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**The competitiveness of French agri-food exports:  
a methodological and comparative approach**

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# The competitiveness of French animal products exports: a methodological and comparative approach

(PRELIMINARY AND INCOMPLETE. PLEASE DO NOT CITE.)

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## I - Introduction

The agricultural and agri-food sector is particularly important for the French economic growth since it constitutes the third largest trade surplus (after aeronautics-space and chemicals)...%?

However, recent works and international trade data reveal a loss of competitiveness of French animal industries since the beginning of the 21st century (). Although France is a net exporter in this sector, since 2013 it runs a trade deficit with the EU-28. Other European countries face the same economic environment (liberalization of markets, stronger competition from emerging countries, wide use of the public and private standards, etc.), not all follow the same trajectory as France. The cost of labor, often incriminated, does not explain alone this decline in competitiveness.

In the field of international trade, the overall competitiveness of a territory is usually assessed based on market share evolutions or comparative (dis)advantages. These indicators reflect a country's position relative to its competitors. In addition to this global approach of competitiveness, a panel of additional indicators focuses on individual potential sources of competitiveness (e.g. labor productivity, labor costs, innovation, value chains, etc.).

The aim of the paper is to measure the competitiveness of French exports of animal products, relative to its foreign competitors, based on a shift-share approach. The paper extends the World Bank's measure of export competitiveness (<https://mec.worldbank.org/>) beyond the contribution of product mix and exports' geography, differentiating between effects in terms of prices and quantities. More specifically, the main contribution consists in refining this analysis by taking into account additional determinants, such as trade agreements, tariffs, non-tariff barriers and exchange rates. The aim is to offer a global apprehension of competitiveness of French agri-food sectors, not restricted to countries' specialization (the principle of comparative advantage), and to simultaneously measure the contribution of specific sources of competitiveness. We compare the results across the French animal products inside the sector and with respect to the main competing countries within and outside the European Union for the overall French animal sector.

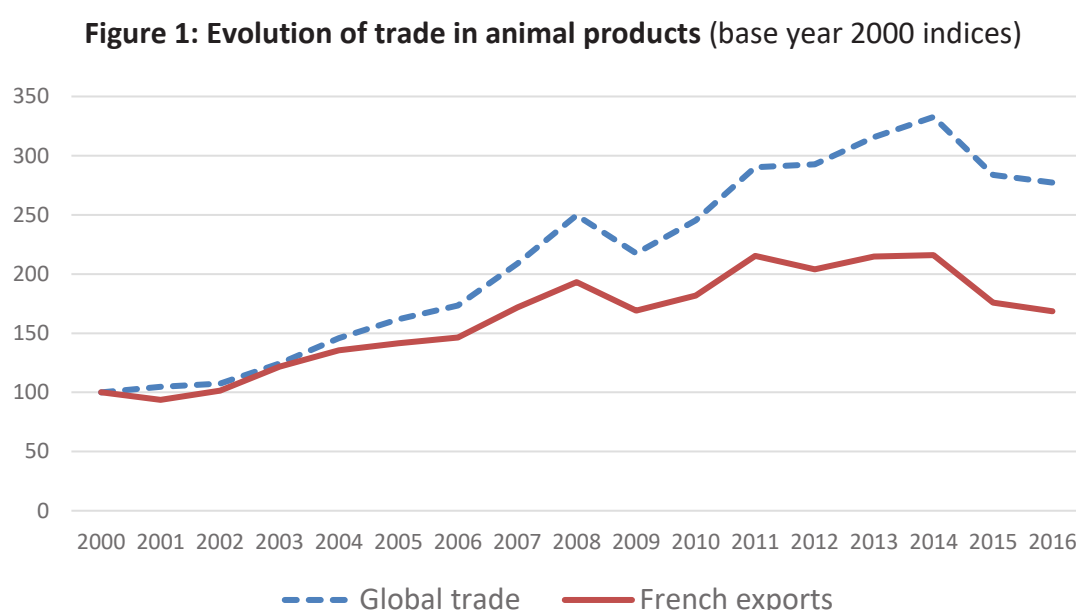
The paper is structured as follows. Section II provides an overview of global agri-food trade with a focus on French animal sector exports. Section III explains the data and methodology used to measure the competitiveness of the French animal sector relative to that of other

countries, while Section IV Identifies and estimates the contribution of different competitiveness factors. Section V summarizes our conclusions.

## II – Trade in animal products at the global level and at the scale of France

### 2.1 – Global trade in animal products

Trade in animal products has increased steadily in the early 2000 (Figure 1). Similarly to trade in other agri-food sectors, trade volumes plunged after the 2008-2009 financial crisis, and recovered slowly in the following years. Since 2014, we observe a slowdown in worldwide trade activity, in animal products as well as in other agri-food sectors. Over the entire period, French exports grew at a slower pace than global trade, leading to a decrease in France's share of the global market.



Source: Authors' computations using data from BACI.

Table 1 shows the redistribution of world markets shares in the animal products sector among main exporters (with 1% or more of the world market). The European Union accounts for over half of the world exports of animal products. This high figure includes intra-EU trade. (When we exclude intra-EU trade this figure drops to 22%.) According to Table 1, in 2016 France accounted for almost 6% of worldwide exports of animal products. Since 2000, it lost 39% (3.8 percentage points) of its market share. Its main European competitors remain Germany (9.3%) and Netherlands (9.2%). Outside EU, the mains exporters are US, Brazil, Australia and New Zealand. The position of all these countries – except Brazil – deteriorates, but less (in relative terms) than for France. Brazil stands out with a 150% increase of its 2000 market share. Large increases are observed as well for Poland (+280%), India (+252%), Belarus (+373%), and Switzerland (102%).

**Table 1: Market shares of main exporters of animal products, 2000-2016**

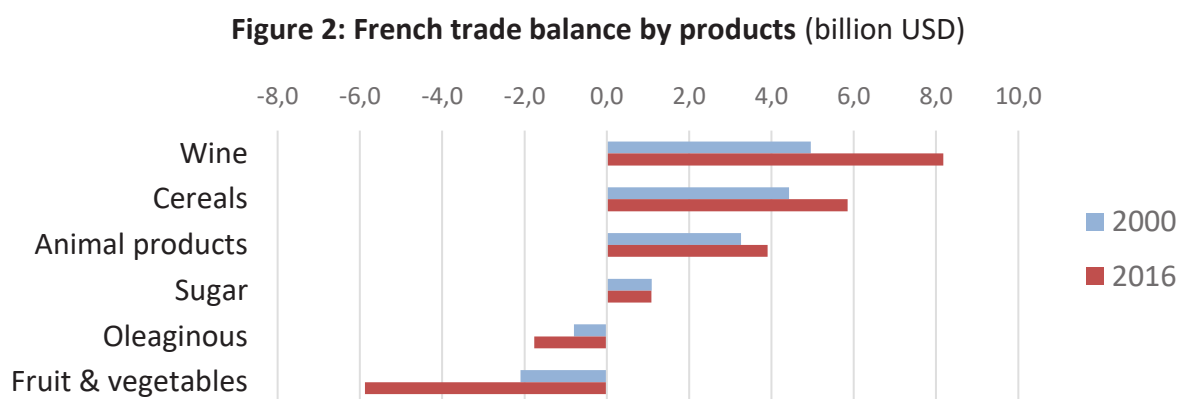
Exporter	Market share (%)		Change in market share	
	2000	2016	(p.p.)	(%)
<b>EU28</b>	<b>56,81</b>	<b>52,71</b>	<b>-4,10</b>	<b>-7,2</b>
Germany	8,92	9,27	0,35	3,9
Netherlands	10,69	9,17	-1,52	-14,2
<b>France</b>	<b>9,67</b>	<b>5,88</b>	<b>-3,79</b>	<b>-39,2</b>
Ireland	4,36	3,70	-0,66	-15,2
Spain	2,40	3,65	1,25	52,1
Denmark	5,87	3,45	-2,42	-41,2
Belgium and Luxembourg	4,38	3,38	-1,00	-22,8
Poland	0,83	3,15	2,32	280,0
Italy	2,13	2,69	0,56	26,1
United Kingdom	2,83	2,10	-0,73	-25,8
Austria	1,36	1,55	0,19	13,9
United States of America	12,54	9,38	-3,17	-25,2
Brazil	2,47	6,17	3,70	150,1
New Zealand	5,10	5,78	0,68	13,4
Australia	6,23	5,20	-1,03	-16,5
Canada	5,10	3,08	-2,02	-39,6
Thailand	1,13	2,07	0,94	83,4
India	0,51	1,79	1,28	252,2
Mexico	1,06	1,23	0,18	16,9
China	1,48	1,15	-0,33	-22,6
Belarus	0,24	1,14	0,90	372,8
Argentina	1,46	1,09	-0,36	-24,9
Switzerland	0,53	1,07	0,54	101,6
Uruguay	0,72	1,03	0,31	42,7
Rest of the World	4,63	7,11	2,48	53,5

Source: Authors' computations using data from BACI.

Notes: We report only countries accounting for at least 1% of world exports in 2016.

## 2.2 – State of the art of French exports of animal products

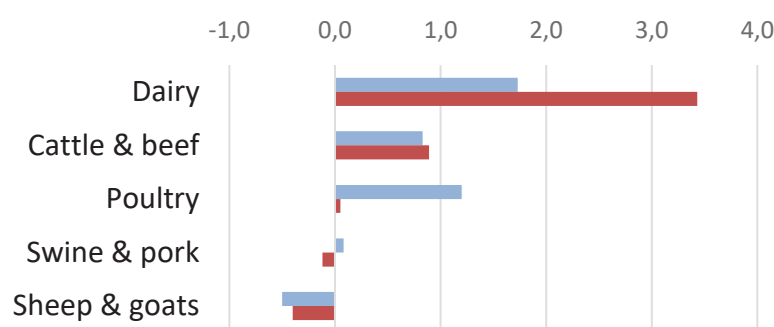
The French agri-food sector is characterized by a trade surplus. However, there is a strong disparity across products: the trade balance is positive for wine, cereals, animal products and sugar, but negative for oleaginous and fruit and vegetables. These disparities have widened over time (2000-2016), with the French trade surpluses and deficits increasing for most products groups (Figure 2).



Source: Authors' computations using data from BACI.

Analyzing more deeply the animal products, we notice that the positive trade balance is strongly supported by dairy products and cattle (Figure 3). France is a net exporter of dairy products, both on the EU and extra-EU market. Its trade balance in this sector improved with both types of partners, most of the recent growth being driven by the Chinese and other Asian countries' demand. French exports of cattle and beef products are strongly concentrated on the EU market (90% in 2016), and explain most of the positive trade balance in this sector. Exports to non-European markets remain marginal, despite a strong increase since 2009. In the poultry sector, the positive balance observed in 2000 completely eroded by 2016. This was due to a strong (fourfold) increase in French imports from EU partners. The trade balance with EU countries became negative in 2009 and continued to deteriorate over time, although it remains positive and steady with extra-EU partners. France's balanced trade in swine and pork products masks the country's contrasting positions on the EU and extra-EU markets. Thus, the French positive and improving trade balance with non-EU partners cancels out its negative and deteriorating balance with EU trade partners. France remains a net importer of sheep and goat products, from both EU and non-EU countries. Except for sheep and goats, the bulk of French imports of animal products are of EU origin.

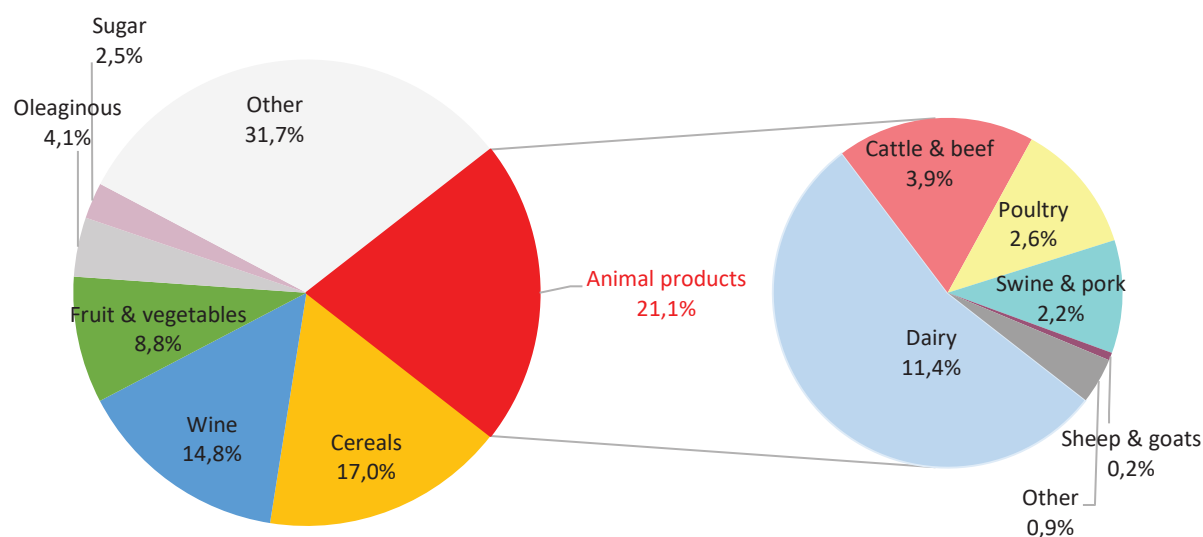
**Figure 3: French animal products trade balance (billion USD)**



Source: Authors' computations using data from BACI.

Besides, Figure 4 shows that animal products represent the largest share of French agri-food exports in 2016 (21.1%). They are followed by cereals (17%), wines (14.8%) and fruits and vegetables (8.8%). Within the animal sector, dairy products account for over half of French exports, followed by cattle and beef, poultry, and swine & pork. Sheep & goats represent only a marginal share of French agri-food exports, France being a net importer in this sector. Therefore, we will spend less attention to this group of products in the rest of the analysis.

**Figure 4: Structure of French agri-food exports, 2016**

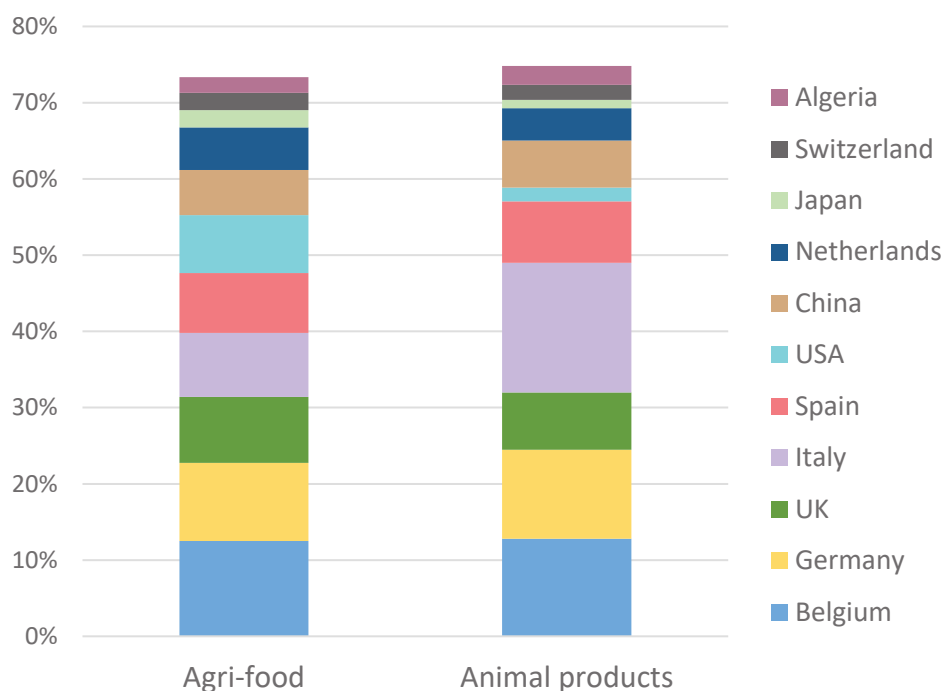


Source: Authors' computations using data from BACI.

Now let's have a look to the main customers of France (Figure 5). 70% of the exports of animal products are directed to EU partners (against 62% for agri-food exports). The main EU trading partners are Belgium, Germany, Italy and Spain. In addition, exports of animal products are more concentrated than in the overall agri-food sector: 41% (57%) of French exports of animal products are directed to three (five) main destination markets, all in the EU. In the case of the

agri-food sector, the top three (five) partners correspond to 31% (48%) of the exports. There are sizable differences for some destination markets. Italy absorbs 17% of the French animal products exports, the double of its share in French agri-food exports, and becomes the main destination of French exports in this sector (ahead of Germany and Belgium). On the opposite, while US is the largest extra-EU market for French agri-food exports (7.6%), its share is much smaller for animal products (1.8%). France's main non-EU partners in the animal products sector are China, Algeria, Switzerland, followed by US and Japan.

**Figure 5: Main destinations of French exports**



Source: Authors' computations using data from BACI.



### III – Methodology and data

#### 3.1 Defining competitiveness

A large number of works address, measure and attempt to explain the competitiveness and/or the lack thereof, at country or region level. Despite the interest for analyzing competitiveness, there is no uniformity in the literature on the definition of this term or on the elements it encompasses. The definition of competitiveness varies greatly on the adopted approach and level of analysis.<sup>1</sup> Still, some similarities emerge across macro-level analyses. Competitiveness most often refers to how well a country (or region or territory) performs in the market against its competitors.<sup>2</sup> From the point of view of international economics, competitiveness is reflected by the performance on international markets, mainly in terms of exports or FDI. It is measured through a wide number of economic indicators, such as trade balance, market shares, revealed comparative advantage, relative prices, real effective exchange rates, unit costs, productivity, innovation and technology, export sophistication, quality of produced/exported goods, etc. See Latruffe (2010) Castellani and Koch (2015), Karadeloglou and Benkovskis (2015) and Wijnands and Verhoog (2016) for an overview of most commonly employed indicators.

We adopt the definition of competitiveness that relies on countries' export performance. More specifically, we follow Gaullier et al. (2013) and Cheptea et al. (2014) and measure competitiveness as the evolution of export market shares, adjusted by structural effects. The geographic and sectoral structure of a country's exports may greatly affect the evolution of its exports. Thus, a country's market share erodes if it sells to partners whose demand grows more slowly than that of the trade partners of its main competitors. Similarly, a country's position deteriorates if the global demand for the products it exports grows a lower rate than the demand for products exported by competing countries. On the opposite, a beneficial geographical orientation or product decomposition of exports improves the country's performance at no effort. Adapting to the evolving demand conditions is usually a slow and costly process. It takes a long time for a country to change its specialization and trade partners. Therefore, we separate the contribution of structural effects and focus on country's intrinsic market share evolutions.

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<sup>1</sup> For example, the OCDE defines competitiveness as the "ability of companies, industries, regions, nations, and supranational regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels on a sustainable basis" (Hatzichronoglou, 1996). According to the European Commission, "a competitive economy is one that raises living standards sustainably and provides access to jobs for people who want to work" (European Commission, 2012). The World Economic Forum (WEF) that computes the Global Competitiveness Index (GCI) perceives competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of an economy, which in turn sets the level of prosperity that the economy can achieve." (Schwab and Sala-i-Martin, 2017).

<sup>2</sup> Latruffe (2010) summarizes that "Competitiveness can be defined as the ability to face competition and to be successful when facing competition."

### 3.2 Competitiveness as the intrinsic evolution of exporter's market share

We start by constructing a competitiveness indicator at country-and-sector level, based on the econometric shift-share decomposition of annual changes in market shares (Cheptea et al., 2005; Gaulier et al., 2013; Cheptea et al., 2014; Measuring Export Competitiveness of the World Bank). In a first stage, we identify the specific trade dynamics for each exporter, destination, and product, based on the growth rates of trade flows defined at the most disaggregated level. In a second stage, we aggregate the results by exporting country, and compute a decomposition of changes in market shares. The competitiveness of an exporting country is identified with the evolution of its market share corrected by structural factors (product mix and export geography). The analysis encompasses all agri-food products traded internationally. When aggregating results by exporting countries, we distinguish between the different agri-food sectors/value chains. This approach permits to compare the competitiveness of France with those of these main competitors on the whole world market, as well as on various markets (intra-EU and extra-EU), for different sectors. For this analysis, we employ BACI data on world trade over the 2000-2016 period.

For each year  $t$  and group of products  $s$ , we identify the trade dynamics specific to each exporting country  $i$ , destination market  $j$ , and product  $k$ , using a weighted fixed effects estimation of export growth rates defined at the highest level of data disaggregation:

$$g_{ijk}^t = \alpha_i^t + \beta_j^t + \gamma_k^t + \varepsilon_{ijk}^t \quad (1)$$

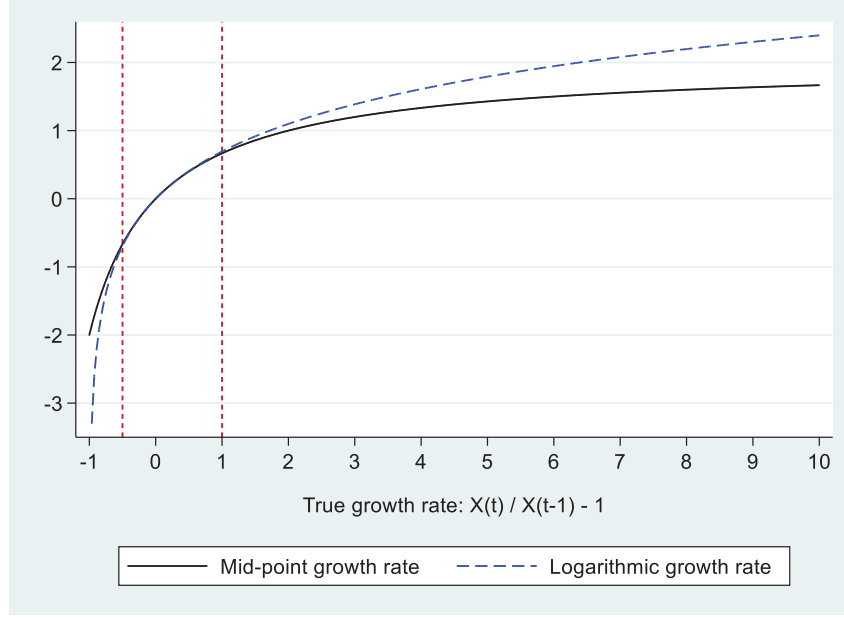
We use the share of each flow in global trade,  $w_{ijk}^t$ , as weights and impose the following constraints:  $\sum_i \alpha_i^t w_i^t = g^t$ ;  $\sum_j \beta_j^t w_j^t = 0$ ;  $\sum_{k \in s} \gamma_k^t w_k^t = 0$ . This permits us to interpret destination- and product-specific trade dynamics  $\beta_j^t$  and  $\gamma_k^t$  as deviations from the world average, and exporter-specific dynamics  $\alpha_i^t$  as deviations from the growth in global trade ( $g^t$ ).

Following Bricongne et al. (2012) and Gaulier et al. (2013), we use mid-point growth rates rather than real or logarithmic growth rates:

$$g_{ijk}^t \equiv \frac{X_{ijk}^t - X_{ijk}^{t-1}}{0,5 \cdot (X_{ijk}^t + X_{ijk}^{t-1})} \quad (2)$$

This permits to compute growth rates for disappeared and newly created trade flows, which constitute the extensive trade margin. For reasonable growth rates (ranging between -50% and +100%), the mid-point growth rate is almost equal to the logarithmic growth rate. For very small and very high growth rates, the mid-point growth rate underestimates the true growth rate (see Figure 6). Mid-point growth rates roughly compress logarithmic growth rates into the range  $[-2; 2]$ , imposing a growth rate of -2 for flows that disappeared and a growth rate equal to 2 for newly created flows.

**Figure 6: Mid-point growth rates vs. logarithmic and true growth rates**



Weights are computed as  $w_{ijk}^t = (X_{ijk}^t + X_{ijk}^{t-1}) / (X^t + X^{t-1})$  to allow aggregate-level growth rates to be obtained as the weighted sum of disaggregate growth rates:

$$g_i^t \equiv \frac{X_i^t - X_i^{t-1}}{0.5 \cdot (X_i^t + X_i^{t-1})} = \sum_j \sum_{k \in S} g_{ijk}^t w_{ijk}^t \quad (3)$$

We introduce (1) into (3), subtract the global growth rate (3), and sum results across years:

$$r_{i,s} = \sum_t (g_i^t - g^t) = \underbrace{\sum_t (\alpha_i^t - g^t)}_{\text{Competitiveness}} + \underbrace{\sum_t \left( \sum_j \beta_j^t w_{ij}^t \right)}_{\text{Geographic structure}} + \underbrace{\sum_t \left( \sum_{k \in S} \gamma_k^t w_{ik}^t \right)}_{\text{Product mix}} \quad (4)$$

The right hand side of (4) is an approximation of the logarithmic growth rate of country  $i$ 's market share. It is decomposed into the sum of three terms: the country's competitiveness, and two structural terms reflecting the geographic orientation and the product mix of its exports. A positive (negative) value for either term indicates an increase (decrease) in the country's market share. By construction, the three right-hand side terms of (4) are orthogonal. Our competitiveness measure reflects the country's market share evolution that one would observe if all countries had had the same structure of exports by destination markets and by products, equal to the world average.

### 3.3 Data

Data on product-level bilateral trade flows come from the BACI database in the Harmonized System (HS) 1992 product classification, constructed by CEPII. Data are expressed in current USD. The agri-food sector corresponds to products in HS chapters 1 to 24, 699 HS 6-digit codes in total. Within the agri-food, we focus on animal products (identified by 109 product codes), and compare this sector to five other groups of products (agri-food value-chains) of particular interest for France: wines, cereals, fruit & vegetables, oleaginous, sugar. We disregard the rest of agri-food products from our detailed analysis. This residual group, labeled as “other”, covers fish and fish preparations, coffee, tea, cocoa, live plants, wool, feathers, skins, cotton, bamboo and similar products, mainly from chapters 3, 5, 6, 13, 14, 18, 23. Refer to Table A1 in the Appendix for the detailed definition of the agri-food value chains (sectors). We base our classification on the EU classification of agri-food products.<sup>3</sup> Each HS6 product code is univocally attributed to one agri-food group/sector/value-chain. Each group includes both primary and processed products. For example, the cereals group includes raw cereals (such as wheat and maize), flours, malt, starches, as well as pasta, biscuits, and other processed products obtained from cereals.

Our analysis covers the 2000-2016 period. We exclude small countries (with less than 0.01% of the world agri-food trade in at least one year) and non-independent territories. Within each agri-food sector, we also exclude countries that do not export or import consistently throughout the period (i.e. trade some positive amount in at least one HS 6-digit product in that sector with at least one partner). This reduces the number of countries in the analysis to 122 exporters and 155 importers, but excluded flows represent less than 3% of the global trade in each agri-food sector or group of products. The number of trading countries is smaller for some product groups, reflecting countries’ specialization across products (Table 2). Thus, we have 116 dairy exporting countries, but only 62 exporters of sheep and goat products.

**Table 2: Number of products, exporting and importing countries in the analysis**

	Products (HS6 codes)	Exporters	Importers
Animal products	109	121	155
Dairy	22	116	155
Cattle & beef	14	92	149
Poultry	22	100	155
Swin & pork	19	87	152
Sheep & goats	13	62	128
Other	19	119	154
Cereals	69	122	155
Fruit & vegetables	174	122	155
Oleaginous	56	118	155
Sugar	12	111	155
Wine	4	90	151
Total agri-food (incl. the “other” group)	699	122	155

<sup>3</sup> [https://ec.europa.eu/agriculture/sites/agriculture/files/trade-analysis/statistics/outside-eu/2015/product-classes-details\\_en.pdf](https://ec.europa.eu/agriculture/sites/agriculture/files/trade-analysis/statistics/outside-eu/2015/product-classes-details_en.pdf)

## IV – The competitiveness of France and its main competitors

### 4.1 The animal products sector

We present the results of the shift-share decomposition of the 2000-2016 market share evolution in animal products sector for largest world exports in Table 3. Figures correspond to an approximation of logarithmic growth rates. Market share evolutions are decomposed into a sum of a competitiveness term specific to the exporting country, and two structural terms, reflecting the orientation of exports to destinations with a strongly increasing import demand and the country's specialization in products with a rapidly increasing global demand. Positive (negative) values reflect an increase (decrease) in market share.

**Table 3: Decomposition of market share evolutions, 2000-2016**

Exporter	Market share evolution	Competitiveness	Geographic structure	Product mix
<b>EU28</b>	<b>-0,07</b>	<b>0,04</b>	<b>-0,15</b>	<b>0,04</b>
Germany	0,04	0,11	-0,13	0,06
Netherlands	-0,15	-0,10	-0,12	0,07
<b>France</b>	<b>-0,50</b>	<b>-0,25</b>	<b>-0,20</b>	<b>-0,04</b>
Ireland	-0,17	-0,03	-0,16	0,02
Spain	0,42	0,64	-0,31	0,09
Denmark	-0,53	-0,60	-0,08	0,15
Belgium and Luxembourg	-0,26	-0,06	-0,21	0,01
Poland	1,32	1,48	-0,04	-0,12
Italy	0,23	0,35	-0,21	0,09
United Kingdom	-0,30	-0,15	-0,03	-0,12
Austria	0,13	0,20	-0,22	0,15
United States of America	-0,29	-0,61	0,33	-0,01
Brazil	0,90	1,00	0,09	-0,19
New Zealand	0,12	0,03	0,31	-0,22
Australia	-0,18	-0,34	0,19	-0,04
Canada	-0,50	-0,55	-0,05	0,10
Thailand	0,60	0,17	0,03	0,40
India	1,23	0,97	0,35	-0,09
Mexico	0,15	0,24	-0,15	0,07
China	-0,25	-0,61	0,07	0,29
Belarus	1,53	2,52	-0,63	-0,37
Argentina	-0,29	-0,15	-0,02	-0,12
Switzerland	0,69	0,69	-0,19	0,19
Uruguay	0,35	0,63	-0,18	-0,11

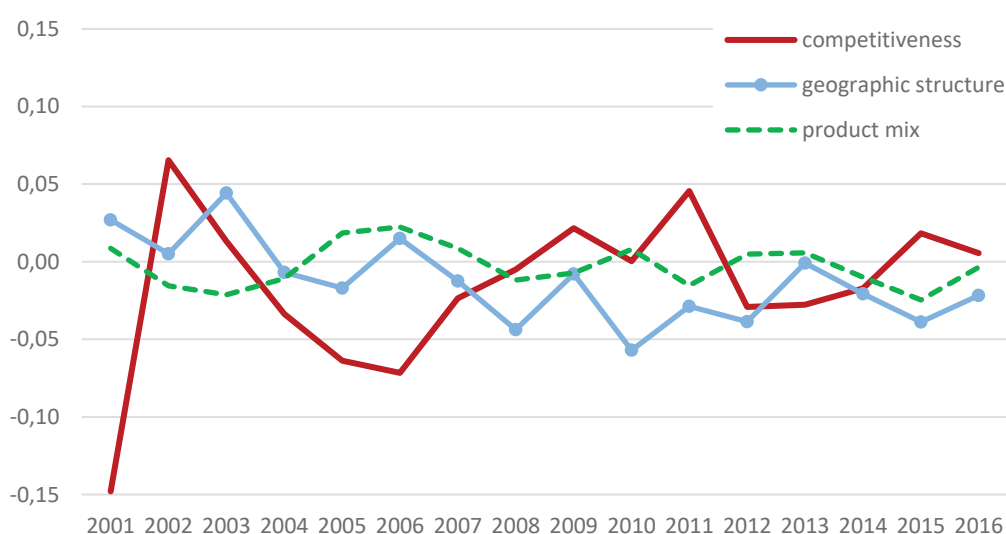
Source: Authors' computations using data from BACI. Only countries accounting for 1% or more of world exports in 2000 or 2016 are reported.

From Table 3 we read that only half of the decrease in the French market share was due to a loss in country's competitiveness. The concentration of French exports in markets with a slowly progressing demand (below the world average) generated a similar contraction of the French market share. Netherlands' market share also deteriorates due to a loss in

competitiveness and an unfavorable geographic structure, but effects are smaller in magnitude and partially compensated by a strong global demand for its products. Germany improves its competitiveness in the sector and conserves its 2000 market share. The US competitiveness in the animal sector deteriorates more than that of France. However, the orientation of American exports to markets with a highly dynamic demand reduces its impact on market shares by half. The strong increase in Brazil's market share comes from its competitiveness.

Figure 7 shows the evolution of French competitiveness and structural terms across time. No clear trend emerges from the evolution of French competitiveness in animal products. France's competitiveness losses were concentrated in the early 2000s, prior to the 2007-2008 world food price crisis (despite a positive spike in 2002). French competitiveness improved since 2007 to reach positive values in 2009 and 2011, but this trend was not sustained through the rest of the period. Differently, France benefited from a favorable geographic structure of exports in the early 2000s, that deteriorated as its trade partners were hit by the 2008-2009 financial crisis, contracting their output/revenues and demand. The French products mix oscillated around zero, showing a resilience of the global demand for French animal products against temporary shocks.

**Figure 7: Evolution of French competitiveness and structural terms in animal products**

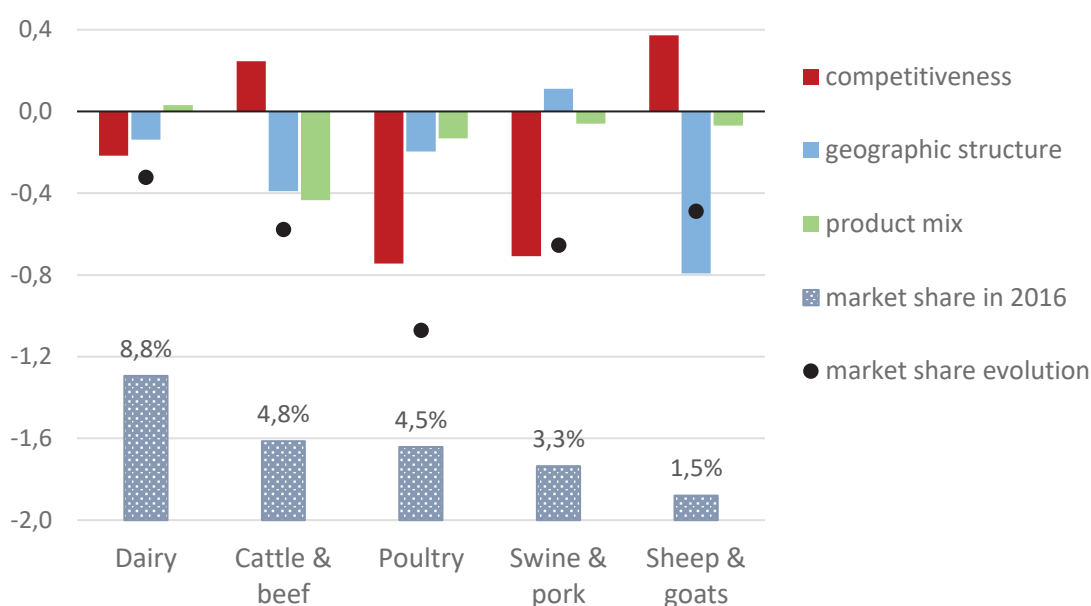


Source: Authors' computations using data from BACI.

Within the animal products sector, the French market share deteriorates the most for poultry products, from 13% in 2000 to only 4.5% in 2016 (see Figure 8 and Table A2 of the Appendix for details). This outcome results from a strong loss in competitiveness, complemented by an unfavorable geographic structure and product mix. The competitiveness of French exports greatly deteriorates also for swine and pork products, but the above-world-average demand growth of France's main clients limits its market share loss in this product group. Although France loses market shares in all product groups of the animal products sector, it manages to keep or increase its competitiveness above the world average for the exports of cattle & beef

and sheep & goat products (Figure 8). In both these product groups, the market share loss is entirely driven by the weak evolution of global demand for French products and the concentration of exports in countries with a slowly growing demand, reflected in negative structural effects. French exports display the highest resilience in the dairy sector, where the market position of France is also the strongest (8.8% in the world exports 2016). The small competitiveness loss and adverse geographical structure of exports were sufficient to make France lose its position of the world's third largest exporter of dairy products to New Zealand.

**Figure 8: French competitiveness by groups of animal products, 2000-2016**



Source: Authors' computations using data from BACI.

Notes: Market shares in 2016 are labelled on a separate (not displayed) vertical axis.

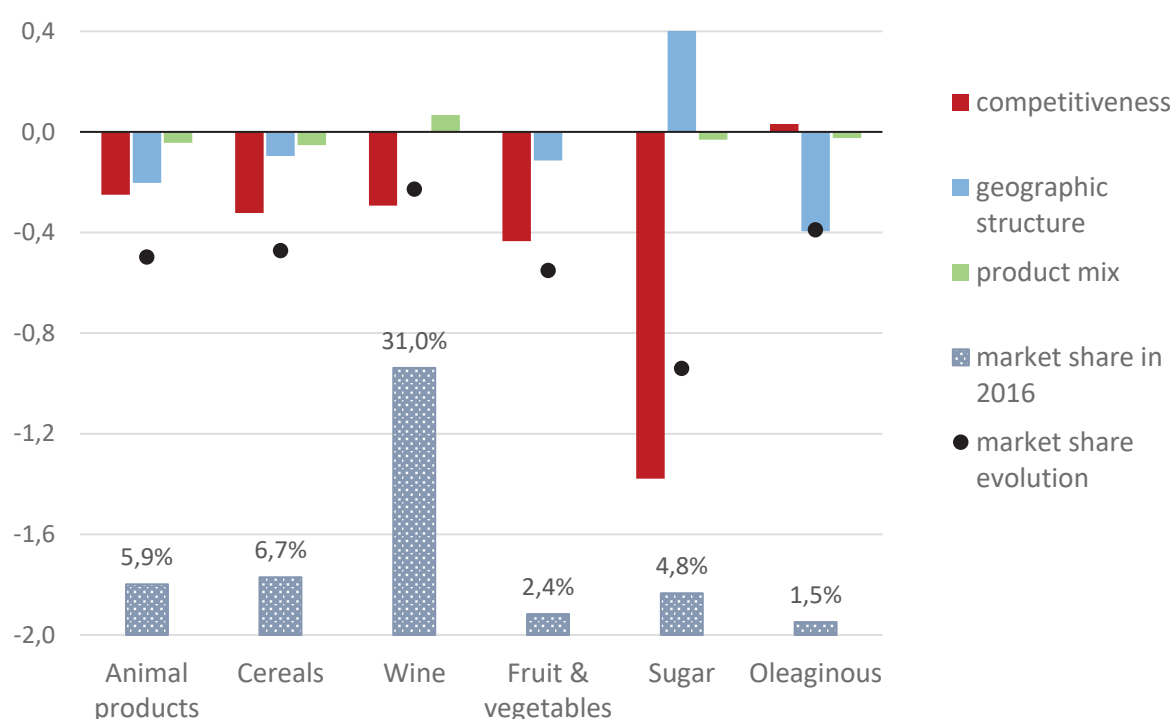
#### 4.2 Animal products vs. other agri-food sectors

The French market share and competitiveness losses in the animal product sector are comparable to those observed for cereal products and fruit and vegetables (Figure 9). The position of France remains strong in the cereals sector (second world exporter, after US), although it loses ground to new competitors: Poland and Romania within the EU; Russia, India, Ukraine, and Brazil outside of the EU market. The French market share is much weaker in the fruit and vegetables sector, where France remains a net importer. Similarly to the animal products sector, the French exports of cereals and fruit and vegetables were marked by an important competitiveness decline, accompanied by a concentration of exports on markets with a lagging demand.

The French share in world exports dropped the less for wines, where France has a dominant position with a market share of 31%, far ahead of all its competitors (Italy at 21%, Spain at 9%, Australia at 7%, Chile at 6%). French wine exports also benefit from the most favorable product mix, the global demand for French wine increasing more rapidly than the demand for

wines of other origins. The French market share loss was the strongest for sugar, a trend shared by most European countries. Still, France remains the first EU exporter of sugar, a sector with marginal contribution to the country's overall agri-food exports. The large drop in the competitiveness of French and European sugar exports was induced by the strong delocalization of production units to developing and emerging economies over the last decade. The oleaginous sector is the only one where the competitiveness of French exports did not decline. This sector suffered from a poor orientation of exports (strong negative geographic structure). Better targeting its buyers would permit France to improve its market position in this sector.

**Figure 9: French competitiveness across agri-food sectors, 2000-2016**



Source: Authors' computations using data from BACI.

Notes: Market shares in 2016 are labelled on a separate (not displayed) vertical axis.

## V – Conclusion



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## Appendix

**Table A1: The list of product codes in the animal products sector, by group of products**

Group	HS 6 code	Short description
Dairy	040110	Milk not concentrated nor sweetened < 1% fat
	040120	Milk not concentrated nor sweetened 1-6% fat
	040130	Milk and cream not concentrated nor sweetened < 6% fat
	040210	Milk powder < 1.5% fat
	040221	Milk and cream powder unsweetened < 1.5% fat
	040229	Milk and cream powder sweetened < 1.5% fat
	040291	Milk and cream unsweetened, concentrated
	040299	Milk and cream nes sweetened or concentrated
	040310	Yogurt
	040390	Buttermilk, curdled milk, cream, kephir, etc.
	040410	Whey
	040490	Natural milk products nes
	040500	Butter and other fats and oils derived from milk
	040610	Fresh cheese, unfermented whey cheese, curd
	040620	Cheese, grated or powdered, of all kinds
	040630	Cheese processed, not grated or powdered
	040640	Cheese, blue-veined
	040690	Cheese except fresh, grated, processed or blue-veined
	170210	Lactose and lactose syrup
	190110	Infant foods of cereals, flour, starch or milk, retai
	220290	Non-alcoholic beverages nes, except fruit, veg juices
	350110	Casein
Group	HS 6 code	Short description
Cattle & beef	010210	Bovine animals, live pure-bred breeding
	010290	Bovine animals, live, except pure-bred breeding
	020110	Bovine carcasses and half carcasses, fresh or chilled
	020120	Bovine cuts bone in, fresh or chilled
	020130	Bovine cuts boneless, fresh or chilled
	020210	Bovine carcasses and half carcasses, frozen
	020220	Bovine cuts bone in, frozen
	020230	Bovine cuts boneless, frozen
	020610	Bovine edible offal, fresh or chilled
	020621	Bovine tongues, frozen
	020622	Bovine livers, frozen
	020629	Bovine edible offal, frozen except livers and tongues
	021020	Bovine meat salted, dried or smoked
	160250	Bovine meat, offal nes, not livers, prepared/preserved

Group	HS 6 code	Short description
Swine & pork	010310	Swine, live pure-bred breeding
	010391	Swine, live except pure-bred breeding < 50 kg
	010392	Swine, live except pure-bred breeding > 50 kg
	020311	Swine carcasses and half carcasses, fresh or chilled
	020312	Swine hams, shoulders & cuts bone in, fresh or chilled
	020319	Swine cuts, fresh or chilled, nes
	020321	Swine carcasses and half carcasses, frozen
	020322	Hams, shoulders and cuts, of swine, bone in, frozen
	020329	Swine cuts, frozen nes
	020630	Swine edible offal, fresh or chilled
	020641	Swine livers, frozen
	020649	Swine edible offal, frozen except livers
	021011	Hams and shoulders, swine, salted, dried or smoked
	021012	Bellies (streaky) of swine, salted, dried or smoked
	021019	Swine meat, salted/dried/smoked not ham/shoulder/bell
	160100	Sausages, similar products of meat, meat offal & bloo
	160241	Swine hams & cuts thereof, prepared or preserved
	160242	Swine shoulders & cuts thereof, prepared or preserved
	160249	Swine meat or offal nes, prepared,preserved, not live

Group	HS 6 code	Short description
Poultry	010511	Fowls, live domestic < 185 grams
	010519	Poultry, live except domestic fowls, < 185 grams
	010591	Fowls, live domestic > 185 grams
	010599	Poultry, live except domestic fowls, > 185 grams
	020710	Poultry, domestic, whole, fresh or chilled
	020721	Fowls, domestic, whole, frozen
	020722	Turkeys, domestic, whole, frozen
	020723	Ducks, geese and guinea fowls, domestic, whole, frozen
	020731	Fatty livers (geese,ducks) domestic fresh or chilled
	020739	Poultry cuts & offal, except livers, fresh or chilled
	020741	Fowl cuts & offal, domestic, except livers, frozen
	020742	Turkey cuts & offal, except livers, frozen
	020743	Duck, goose, guinea fowl cuts, offal not liver, froze
	020750	Poultry livers, domestic, frozen
	021090	Meat and edible meat offal cured, flours, meals nes
	040700	Birds eggs, in shell, fresh, preserved or cooked
	040811	Egg yolks dried
	040819	Egg yolks except dried
	040891	Eggs, bird, not in shell, dried
	040899	Eggs, bird, not in shell not dried
	160231	Turkey meat, offal prepared or preserved, except live
	160239	Fowl, duck,goose, offal, prepared, preserved not live

Group	HS 6 code	Short description
Sheep & goats	010410	Sheep, live
	010420	Goats, live
	020410	Lamb carcasses and half carcasses, fresh or chilled
	020421	Sheep carcasses and half carcasses, fresh or chilled
	020422	Sheep cuts, bone in, fresh or chilled
	020423	Sheep cuts, boneless, fresh or chilled
	020430	Lamb carcasses and half carcasses, frozen
	020441	Sheep carcasses and half carcasses, frozen
	020442	Sheep cuts, bone in, frozen
	020443	Sheep cuts, boneless, frozen
	020450	Goat meat, fresh, chilled or frozen
	020680	Sheep, goat, ass, mule, hinnie offal, fresh or chilled
	020690	Sheep, goat, ass, mule, hinnie edible offal, frozen

Group	HS 6 code	Short description
Other animal products	010111	Horses, live pure-bred breeding
	010119	Horses, live except pure-bred breeding
	010120	Asses, mules and hinnies, live
	010600	Animals, live, except farm animals
	020500	Horse, ass, mule, hinny meat, fresh, chilled or frozen
	020810	Rabbit or hare meat, offal, fresh, chilled or frozen
	020820	Frog legs, fresh, chilled or frozen
	020890	Meat and edible offal nes fresh, chilled or frozen
	020900	Pig and poultry fat, unrendered
	040900	Honey, natural
	041000	Edible products of animal origin nes
	150100	Lard, other pig fat and poultry fat, rendered
	150200	Bovine, sheep and goat fats, raw or rendered
	150300	Lard stearin, oleostearin & oils, natural tallow oil
	150430	Marine mammal fats, oils, etc. not chemically modified
	151610	Animal fats, oils, fractions, hydrogenated, esterified
	160210	Homogenized preparations of meat and meat offal
	160220	Livers of any animal prepared or preserved
	160290	Meat, meat offal and blood, prepared or preserved, nes

**Table A2: decomposition by product groups within the animal products sector**

Exporter	market share 2016	2000-2016 change	mkt share evolution	competitiveness	geographic structure	product mix
<b>DAIRY</b>						
<b>EU28</b>	<b>62,21</b>	<b>-9,80</b>	<b>-0,15</b>	<b>-0,11</b>	<b>-0,08</b>	<b>0,04</b>
Netherlands	11,87	-0,61	-0,05	-0,08	0,02	0,00
Germany	11,57	-3,50	-0,26	-0,18	-0,14	0,06
<b>France</b>	<b>8,83</b>	<b>-3,37</b>	<b>-0,32</b>	<b>-0,22</b>	<b>-0,14</b>	<b>0,03</b>
Ireland	5,22	-0,81	-0,14	-0,18	-0,05	0,09
Belgium & Luxembourg	4,07	-1,40	-0,30	-0,09	-0,18	-0,02
Italy	3,70	0,81	0,25	0,28	-0,18	0,15
Denmark	3,16	-1,78	-0,45	-0,56	0,03	0,08
Poland	2,50	1,64	1,03	1,16	0,01	-0,14
Austria	2,18	-0,03	-0,01	-0,08	-0,15	0,21
United Kingdom	2,07	-1,27	-0,48	-0,48	0,03	-0,03
Spain	1,74	-0,14	-0,08	0,04	-0,29	0,17
New Zealand	10,41	2,32	0,25	0,28	0,21	-0,24
United States of America	5,65	2,26	0,51	0,43	0,01	0,06
Switzerland	2,85	1,42	0,68	0,52	-0,08	0,24
Australia	2,46	-3,02	-0,80	-0,86	0,21	-0,15
Belarus	2,16	1,74	1,62	2,11	-0,30	-0,19
Thailand	1,76	1,40	1,57	1,10	0,22	0,26
Saudi Arabia	1,37	1,03	1,35	0,55	0,81	-0,02
United Arab Emirates	1,10	0,92	1,72	1,66	0,15	-0,09
Argentina	0,94	-0,19	-0,20	0,66	-0,67	-0,18
<b>CATTLE &amp; BEEF</b>						
<b>EU28</b>	<b>31,52</b>	<b>-4,43</b>	<b>-0,13</b>	<b>0,15</b>	<b>-0,19</b>	<b>-0,09</b>
Netherlands	5,24	-1,18	-0,20	-0,08	-0,26	0,14
<b>France</b>	<b>4,82</b>	<b>-3,81</b>	<b>-0,58</b>	<b>0,25</b>	<b>-0,39</b>	<b>-0,43</b>
Ireland	4,43	-0,74	-0,15	0,04	-0,37	0,18
Germany	3,80	-2,14	-0,45	-0,37	0,00	-0,07
Poland	2,55	1,94	1,39	1,84	-0,18	-0,28
Spain	1,79	0,04	0,02	0,46	-0,32	-0,12
Belgium & Luxembourg	1,70	-0,34	-0,18	0,14	-0,21	-0,11
Italy	1,33	0,13	0,10	0,11	-0,04	0,03
Austria	1,13	0,01	0,01	0,20	-0,07	-0,12
United Kingdom	1,11	0,84	1,36	1,24	-0,06	0,18
Denmark	0,76	-0,69	-0,64	-0,52	-0,19	0,07
Australia	14,21	1,77	0,13	0,01	0,04	0,08
United States of America	11,49	-9,69	-0,34	0,25	-0,78	0,18
Brazil	10,34	6,51	0,98	0,62	0,28	0,08
India	6,93	5,32	1,43	1,13	0,31	0,00
Canada	5,32	-4,90	-0,64	-0,16	-0,37	-0,11
New Zealand	4,19	0,41	0,10	0,10	-0,04	0,04
Mexico	3,32	1,23	0,45	1,33	-0,43	-0,45
Uruguay	3,30	1,28	0,48	0,31	0,11	0,06
Argentina	2,32	-1,04	-0,33	-0,84	0,32	0,19
Paraguay	2,14	1,67	1,40	1,48	-0,27	0,20

**Table A2: decomposition by product groups within the animal products sector (cont'd)**

Exporter	market share 2016	2000-2016 change	mkt share evolution	competitiveness	geographic structure	product mix
<b>SWINE &amp; PORK</b>						
<b>EU28</b>	<b>69,48</b>	<b>-1,33</b>	<b>-0,02</b>	<b>0,02</b>	<b>-0,04</b>	<b>0,00</b>
Germany	15,12	8,24	0,78	0,75	0,02	0,01
Spain	11,08	5,76	0,73	1,16	-0,43	0,00
Denmark	10,06	-9,07	-0,64	-0,70	-0,01	0,07
Netherlands	8,81	-5,15	-0,46	-0,55	0,04	0,06
Belgium & Luxembourg	4,20	-2,85	-0,52	-0,36	-0,07	-0,09
Italy	4,10	0,82	0,22	0,60	-0,30	-0,08
<b>France</b>	<b>3,31</b>	<b>-3,08</b>	<b>-0,66</b>	<b>-0,71</b>	<b>0,11</b>	<b>-0,06</b>
Poland	3,30	2,52	1,38	1,52	0,13	-0,27
Ireland	1,89	0,11	0,06	0,07	-0,05	0,04
Austria	1,76	0,38	0,24	0,22	0,00	0,02
Hungary	1,39	-0,47	-0,29	-0,37	0,14	-0,07
United Kingdom	1,33	-0,49	-0,26	-0,66	0,43	-0,04
United States of America	14,02	1,66	0,12	-0,44	0,53	0,03
Canada	7,41	-2,83	-0,32	-0,16	-0,31	0,14
Brazil	3,58	2,31	1,01	1,82	-0,44	-0,37
Mexico	1,15	-0,60	-0,42	-0,15	-0,32	0,05
Chile	1,02	0,67	1,06	1,39	-0,26	-0,08
<b>POULTRY</b>						
<b>EU28</b>	<b>46,85</b>	<b>-2,56</b>	<b>-0,05</b>	<b>0,26</b>	<b>-0,36</b>	<b>0,06</b>
Netherlands	11,24	-3,00	-0,23	0,13	-0,50	0,13
Germany	7,03	2,19	0,37	0,59	-0,36	0,14
Poland	6,07	5,23	1,93	2,52	-0,59	0,00
<b>France</b>	<b>4,47</b>	<b>-8,63</b>	<b>-1,07</b>	<b>-0,74</b>	<b>-0,20</b>	<b>-0,13</b>
Belgium & Luxembourg	3,30	-0,02	-0,01	0,11	-0,25	0,14
United Kingdom	2,32	-1,04	-0,37	-0,26	-0,15	0,05
Hungary	2,23	-0,31	-0,13	0,49	-0,54	-0,08
Spain	1,69	0,41	0,27	0,24	-0,04	0,07
Italy	1,41	0,32	0,24	0,57	-0,32	-0,02
Denmark	1,38	-0,69	-0,40	-0,31	-0,09	0,00
Ireland	0,95	-0,14	-0,14	0,17	-0,57	0,26
Brazil	19,07	9,70	0,70	0,91	0,14	-0,36
United States of America	11,09	-9,07	-0,60	-1,27	0,74	-0,07
Thailand	8,00	1,28	0,18	0,16	-0,41	0,43
China	3,69	-3,81	-0,72	-0,95	-0,23	0,46
Turkey	1,78	1,66	2,54	1,48	1,31	-0,25
Canada	1,36	-0,07	-0,05	-1,73	1,60	0,08
Chile	1,11	0,70	0,96	0,87	0,43	-0,33
Malaysia	1,08	-0,28	-0,23	-0,45	-0,11	0,33

**Table A2: decomposition by product groups within the animal products sector (cont'd)**

Exporter	market share 2016	2000-2016 change	mkt share evolution	competitiveness	geographic structure	product mix
<b>SHEEP &amp; GOATS</b>						
<b>EU28</b>	<b>26,75</b>	<b>-3,99</b>	<b>-0,14</b>	<b>0,74</b>	<b>-0,69</b>	<b>-0,18</b>
United Kingdom	6,74	-4,97	-0,50	0,50	-0,90	-0,10
Spain	4,69	2,19	0,62	1,73	-0,88	-0,24
Ireland	3,72	-1,76	-0,39	0,44	-0,82	0,00
Romania	3,25	1,90	0,86	1,77	0,01	-0,91
Netherlands	2,65	0,44	0,17	1,08	-0,74	-0,16
<b>France</b>	<b>1,50</b>	<b>-0,94</b>	<b>-0,49</b>	<b>0,37</b>	<b>-0,79</b>	<b>-0,07</b>
Belgium & Luxembourg	1,01	-0,10	-0,10	-0,11	-0,25	0,26
Germany	0,91	-0,14	-0,15	0,10	-0,30	0,05
Hungary	0,65	-0,63	-0,68	1,49	-1,20	-0,97
Australia	31,86	8,35	0,30	-0,20	0,40	0,11
New Zealand	28,80	-2,39	-0,08	-0,13	-0,19	0,25
India	2,94	2,20	1,31	0,04	0,93	0,33
Jordan	1,78	1,44	3,00	3,25	0,61	-0,86
Ethiopia	1,47	1,34	2,16	1,47	0,60	0,10
Iran	1,11	-0,02	0,89	1,33	0,06	-0,50
Uruguay	0,72	-0,65	-0,67	-1,52	0,90	-0,05
United States of America	0,40	-1,07	-1,30	-0,71	-0,40	-0,19
Sudan	0,19	-2,70	-1,17	-0,61	0,37	-0,94
Syrian Arab Republic	0,01	-3,43	-4,85	-4,45	0,50	-0,91

Source: Authors' computations using data from BACI. Only countries accounting for 1% or more of world exports in 2000 or 2016 are reported.