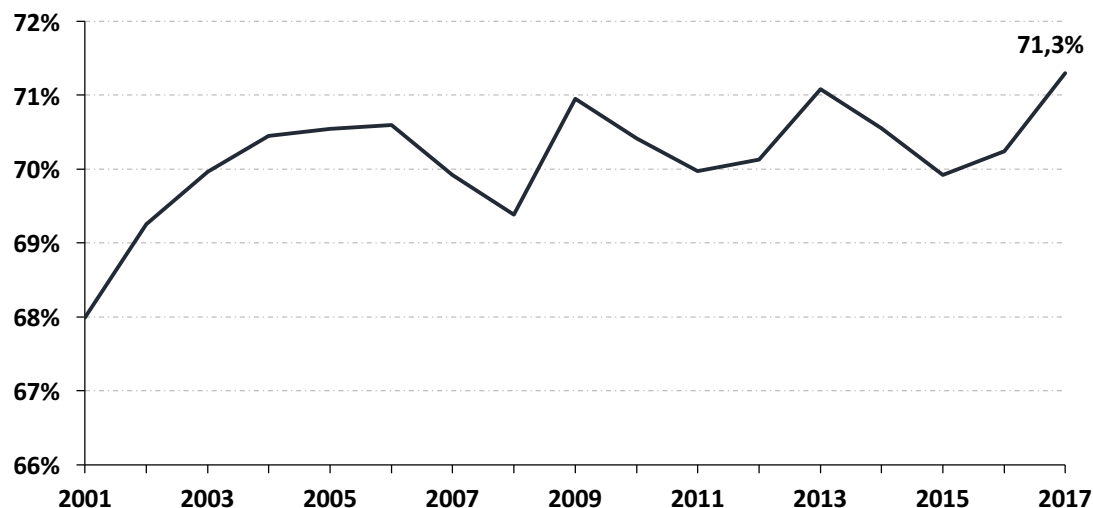
<sup>21</sup> Several media articles have informed about these tensions adding specifically that the size of the EU beef quota offered to Mercosur remains a sticking point. On the other hand, we say "apparently" because the slow pace of progress, is functional to highly protected and politically powerful Mercosur industries (particularly in Argentina and Brazil), that in the event of a trade agreement would suffer displacements by imports from the EU.

<sup>22</sup> These new acceding countries had to increase the rate of assistance to their agro industrial sectors up to the level mandated by the CAP triggering trade diversion effects. For example, Drabik et. al. (2007) have noted that: "... a review of the detailed data shows that there are many cases when the gradual liberalization increased Slovakia's agricultural imports from the EU15 + CEEC (Central and Eastern European Countries) while at the same time Slovakia agricultural imports from the ROW decreased...This is an indication that imports from the EU15 + CEEC, which are positively discriminated against, replaced imports from the ROW, an indication of trade diversion". Also Nogués (2018).

<sup>23</sup> Geopolitics may have played a role in this FTA as Canada together with the US and the UK were the three countries whose soldiers disembarked during D day in Normandy.

<sup>24</sup> This resistance has been made quite clear by France and other members. See for example RFI (2018).

**Graph 2:** EU28 agro industrial imports from the EU28 as percent of aggregate EU agro industrial imports (USD)



Source: Data from Trademap.

These declining incentives for the EU to offer the sufficient market space to Mercosur in order to arrive at an agreement on the agro industrial chapter of the FTA under negotiation is made nowhere more clear than in the case of beef. According to Mathews (2018) "...The EU has gradually reduced the proposed amount of beef it would accept from the Mercosur from 100,000 tons per year in 2004, to 78,000 tons in 2016, to 70,000 tons in 2017". Much of this beef would have been destined to the UK market as within the EU this country is the second most important beef importer after Germany. Nevertheless, after the UK leaves the EU, this beef will have to be sold domestically depressing its prices<sup>25</sup>. Mathews (2018) adds that "...Brexit also makes the EU a less attractive potential partner, and may make it more difficult for the EU to negotiate as favourable terms in future trade deals as it might otherwise have done..." (p 12)<sup>26</sup>.

Brexit brings other bad news for EU farmers as the UK puts more into the EU budget than it takes from it. Preliminary estimates suggest that unless other donors meaning Germany in particular, close the funding shortfall implied by Brexit, farmers in the continent could face an average cut in the CAP subsidies they are now receiving by around 5% (Reuters 2017).

Therefore, if in the early years of the millennium a balanced and ambitious Mercosur-EU FTA essentially meaning a high degree of access to the EU's agro industrial market in exchange for concessions in manufactures, services and

<sup>25</sup> Although the impact of Brexit on the UK macroeconomy may be quite negative, studies show that this will not be the case on individual countries in Europe. The one exception is Ireland who is the major meat exporter to the UK (Bellora et. al. 2017).

<sup>26</sup> During 2016 UK beef imports from the EU amounted to USD 4,670 million and a HB would eliminate most of this trade pushing lower beef prices in the continent. To some extent this impact would be compensated by lower UK beef exports to the EU but there still remains a significant negative net trade impact (table 5). The EU could also try to seek new buyers in international markets for its excess food supply adding competitive pressures on Mercosur.

intellectual property, remained a long shot, these three events (the EU enlargements to central and eastern European countries; the EU-Canada FTA and most importantly, the trade and financial consequences of Brexit) have put such a goal even further out of reach<sup>27</sup>. What once may have appeared to be a promising economic program of trade liberalization has since become increasingly unlikely and now in Mercosur's trade negotiations with Europe a balanced trade agreement appears to be more in the reach of being achieved with the UK than with the EU. Perhaps given these factors and the uncertainties that populist forces have brought into the institutional foundations of the EU, the priority of Mercosur's negotiations with these two partners may have to be reconsidered in order to get the highest payoff from the scarce negotiating resources it has at its disposal<sup>28</sup>.

## V. About a Mercosur-UK FTA

In agro industrial products Mercosur and the UK are also complementary economies so given their size, the gains from an FTA would be quite important, perhaps more than any other trade deal being considered except with the EU<sup>29</sup>. In addition to these potential gains that could be reaped from the consequences of Brexit, a number of non-economic considerations also make the UK market attractive. After summarizing them, we discuss briefly the future of the UK's agricultural policies. Finally, as an example of the trade significance of Brexit we look in greater detail at the export prospects of different meat products and offer a back of the envelope estimate of how a HB could impinge upon Mercosur's exports of these products as well as on agro-industrial exports more generally.

### Non-economic considerations

Three non-economic considerations make the UK attractive as a partner with whom to complete a relevant FTA. First, Brexit has a concrete deadline: March 29, 2019 with a transition period lasting until December 31, 2020. This is important and quite unique among trade negotiations that generally have no deadline to be completed and as has been the case between Mercosur and the EU, in the absence of deadlines they could drag on for years. Second, the broad nature of the market exchange that would characterize a Mercosur-UK FTA is expected not to be very different from the exchange being discussed with the EU: essentially a liberalization of Mercosur's services, protected manufactures and strengthening of intellectual property in exchange for greater access to agro industrial markets. Therefore, the

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<sup>27</sup>From the standpoint of the EU, suggestions from academic circles that it should be less ambitious than seeking an FTA have also been made (for example, Messerlin 2013). In part, this view was driven by concerns regarding the uncertain spirit of openness that Mercosur showed at the time. It was also driven by concerns regarding the important trade diversion effects that such an agreement would cause on the rest of the world.

<sup>28</sup> It has now been several years since the objectives of the founding fathers of European integration appear to be challenged by problems that could not be foreseen at the time. See Germond (2009) for an historical discussion.

<sup>29</sup> In practically all the first 24 chapters of the HS, where the UK records a trade deficit, Mercosur shows a surplus.

experience gained through years of negotiating with the EU can fruitfully be used for talks with the UK and this is certainly a time-saving factor. Third, given that the UK GDP is approximately one fifth the size of the EU, Mercosur's concessions offered to the UK need not be as important as those demanded by the EU. This should help to placate domestic pressures thereby facilitating a transparent negotiation and reaching a balanced agreement.

Finally, a draft FTA with the UK should be easy to have ratified by the five countries particularly given the fact that the UK government has expressed quite clearly that upon leaving the EU, it will be moving to a market-oriented agricultural sector much as it was before joining the EU. These aspects (concrete Brexit deadlines; accumulated negotiating experience with the EU; the possibility of reaching a balanced exchange of concessions and, relative easiness of ratification) increase the attractiveness of negotiating an FTA with the UK.

### *The future of the UK's agricultural policies*

Earlier this year, the UK Secretary of State for Environment, Food and Rural Affairs (2018) presented to the Parliament a document for public consultation entitled: "Health and Harmony: the future for food, farming and environment in a green Brexit". This document's objectives for its agricultural sector depart loudly from those that have prevailed under the CAP. Some excerpts from the prologue read as follows: "For more than forty years the EU's Common Agricultural Policy (CAP) has decided how we farm our land, the food we grow and rear the state of the natural environment. Over the period the environment has deteriorated, productivity has been held back and public health has been compromised... The environmental damage we have suffered while inside the CAP has been significant. Soil health has deteriorated. Farmland bird numbers have dropped. Precious habitats have been eroded..."<sup>30</sup> And CAP subsidies "...skewed to those with the biggest landholdings has kept land prices and rents high ... and held back innovation" (p 5)<sup>31</sup>.

In this document the Government's policy proposals are expected to result in an agricultural sector that will be "... more dynamic, more self-reliant agriculture industry as we continue to compete internationally..." (p 6). By dismantling the CAP subsidies the post Brexit policy direction is towards a market-oriented and competitive agricultural sector and although subsidies are proposed to continue, they will not be tied to land size as in the CAP but to environmental goals: the catch phrase is "public

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<sup>30</sup> Similar and serious damages to the environment have also been registered in the continent which have also been attributed to the CAP (Mathew 2018).

<sup>31</sup> As has been the case with several central and eastern European countries, after joining the EU in 1973 the UK had to adopt the highly protectionist CAP policies. The suggestion that decades of agricultural policies under the CAP has not necessarily been good for UK agriculture has previously been made among others by Buckwell (2016) who asserts that: "...Assembling lists of good and bad features of the experience of 42 years under the CAP leads to the conclusion that the CAP has not been an unambiguously 'good thing' for UK farming, and prompts the thought that escaping the CAP per se would not necessarily be a complete disaster". Other critical views regarding the impact of the CAP on the UK agricultural sector include Helm (2016), Swinbank (2017), and Financial Times (2017).

money spent on public goods”<sup>32</sup>. Regarding trade policies, the proposal emphasizes signing FTAs with countries that currently have agreements with the EU and also, “...with a number of countries that have a keen interest in doing so...” (p 62).

Brexit will impact on consumer prices generally and food prices in particular. Research by Clarke et. al. (2017) concludes that under a HB food prices would rise well above average inflation. These authors report the following adjustments of consumer prices: dairy products: 8%; oils and fats: 8% and meat: 6%. These adjustments are over and above the impact that a lower pound has already had on prices. Clarke et. al. (2017) also show how a Brexit induced food price inflation would be tilted against the lowest quintiles and the unemployed. Confronted with such a situation the UK will most likely move to liberalize trade and avoid such consequences<sup>33</sup>.

Also given that in the future, subsidies for agricultural related public goods will have to compete with subsidies for other significant areas such as health and education, it appears unlikely that public money for this sector will remain at the level currently available under the CAP. The UK government has confirmed that such a level will be maintained only until December 31, 2020 but there is no commitment after this date. Therefore, most likely, over time subsidies for the agricultural sector will start declining from the current levels.

#### Assessing the trade opportunities: back of the envelope estimates

In assessing a Mercosur-UK agreement it is also important to stress the implications of the choice faced by the UK of eventually liberalizing unilaterally priority sectors including perhaps some food products, or negotiating access to its market through FTAs. Mercosur could certainly wait for unilateral liberalization but: Which products would the UK liberalize first if any? By how much? Would these products be the ones where the Mercosur countries show a strong comparative advantage? and most importantly: How high would tariff discrimination against Mercosur exports be in a non FTA scenario while other efficient exporters move in and sign FTAs with the UK? In fact, talks are already moving forward with Australia (Bridges 2017) and Canada (Politico 2018), and common sense suggests that FTAs with these countries will be completed sooner rather than later. Therefore, the option of Mercosur waiting for the UK to implement unilateral liberalization is risky and as has been the case with the EU and other agreements, a late reaction is unlikely to retain the trade opportunities that could now be seized. In what follows, we offer back of the envelope estimates that illustrate the export opportunities that a HB could eventually open to Mercosur.

##### a) Meat exports

As hinted above, the fact that in spite of the strong export performance of Mercosur as the leading world meat exporter illustrated in graph 3, the fraction that

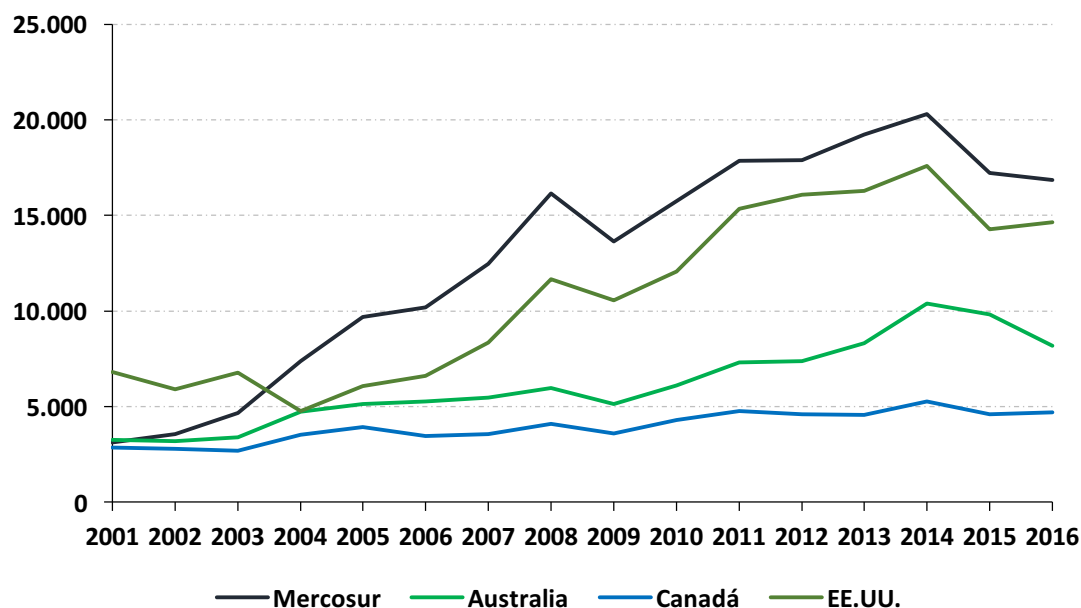
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<sup>32</sup> As agricultural policies are part of the devolved administration, the proposals in the document apply to England while Scotland, Wales and Northern Ireland will be free to decide their own policies. Because in these regions, the CAP subsidies provide the bulk of farmer’s income, dismantling and substituting it for other forms of assistance will be quite more challenging (Mathews 2018).

<sup>33</sup> For a number of reasons listed in their paper, Clarke et. al. (2017) conclude that their estimates of the food price inflation that implementation of MFN tariffs is likely to trigger, are conservative.

has gone to the EU is well out of proportion. In 2016 the EU imported meat for a total of USD 41,418 million of which Mercosur's share was 5.4%. In that same year Mercosur's share in world meat exports was close to three times higher: 14.9%.

**Graph 3:** World meat exports

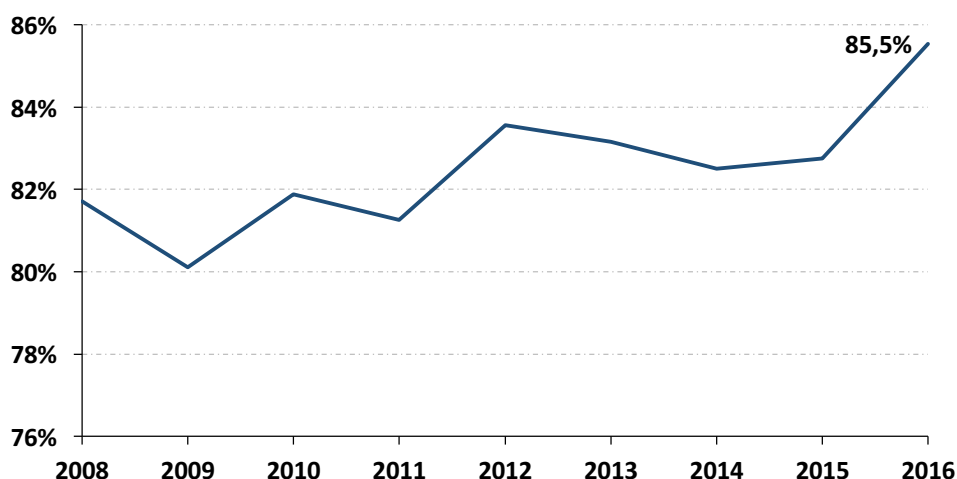


Source: Trademap.

Graph 4 shows that the UK has increasingly relied on meat imports from the EU and in 2016 the share from this origin reached 86% (equivalent to USD 4,670 million) while Mercosur's share was equivalent to only 3%. Although a number of factors can account for this high degree of market specialization, the CAP is a primary suspect. In a non CAP world these shares would likely be quite different and this assertion can be partly supported by going back to 2001 before the EU enlargement to central and eastern European countries. Then Mercosur's share in UK's meat imports was 7% (more than three times higher than in 2016) while the EU15 share was 78% (9 percentage points lower than the share it had in 2016). The EU enlargement goes a long way in explaining the important decline in Mercosur's share. For example, in 2001 Poland, Rumania, Hungary and Bulgaria accounted for a mere 0.1% of the UK's meat imports but by 2016 their share had increased to 14%.

Brexit will bring an end to these distortions in the UK market as this country will begin importing on an MFN basis and/or under FTAs. This will be the first time since 1973 when the UK joined the EU that third countries regain a level playing field (or near to it) when competing with the EU in this market. How could this impact on Mercosur's exports? We look at the structure of meat trade and the level of agro industrial exports.



**Graph 4:** UK meat imports from the EU as a proportion of UK's aggregate meat exports

Source: Constructed with data in trademap.

Columns 3 and 4 of table 6 show UK imports from the EU for different kinds of meats. Column 5 are estimates of MFN tariffs at the four-digit level of the HS (appendix B for the details). The numbers here show important differences ranging from an average MFN tariff of 31% for pig meat, to 92% for frozen bovine meat. Lacking more precise information, we have applied uniformly an import elasticity of  $-1.9^{34}$  and  $-1.0$ . The resulting trade effects presented in column 8 confirms the finding that a HB would curtail meat imports from the EU by 83% in value terms, and by 80% in quantity terms (1.2 million tons). The hardest hit imports would be chicken and bovine meat and the EU exporters that would be most affected would be Netherlands for chicken meat and Ireland for bovine meat (Donellan and Hanrahan 2016, and Swinbank 2017).

Part of this import contraction would be compensated by lower exports from the UK to the EU that Brexit would also trigger. On the basis of 2016 trade flows table 7 shows that post HB, the net reduction in meat trade would be USD 2,647 million concentrated in chicken meat, salted meat and fresh bovine meat. In terms of quantities, a HB would result in a net trade reduction of the UK imports from the EU equivalent to 844,000 tons.

Where could a HB leave Mercosur's meat exports to the UK? Share analysis is a simple way to provide a back of the envelope estimate. Under the following assumptions and using 2016 trade data, Mercosur could increase its meat exports to the UK quite significantly if: i) over time the UK returns to its pre HB level of meat imports from the EU; ii) facilitated by years of common administration of the EU's NTBs and/or under an FTA, post a HB the EU would export 25% of the increase in UK imports that is assumed in (i) and, iii) third countries fill the remaining 75% in

<sup>34</sup>This elasticity is not explicitly mentioned in Lawless and Morgenroth (2016) so we have estimated it indirectly as indicated in appendix A. Recent estimates by Ghodsi and others (2016) suggest that import demand elasticities by country and product usually fall within the range of those implicit in Lawless and Morgenroth (2016). Nevertheless, greater precisions can certainly be gained by direct estimation of won price and cross elasticities.

proportion to their share in world meat exports net of intra EU trade<sup>35</sup>. In 2016, Mercosur's share in world meat exports net of intra EU trade was 20.0%. Applying this proportion to the increase in the UK's meat imports post a HB net of the EU supply (USD 2,960), yields USD 592 million of additional meat exports. This is more than three times what Mercosur exported to this market in 2016 (USD 184 million)<sup>36</sup>.

**Table 6:** EU MFN meat tariffs and impact of HB on UK imports from the EU

HS line	Product	UK imports from EU in 2016		EU MFN tariff (%)	UK import reduction (tons) from EU assuming import elasticity of:		UK import reduction (USD) from the EU assuming an import elasticity of:	
		Value (USD 000)	Quantity (tons)		1,9	1	-1.9	-1.0
0201	Fresh bovine meat (1)	1,020,205	178,832	56	178,832	100,146	1,020,205	571,315
0202	Frozen bovine meat (1)	193,093	63,427	92	63,427	58,353	193,093	177,646
0203	Pig meat	1,047,076	438,464	31	258,255	135,924	616,728	324,594
0204	Sheep meat	46,335	9,913	50	9,417	4,957	44,018	23,168
0205	Horsemeat	0	0	45	0	0	0	0
0206	Meat residues	45,418	29,594	47	26,427	13,909	40,558	21,346
0207	Chicken meat	1,519,218	492,025	41	383,287	201,730	1,183,471	622,879
0208	Meats of rabbits, etc.	16,277	3,862	47	3,449	1,815	14,535	7,650
0209	Meat fats	7,758	8,246	47	7,364	3,876	6,928	3,646
0210	Salted, dried and smoked meats (1)	775,066	249,829	55	249,829	137,406	775,066	426,286
Total	---	4,670,446	1,474,192	47	1,180,288	658,115	3,894,602	2178,530

Note: For three sectors (0206, 0208 and, 0209) we have assumed an MFN tariff equal to the weighted average (by UK imports from the EU) of the other seven sectors. Parameter values indicate that in the following sectors imports would decline by more than 100%. The steps followed for estimating average MFN tariff at the four-digit level are detailed in Appendix B.

Source: Trade data from trademap and MFN tariffs from appendix B.

#### b) Agro industrial exports

Under similar assumptions, following a HB, Mercosur would export an additional USD 1,500 million of agro industrial products to the UK (share of Mercosur in world agro industrial exports net of intra EU trade of 11.3% times the level of UK import contraction net of the 25% to be supplied by the EU or USD 16,240

<sup>35</sup> We net trade with and intra EU under the assumption that most of it is trade diversion from preferences under the high protective barriers of the CAP.

<sup>36</sup> The US and Australia have quite similar shares to that of Mercosur's but because these countries are free of hoof and mouth disease without vaccination, they export beef at higher unit prices.

million)<sup>37</sup>. This is close to double what it actually exported to the UK in this year: USD 1,723million.

**Table 7:** Net trade reduction in meats between the UK and the EU: 2016 in USD000

Meat type	UK Exports to the EU	UK Imports from the EU	Impact of Brexit on: (1)			
			Exports	Imports	Net trade	Quantity (tons)
Fresh bovine meat	407,746	1,020,205	407,746	1,020,205	-612,459	-136,557
Frozen bovine meat	48,679	193,093	48,679	193,093	-144,414	-44,231
Pig meat	216,433	1,047,076	135,638	324,594	-190,956	-82,599
Sheep meat	432,383	46,335	410,764	410,183	+581	+105
Horse meat	0	0	0	0	-0	0
Meat residues	54,476	45,418	48,647	40,558	+8,089	+4,552
Chicken meat	234,049	1,519,218	182,324	1,183,471	-1,001,147	-305,974
Meat of rabbits etc.	17,798	16,277	15,894	14,535	+1,359	+279
Meat fats	5,947	7,758	5,311	6,928	-1,617	-1,720
Salted, dried and smoked meats	68,500	775,066	68,500	775,066	-706,566	-277,778
Total	1,486,078	4,670,446	1,323,503	(3864602) 3,947,170	-2,647,130	-843,923

Note: (1) estimated with an import demand elasticity of -1.9 and the MFN tariffs in table 6; (2) quantities in the last column are estimated with unit values presented in appendix B.

Source: Author's elaboration based on data from trademap.

<sup>37</sup> In 2016 the underlying numbers for meat and agro industrial products were as follows (USD million):

Trade flow	Meat	Agro industrial
Pre HB UK imports from EU	4,670	43,480
Post HB UK imports from EU	723	21,827
UK import contraction	3,947	21,653
UK import contraction net of 25% supplied by the EU	2,960	16,240
World exports net of intra EU trade	74,895	1,025,534
Country exports net of EU:		
- Mercosur	14,950	94,674
- US	14,381	128,053
- Australia	15,506	28,749
- Canada	4,635	47,667
- EU net	11,395	145,202

Source: Trademap.

The extent to which Mercosur could reach these levels of exports depends on a number of critical factors including whether: i) in fact the UK returns to the pre Brexit level of agro industrial imports or close to it; ii) it can conclude an FTA with the UK at par with other exporters like Australia and Canada; iii) it can meet the stringent quality standards that will be demanded by the UK and, iv) it can maintain its growth momentum by not discriminating heavily against its exports as Argentina did until late 2015<sup>38</sup>.

## VI. Final remarks

Given the high protection provided by the EU to agro industrial products, we estimate that a hard Brexit would reduce UK imports from these countries by 50%, which is more than double the import contraction projected for manufactures (22%). For the post Brexit years and following the dismantling of the CAP, the UK Government has proposed implementing deep reforms to its agricultural policies moving towards a more competitive sector. The Government has also announced its intention of signing FTAs with efficient agricultural exporters and is already moving in this direction. Under these policies, it appears likely that these exporters will fill most of the trade gap left by imports from the EU and by so doing; the UK would avoid the food price inflation that a hard Brexit would otherwise trigger.

Mercosur and the EU have been negotiating an FTA for close to two decades but still to no avail. Three structural factors and policies help to understand the increasing reluctance of the EU to offer concessions in agro industrial products at a level close to what Mercosur countries seek for closing what these countries apparently believe is required in order to close a relatively balanced agreement: 1) the enlargements of the EU to thirteen central and eastern European countries many of them with comparative advantage in agricultural products; 2) the numerous FTAs it has signed and in particular the one with Canada that came into effect in late 2017 and to whom the EU has offered relatively important market space and now, 3) Brexit. Therefore, if in the early millennium years, a balanced Mercosur-EU FTA remained a possibility, these events have put such a goal further out of reach.

We suggest that in the event that Mercosur countries want to truly liberalize trade by gradually signing FTAs as several other Latin American countries have done, then they should consider giving priority to negotiations with the UK. Back of the envelope estimates indicate that these countries could close to double their agro industrial exports to this market within a time horizon that currently appears to be quite concrete and quite near. Delaying these negotiations runs the risks of Mercosur losing trade opportunities once again which are unlikely to be recouped later.

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<sup>38</sup> In response to high and discriminatory trade barriers including arbitrary export quotas administered between 2006 and 2015, Argentina's cattle stock declined by around 10 million heads from 60 million. As a consequence, the export/output ratio declined from around 15% in the early millennium years to 7% shortly before the export barriers were lifted in late 2015 (Nogués 2015).

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## Appendix A: Basic data

Table A shows the basic data on MFN tariffs and the proportional trade impacts of Brexit used in the text which have been inferred from Lawless and Morgenroth (2016) as clarified in the source of table A. In turn, the import demand elasticity for HS chapter j ( $e_j$ ) has been deduced from the following expression:

$$e_j = (\Delta M_j / M_j) / t_j \quad (1)$$

where  $\Delta M_j / M_j$  is the proportional variation of imports listed in the last column of table A, and  $t_j$  is the MFN tariff rate listed in the third column. Thus, for the meat chapter we compute its implied import elasticity used in table 6 of the text as:

$$e = -92.9 / 49.3 = -1.9.$$

**Table A:** MFN tariffs and trade reduction effects of a HB

HS chapter	Product	MFN tariffs	Trade impact of a HB
01	Live animals.	1.0%	-19.0%
02	Meat and edible meat offal	49.3%	-92.9%
03	Fish and crustaceans, etc.	8.4%	-40.5%
04	Milk, dairy products, honey, etc.	31.3%	-66.7%
05	Products of animal origin's.	0.0%	-0.0%
06	Live trees and other plants and flowers.	4.2%	-23.8%
07	Edible vegetables.	5.6%	-42.8%
08	Fruits.	7.5%	-35.7%
09	Coffee, tea, mate, etc.	4.1%	-26.2%
10	Cereals.	45.7%	-57.1%
11	Products of the milling industry, etc.	26.9%	-88.1%
12	Oil seeds and oleaginous fruits.	2.5%	-6.6%
13	Lac; gums, resins, etc.	1.5%	-7.2%
14	Vegetable plaiting materials, etc.	0.0%	-0.0%
15	Animal or vegetable fats and oils.	6.5%	-47.6%
16	Preparations of meat, of fish or of crustaceans, etc.	33.3%	-95.2%
17	Sugars and sugar confectionery.	42.0%	-97.6%
18	Cocoa and cocoa preparations.	11.8%	-69.0%
19	Preparations of cereals, etc.	15.1%	-85.7%

20	Preparations of vegetables, fruit, etc.	20.9%	-88.1%
21	Miscellaneous edible preparations.	14.4%	-87.0%
22	Beverages, spirits and vinegar.	3.9%	-38.1%
23	Residues and waste from the food industry, etc.	19.0%	-35.7%
24	Tobacco and manufactured tobacco substitutes	38.1%	-45.2%
<b>Simple average chapters 1 to 24</b>		<b>16.4%</b>	<b>-49.8%</b>
<b>Simple average chapters 25 to 99</b>		<b>4.0%</b>	<b>-22,3%</b>

Source: Inferred from Lawless y Morgenroth (2016) as follows: (i) average MFN tariffs from Figure 3 and, (ii) proportional trade impact of a HB from Figures 8 and 9.

### **Appendix B: EU MFN meat tariffs**

Usually, EU MFN meat barriers are a composite of ad valorem and specific tariffs<sup>39</sup>. The ad valorem equivalent (AVE) of the specific tariffs have been estimated following the guideline suggested in European Commission (2005) according to which for product j:

$$AVE_j = S_j / (0,25U_{Vej} + 0,75U_{Vwj}) \quad (a)$$

where S: specific tariff per unit; U<sub>Ve</sub>: unit value of imports from the EU and, U<sub>Vw</sub>: unit value of imports from the rest of world<sup>40</sup>. Given that most of UK's agro industrial imports come from the EU we simplify to the following expression:

$$AVE_j = S_j / U_{Vej} \quad (b)$$

In most cases, for each product there is a range of specific tariffs. Consequently several AVEs have been estimated by:

$$AVE_j = [(S_{maxj} + S_{minj}) / 2] / U_{Vej} \quad (c)$$

where S<sub>max</sub> and S<sub>min</sub> are the maximum and minimum specific tariffs.

The third column of Table B shows ad valorem tariffs and the next four columns the minimum, maximum and average specific tariffs in euros and dollars. Following are the unit values estimated with 2016 trade data. The final two columns show AVEs and our estimates of the EU MFN tariff protection (ad valorem plus specific). Estimates of AVEs are computed at the six-digit level for the main trade positions and transformed to the four digit level either by simple correspondence (i.e. 0201, 0202, 0205 & 0210), or by simple average of the main six digit positions (0203, 0204 and 0207). These four digit estimates are then used in the text to simulate the trade effects of a HB.

<sup>39</sup> There are also tariff rate quotas (TRQs) but these are part of the Brexit negotiations and we have not dealt with them here.

<sup>40</sup> Due to high preference margins under the CAP, it is likely that intra-EU trade is priced above levels that would prevail under competition. Therefore, using unit values estimated with UK import data from the EU is likely to underestimate the rates of MFN tariff protection.

**Table B:** Meat MFN tariffs: ad valorem plus specific

HS	Product	Ad valorem tariff (%) (2)	Specific tariff				Unit value in USD/ton (3)	EU MFN tariff	
			Min	Max	Average in euros	Average in USD/ton (3)		AVE	Ad valorem +AVE
020130	Bovine meat, fresh	13	221 €/100 kg	221 €/100 kg	221 €/100 kg	2,453	5,704	43	56
Average 0201	---	---	---	---	---	---	5,704	---	56
020230	Bovine meat, frozen	12	221 €/100 kg	304 €/100 kg	263/100 kg	2,919	3,265	80	92
Average 0202	---	---	---	---	---	---	3,265	---	92
020312	Pig meat	0	60 €/100 kg	78 €/100 kg	64/100 kg	640	1,959	33	33
020319	Pig meat	0	47 €/100 kg	87 €/100 kg	67/100 kg	744	2,596	29	29
020329	Pig meat	0	47 €/100 kg	87 €/100 kg	67/100 kg	744	2,365	31	31
Average 0203	---	---	---	---	---	---	2,307	---	31
020443	Sheep meat	13	235 €/100 kg	235 €/100 kg	235 €/100kg	2,609	4,322	60	73
020422	Sheep meat	13	142 €/100 kg	168 €/100 kg	155 €/100kg	1,721	6,265	27	40
020442	Sheep meat	13	90 €/100 kg	168 €/100 kg	129 €/100kg	1,432	5,997	24	37
Average 0204	---	---	---	---	---	---	5,528	---	50
0205	Horsemeat	0	0	0	0	0	nc	0	0
Average 0205	---	---	---	---	---	---	---	---	0
0206	Meat residues	---	---	---	---	---	1,777		47
020713	Chicken meat	6	101€/100kg	102€/100kg	102/100kg	1,132	3,204	35	41
020714	Chicken meat	6	101€/100kg	102€/100kg	102€/100kg	1,132	3,339	34	40
Average 0207	---	---	---	---	---	---	3,272	---	41
0208	Meat of rabbits, etc						4,863		47
0209	Meat fats						940		47
021019	Salted, dried & smoked meats	15	60€/100kg	151€/100kg	106€/100kg	1,177	3,102	40	55
Average 0210	---	---	---	---	---	---	---	---	55

Notes: (1) decimals have been rounded; (2) when there are more than one ad valorem rates we use the simple average; (3) estimates of unit values are from 2016 trade statistics of UK imports from the EU; (4) specific tariffs are transformed from euros to dollars using the average 2016 exchange rate: USD 1.11 per euro and, (5) for the following three sectors we have used the weighted average (by UK imports) of the MFN tariff (47%) from the other sectors: 0206, 0208 and, 0209; (6) because trademap has recorded values but not quantities of UK imports from the EU, we have estimated unite values from UK imports from world.

Source: Trade data from trademap and tariff data from WTO integrated tariff data: [https://www.wto.org/english/tratop\\_e/schedules\\_e/goods\\_schedules\\_table\\_e.htm](https://www.wto.org/english/tratop_e/schedules_e/goods_schedules_table_e.htm).