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Globalization versus Regionalization in Agri-Food Exports from Spain and Portugal

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Abstract: Spain and Portugal, two countries located in southern Europe, share a significant export specialization in agricultural and agri-food products compared to the EU-27 as a whole. Based on arguments drawn from the literature and information provided by Eurostat, this paper first identifies the characteristics of the dynamics of sales of agri-food products in the international market for the two Iberian Peninsula economies between 2008 and 2022, a period marked by the introduction of restrictions on foreign trade flows worldwide. Secondly, using panel data methodology, it examines how imports by EU-27 partners influence this trajectory. The results confirm the strengthening of export specialization in these two countries, which sell a wide variety of agri-food products in international markets. Additionally, in the case of Spain, the estimated concentration indices show a spatial diversification process towards new destinations. In both economies, however, the EU-27 market, characterized by strong competition and low development expectations, continues to influence export trends in the short and medium terms. Consequently, institutions and companies in the sector must adopt a more dynamic approach and implement actions aimed at facilitating access to new export destinations and consolidating business there. Thus, an increasing share of their exports should be reoriented towards markets with higher demand growth, helping to reinforce the global competitiveness of the national agri-food sector. This research contributes to the scientific literature on the medium- and long-term effects of economic integration processes on the exports of agri-food products of member countries.

Keywords: exports; agriculture; agri-food; panel data; Spain; Portugal

1. Introduction

The Southern European countries of Spain and Portugal, which joined the EEC in 1986, both show a high degree of export specialization in the agri-food sector compared to the EU-27 as a whole. In 2022, the value of exports of agri-food products from Spain to foreign markets amounted to EUR 69.83 billion, representing 9.93% of EU-27 agri-food exports. In comparison, Spain's share in the total volume of EU exports was 5.79%, and its share of the EU GDP was estimated at 8.46%. Similarly, Portugal accounts for a 1.44% share of EU-27 agri-food exports, 1.15% of total merchandise exports, and 1.52% of the EU GDP. As in other areas of the developed world, the agri-food sector plays a crucial role in the Spanish and Portuguese economies, determining the management of natural resources. In both countries, the food and beverage industry is the most important manufacturing industry.

Since 2008, the extra EU-27 export activity of the agri-food sector in the Iberian Peninsula has been conditioned by the restrictive practices imposed by various national economies, especially those of the G-20 [1–5], with complex effects on trade flows [6–8]. It has also been affected by the trade agreements that the EU-27 signed with third countries, in force or provisionally applied between 2008 and 2022, of which there have been more than 50 [9]. The average tariffs applied in 2008 and 2022 to agricultural [10,11] and

non-agricultural products by the United States and China, two of the main non-EU destination countries for EU-27 exports of these types of goods in 2022, and the second- and third-largest importers of such products globally, according to the World Trade Organization (WTO), imply the higher tariff burdens on agri-food goods at both the beginning and the end of the period. Additionally, it is the new non-tariff barriers (anti-dumping, countervailing duties, sanitary and phytosanitary measures, technical barriers to trade, quantitative restrictions, safeguards, special safeguards, tariff quotas, export subsidies) that underlie the neo-protectionist process characterizing international trade in 2022. Lastly, significant differences are observed between these two countries in their trade policies: whereas the North American economy imposes many and varied non-tariff barriers on agri-food imports, the Asian economy presents higher tariff rates but makes comparatively less use of the new non-tariff barriers.

The aim of this study is, firstly, to conduct a comparative analysis of the evolution of Spain and Portugal's agri-food product sales in the international market between 2008 and 2022; by so doing, we can gain a better understanding of these countries' export growth within the EU and globally, during a period marked by an increase in restrictive trade practices and the consolidation of the European integration process. Secondly, it seeks to determine whether this trajectory has been conditioned by the development of competitive advantages that have enabled diversification in exported products and their destinations. According to various authors [12–16], the quality of growth in international sales depends on the ability to export a greater variety of products to more countries. The third aim of this study is to identify which products and markets have contributed the most to the increase in these countries' export revenues, detecting similarities and differences between the two cases. Finally, using a gravity model, it investigates the macroeconomic variables that have influenced the agri-food exports of Spain and Portugal.

Based on the arguments presented above, the following research questions are proposed:

1. Have the exports of agri-food products from Spain and Portugal registered a higher growth rate than those of the EU-27 as a whole, consolidating the export specialization of these two countries?
2. Has there been a process of diversification in the type of agri-food products exported by Spain and Portugal between 2008 and 2022, boosting their competitiveness?
3. Which products have contributed most to the increase in agri-food exports from the two Iberian Peninsula economies between 2008 and 2022?
4. Has there been a process of regionalization of the agri-food product exports from Spain and Portugal in favor of the EU-27, or, on the contrary, are these countries increasing their sales in more distant markets, outside of Europe, in an effort to increase their participation in the global market?
5. Does the size of the destination market, per capita GDP, or distance from the importing country explain the recent evolution of agri-food exports from Spain and Portugal?

This study aims to complement the findings of previous research analyzing the effects of economic integration processes on the trade flows of agri-food products [17–19], particularly in the EU [20–29]. To that end, it explores whether the consolidation of the European agricultural market reinforces the geographical concentration of exports to member state trading partners or, conversely, if a process of spatial diversification takes place. Such diversification could be achieved if national companies develop a competitive advantage, enabling an increase in export destination markets and enhancing the global competitiveness of the national agri-food sector. From the results of this research, conclusions can be drawn to guide measures that could be implemented to boost the competitiveness of this sector.

Following this introduction, the rest of the paper is structured in four sections. The Section 2 presents the contextual framework, data, and methodology used in the research. The Section 3 presents the results, which are then discussed in the Section 4. Finally, the Section 5 details the main conclusions.

2. Materials and Methods

2.1. Contextual Framework

The positive links between export diversification, increased trade revenues, and economic growth have been widely documented in the literature [30], contrary to the principles advocated by Adam Smith, Ricardian economics, neoclassical economics, and the Heckscher-Ohlin-Samuelson model, all of which emphasize the benefits of the produc-tive and commercial specialization of national economies. According to [31,32], the magnitude of exports is important, but the diversity of goods sold in international markets is more significant for sustaining revenue growth from external sales. Many economies that depend on exports of basic products or have a limited basket of exported goods often suffer from the instability of foreign purchases due to inelastic and unstable global demand, which affects the evolution of export revenues, negatively impacting investment and GDP growth [13]. According to [33], Chile is an example of a productive system based on the exploitation of natural resources that successfully diversified into new export activities. Many of the new products sold in international markets, such as wine, salmon, fruits, and forestry goods, present significant comparative advantages, supported by a favorable agro-ecological environment.

On the other hand, [14] argue that the geographical diversification of sales destinations is crucial. Countries with a limited set of trading partners may be affected by demand shocks in partner countries, impacting the quantity and price of goods sold abroad and the associated foreign exchange earnings. According to [15,16], the quality of growth in international sales depends on the ability to export a greater variety of products to more countries. This requires an innovative approach by exporting companies, in the areas of both production and sales, to overcome the cost barriers of opening up new markets beyond national borders [34]. Based on these arguments, this study first attempts to determine whether there has been a sectoral and geographical diversification of agri-food exports from Spain and Portugal during the analyzed period. Secondly, it evaluates whether the recent evolution of exports from Spain and Portugal has been influenced by the possible diversification of the portfolio of agri-food products sold in the international market or, alternatively, by the wider variety of destination markets targeted by exporting companies.

When studying the dynamics of qualitative, sectoral, and spatial diversification of agri-food exports, it is essential to consider the effects of regional economic integration processes. Various studies identify a process of trade expansion supported by the devel-opment of an internal market shared by trading partners, which is especially significant for processed agricultural products and those with high added value [17–19]. Several studies have addressed this topic with a specific focus on the EU, considering different periods and various goods. Generally, the results indicate that the European integration process has significantly boosted trade between member states, promoting trade expansion, although it is not as evident that there has been trade diversion away from third countries [20,21]. Using the gravity model, ref. [35] investigate the effects of the integration of the Spanish agri-food sector into the EU-12, concluding that a significant process of trade creation and diversion towards member countries occurs, promoting export growth. Additionally, ref. [36] argue that Spanish food industry exports have benefited from Spain's EU membership, especially after the transitional period and the dismantling of tariff barriers. This has been aided by the transformation of the sector to adapt to the quality standards demanded by consumers and international markets.

The enlargement of the EU in 2004, which involved the accession of the Czech Re-public, Cyprus, Slovakia, Slovenia, Estonia, Hungary, Latvia, Lithuania, Malta, and Po-land, followed by Romania and Bulgaria in 2007, has prompted many researchers to analyze the trade in agri-food products from partner countries [22–29]. The effects vary depending on the country and the type of products considered in the analysis. For example, while the development of the internal market has contributed to greater sophistication and quality of exported goods in some member countries, such as Poland or the Czech Republic, in other

cases, such as Romania and Bulgaria, a specialization in primary goods persists, reducing overall sector competitiveness.

2.2. Materials

The empirical study that underpins this article is longitudinal and uses secondary information on foreign trade flows provided by Eurostat, the statistical office of the European Commission. It should be acknowledged that trade statistics may be susceptible to errors and discrepancies, and the data available in Eurostat are no exception. The period of analysis, 2008–2022, was chosen to capture the slowdown in trade flows following the 2008 financial crisis and the widespread implementation of trade-restrictive practices from that year onwards [37,38], while 2022 was the last year with available information at the time the analysis was conducted.

The exported products are identified using the classification of the Harmonized Commodity Description and Coding System (HS) of the World Customs Organization, revision 2007. In this classification, products are grouped into 21 sections, which include 97 chapters, subdivided into tariff headings (four digits) and subheadings (six digits), allowing for the identification of 5000 different products. For example, at the six-digit level, it is possible to distinguish between "Fresh or chilled pig carcasses and half-carcasses" (020311) and "Hams, shoulders, and cuts thereof, with bone-in, fresh or chilled" (020312), which should be grouped together for the purposes of this analysis. Specifically, the agri-food products that are the focus of this analysis are included in sections I to IV: I. "Live animals; animal products" (chapters 1 to 5); II. "Vegetable products" (chapters 6 to 14); III. "Animal or vegetable fats and oils and their cleavage products; edible fats; animal or vegetable waxes" (chapter 15); and IV. "Prepared foodstuffs, beverages, spirits, and vinegar; tobacco and tobacco substitutes…" (chapters 17 to 24) [24]. In this study, a four-digit disaggregation level is used, yielding a total of 202 different categories. In the disaggregation by product types and markets, a minimum threshold of EUR 400,000 has been applied (this is the established limit above which EU-27 exporters/importers must make the Intrastat declaration for intra-community trade [39]). Other studies of a country's overall trade flows have used the two-digit ISIC classification level [16], or the three-digit ISIC classification level [16] or the three-digit ISIC classification level [18], meaning this research is based on a higher level of disaggregation.

The figures on exports and GDPs of EU countries are expressed in constant EUR to avoid erroneous conclusions due to the inflation recorded between 2008 and 2022, especially during the last two years as a result of the effect of the Ukraine War on agri-food product prices in EU countries [40]. The figures on each country's agri-food product exports are deflated using the deflator of agri-food products provided by [41]. To deflate the value of total exports and GDPs of EU-27 countries, the GDP deflator of each country is used, as indicated by FAOSTAT. Other sources of information used include [9,42–44].

2.3. Descriptive Statistics and Indices

To address the first four questions posed in the introduction, descriptive statistics are used, and different indices are estimated, following the methodology applied by [16,24–26,29].

The analysis of the comparative advantages of Spain and Portugal in agri-food products utilizes the concept of "revealed" comparative advantage (RCA) introduced by [45–47]. Under this concept, the relative importance of Spain's exports or Portugal's exports of agri-food products is compared with the share of these exports in the total agri-food exports of the EU-27. The formula employed is as follows:

$$RCA = \frac{\dfrac{X_{i,j,t}}{X_{jt}}}{\dfrac{X_{i,EU\text{-}27,t}}{X_{EU\text{-}27,t}}}$$

where:

$X_{i,j,t}$: Exports of product i from country j in year t

X_{jt}: Total exports of country j in year t

$X_{i,EU\text{-}27}$: Exports of product i in the EU-27 as a whole in year t

$X_{EU\text{-}27,t}$: Total exports of the EU-27 as a whole in year t

i: agri-food products exported

j: Spain, Portugal

t: year

RCA is calculated for the years 2008 and 2022. The relative trade balance, which compares the value of exports and imports of a particular sector [45], is calculated on the assumption that exports express a country's trade advantages, while imports reveal deficiencies or limitations. The indicator for the relative trade balance is calculated as follows:

$$NX_{ij} = \frac{X_{ij} - M_{ij}}{X_{ii} + M_{ij}}$$

where:

X: Exports

M: Imports

i: type of product

j: country (Spain, Portugal)

The index ranges between 1 and -1. A value of 1 indicates that there are only exports, and the trade advantage is maximum; a value of -1 indicates that there are only imports, and the trade dependency is maximum.

To determine the degree of concentration of agri-food exports, the Hirschman index [48] is calculated. For country j, this index is defined as follows, where i represents the type of agri-food product exported:

$$HI_j = \sqrt{\sum_{i=1}^{n} \left(\frac{X_i}{\sum_i^n X_i} \right)^2}$$

This index compares effective concentration with an evenly distributed composition of products (or export markets), where a higher index indicates a greater concentration of exports. In the case of absolute concentration, the index would be equal to 1, and conversely, in the most diversified case, it would be close to 0 [49].

The degree of similarity between exports from the two countries is quantified using the index proposed by [50], defined as:

$$SI_{i,j} = 100 \times \sum \text{minimum} \left[\frac{X_{iEsp}}{\sum_{i=1}^{n} X_{iEsp}}, \frac{X_{iPort}}{\sum_{i=1}^{n} X_{iPort}} \right]$$

where:

i: agri-food product exported

Esp: Spain

Port: Portugal

A value equal to 100 would indicate an identical sectoral composition of agri-food exports from Spain and Portugal, meaning they are potentially competing in international markets. Conversely, an index close to 0 would indicate total divergence in products.

To assess the differential effect on Spain's and Portugal's agri-food exports caused by the sales of a specific product (or sales to a specific destination country), the shift–share method is used [50]. This method allows us to decompose variations or changes (shifts) in an economic magnitude—in this case, the exports of a specific product (or to a specific country) from Spain and Portugal—into several parts (shares):

$$X_{ijt} - X_{ij0} = SE + DE$$

where:

X_{ij0}: Export in year 0

X_{ijt}: Export in year t

i: Spain, Portugal

j: Destination country (or aggregate set of countries) of exports

SE (sector effect): variation in agri-food exports from a country (i) to a destination (j) if its growth rate were equivalent to the average of the entire agri-food sector of the exporting country i (ri).

$$SE = \left(X_{ijt} - X_{ijo} r_i \right)$$

where:

$$r_i = \frac{\sum_{J=1}^{n} X_{ijt} - \sum_{j=1}^{n} X_{ij0}}{\sum_{J=1}^{n} X_{ij0}}$$

DE (differential effect): variation in the agri-food exports from a country (i) of a product (to a destination) (j), based on the characteristics of the demand. Products (countries) with a positive DE present opportunities for export, while those with a negative DE exhibit a growth rate below the sector average.

$$DE = (X_{it} - X_{io}) - (X_{it} - X_{io}r) \tag{1}$$

The identity (1) expressed in terms of growth rates would be as follows:

$$\frac{(X_{it} - X_{io})}{X_{i0}} = \frac{SE}{X_{io}} + \frac{DE}{X_{io}} = se + de$$

2.4. Panel Data Analysis

To verify the potential association between the exports of agri-food products from Spain and Portugal and the demand for such goods from countries within or outside the EU aggregate, a gravity model is used. This model has traditionally been used in the empirical literature on trade to analyze trade flows between countries. The traditional gravity model was first introduced [51] to explain bilateral trade flows in the absence of discriminatory trade barriers. Reflecting Newton's law of gravity, the model includes several explanatory variables, among which are the demand from the importing country, and the cost of transportation, with the latter variable introducing the effect of distance between trading partners [52]. The flow of trade is expected to be positively related to the size of the market and the consumption of the countries, but inversely linked to the distance between trading countries. Subsequent empirical studies have introduced additional variables that complement the simpler gravity model, allowing for the analysis of the influence of artificial barriers to international trade [53–55]. Based on the arguments presented here, the following equation is tested:

$$EXP_{it} = \alpha it + \alpha 1 GDP_{it} + \alpha 2 GDPpc_{it} - \alpha 3 Dist_{it} + \alpha 4 EU_{it} + \alpha 5 Trade\_Ag_{it} + \alpha eit$$

where:

EXP_{it}: Logarithm of the exports of agri-food products from country i to country j at time t.

GDP_{it}: Logarithm of the GDP of importing country i.

$GDPpc_{it}$: Logarithm of GDP per capita of exporting countries.

$Dist_{it}$: Distance from the capital of country i to the capital of country j.

EU_{it}: Dummy variable indicating whether country i belongs to the EU at time t.

$Trade\_Ag_{it}$: Dummy variable indicating whether there is an association agreement between country i and the EU at time t.

α: Estimated coefficients: These coefficients complete the relationship along with a constant, capturing other exogenous effects not included, and the error term, e_{it}.

The EU_{it} and $Trade\_Ag_{it}$ variables incorporate institutional factors into the analysis, in the sense indicated by [56].

Panel data analysis is used to capture the influence of unmeasured variables that may explain variation between countries. A total of 74 destination countries are considered in the analysis; specifically, those that account for more than 0.05% of total agri-food exports in 2022. Variables are presented in logarithms, and a sequence of econometric models is formulated until the optimum model is identified. Table 1 provides the definitions of the variables.

Table 1. Definition of the variables.

| Variable	Definition	Source and Unit
EXP_{it}	Logarithm of the exports of agri-food products from country i to country j at time t in EUR, at constant prices.	The value of agri-food product exports at current prices comes from [39].
GDP_{it}	Logarithm of the GDP of importing country i, which approximates the size of the export market.	GDP data (constant 2015 USD) comes from [42].
$GDPpc_{it}$	The logarithm of GDP per capita of exporting countries is used as an indicator of demand.	GDP per capita is calculated by dividing GDP by population for each country [42].
$Dist_{it}$	Distance in kilometers between the two main cities of the respective countries.	[44]
EU_{it}	Dummy variable indicating whether country i belongs to the EU at time t.	[43]
$Trade\_Ag_{it}$	Dummy variable indicating whether there is an association agreement between country i and the EU at time t.	[9]

Source: Own elaboration.

A panel data approach is appropriate due to the inclusion of time periods and the likely presence of unobserved individual effects. The use of this technique has multiple advantages, such as the fact that it reduces collinearity between variables, enables the construction of more complex models, eliminates or reduces bias in results when aggregating information, and identifies and evaluates effects not detected by cross-sectional or time-series analysis [57]. However, drawbacks include problems with design and data collection, cross-sectional dependence and short time series. Stata 11.0 software was used for the analysis.

3. Results

3.1. Growth of Agri-Food Product Exports from Spain and Portugal

Between 2008 and 2022, a rising trend is observed the sales of agri-food products from Spain and Portugal outside their national borders, with a steady increase in value from the year 2010, confirming the export specialization of this sector and its competitiveness in international markets, as confirmed by the RCA in Table 2. However, the data in Figure 1 show that this sector is larger in Spain: in 2022, Spain exports eight times more agri-food products than Portugal.
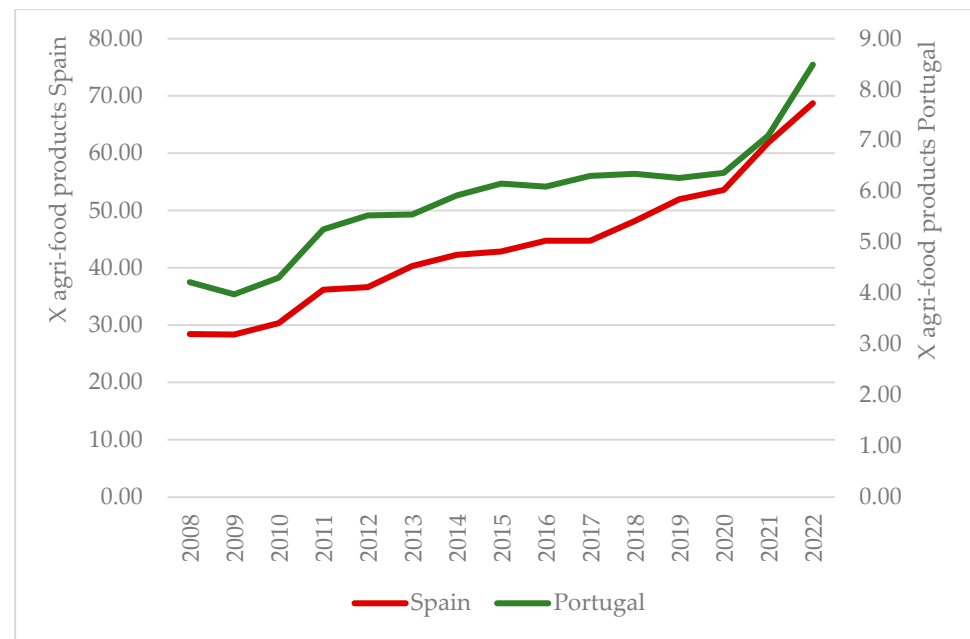
Figure 1. Evolution of agri-food product exports from Spain and Portugal between 2008 and 2022 (in billions of EUR at constant prices). Source: [39].

Table 2. Exports of agri-food products in the EU-27 countries in 2008 and 2022 and main indicators.

	Agri-Food EXP (Million EUR)		Share of Export in %		RCA		NX		EXP [1]	GDP [2]
	2008	2022	2008%	2022%	2008	2022	2008	2022	2008–2022	2008–2022
EU-27	335,305.90	472,107.00	100.00	100.00			0.01	0.04	2.47	0.91
Belgium	29,027.36	34,186.71	8.66	7.24	1.01	0.83	0.04	0.07	1.18	1.34
Bulgaria	1935.13	5583.34	0.58	1.18	1.41	2.37	0.04	0.11	7.86	1.81
Czechia	4298.87	7109.82	1.28	1.51	0.48	0.48	−0.10	−0.08	3.66	1.54
Denmark	15,078.15	16,688.04	4.50	3.53	2.11	1.92	0.20	0.13	0.73	1.48
Germany	52,916.81	39,251.01	15.78	8.31	0.60	0.37	−0.10	−0.12	−2.11	1.03
Estonia	796.88	842.98	0.24	0.18	1.05	0.76	−0.17	−0.07	0.40	1.77
Ireland	8146.35	8756.62	2.43	1.85	1.06	0.57	0.16	0.18	0.52	6.14
Greece	4257.34	9169.61	1.27	1.94	2.23	2.01	−0.25	−0.05	5.63	−1.59
Spain	28,437.87	68,738.17	8.48	14.56	1.65	2.23	0.02	0.11	6.51	0.47
France	49,851.77	53,419.63	14.87	11.32	1.32	1.20	0.10	0.06	0.49	0.86
Croatia	964.15	3307.05	0.29	0.70	1.12	1.95	−0.30	−0.16	9.20	0.67
Italy	26,740.74	46,128.79	7.98	9.77	0.81	0.98	−0.12	0.01	3.97	0.01
Cyprus	221.95	430.40	0.07	0.09	2.22	1.33	−0.62	−0.53	4.84	1.80
Latvia	1174.60	2487.03	0.35	0.53	1.89	1.71	−0.13	0.02	5.50	0.86
Lithuania	2577.73	3708.78	0.77	0.79	1.78	1.47	0.04	0.13	2.63	2.01
Luxembourg	796.19	1015.72	0.24	0.22	0.51	1.04	−0.37	−0.32	1.75	1.85
Hungary	5801.29	3930.15	1.73	0.83	0.87	0.57	0.20	0.15	−2.74	−1.23
Malta	173.80	382.82	0.05	0.08	0.82	1.95	−0.49	−0.39	5.80	5.07
Netherlands	65,936.19	98,384.51	19.66	20.84	1.69	1.50	0.22	0.17	2.90	1.26
Austria	8581.47	12,466.36	2.56	2.64	0.77	0.92	−0.03	0.00	2.70	1.00
Poland	11,639.09	23,438.44	3.47	4.96	1.12	1.13	0.06	0.19	5.13	1.41
Portugal	4216.81	8489.22	1.26	1.80	1.21	1.49	−0.32	−0.21	5.12	0.70
Romania	2161.98	6593.48	0.64	1.40	0.71	1.55	−0.34	−0.05	8.29	0.06
Slovenia	1073.92	2453.74	0.32	0.52	0.51	0.53	−0.28	−0.13	6.08	1.19
Slovakia	1970.94	4214.03	0.59	0.89	0.45	0.56	−0.18	−0.16	5.58	2.25
Finland	1398.13	2019.24	0.42	0.43	0.24	0.36	−0.44	−0.51	2.66	0.46
Sweden	5130.38	8911.31	1.53	1.89	0.46	0.71	−0.31	−0.24	4.02	1.23

[1] Average annual real variation rate of agri-food product exports. [2] Average annual real variation rate of GDP. Source: [39,41].

Table [2] shows the average accumulated growth rate of agri-food exports of the EU-27 countries in 2008 and 2022. Several observations can be made from the data. Firstly, all countries except for Germany and Hungary increase the value of their sales during the analyzed period. In 19 countries (Bulgaria, Czechia, Greece, Spain, Croatia, Italy, Cyprus, Latvia, Lithuania, Malta, the Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden), the average growth rate of exports of agri-food products doubles the increase in the overall national productive activity, quantified by the average accumulated growth rate of GDP. Particularly noteworthy are Croatia and Romania, with average annual growth rates of 9.20% and 8.29%, respectively; these countries manage to more than triple the value of their sales in international markets.

Spain and Portugal record an average annual variation rate in their agri-food exports of 6.51% and 5.12% at constant prices, respectively, doubling the value of their sales in international markets over the analyzed period and consolidating their export specialization in products that are typical of these two Southern European economies. However, there are significant differences between these two countries, firstly, in terms of business volume in international markets and relative importance in the context of the EU-27. Spain, with a sales volume of EUR 28,438.87 million in 2008, is the origin of 8.48% of the total products exported by the entire EU-27, a percentage that rises to 14.16% in 2022. In comparison, Portugal reports a value of EUR 4216.81 million in exports in 2008, accounting for 1.26% of the total EU-27, and lighly less than 2% in 2022. Therefore, although the agri-food sectors of both Spain and Portugal have strengthened their export specializations, it is the Spanish sector that presents competitive advantages, generating net export revenues of EUR 1307.6 million in 2022 and contributing very positively to the country's trade balance. In light of these findings, we now carry out a more detailed analysis of the products and markets that explain this evolution in both Spain and Portugal.

3.2. Exported Products

In this section, we evaluate the diversity of exported products defined at the four-digit level of the SA-2007, applying the EUR 400,000 threshold to identify "new" export products. Based on the information in Table [3], we can assert that both Portugal and Spain—but particularly Spain—place a wide variety of agri-food goods in international markets, adding 186 and 161, respectively, in 2022. The values of the Hirschman concentration index in 2008 and 2022 demonstrate the high diversification by type of agri-food product exports of both countries, but especially Spain. Out of a total of 186 different categories of agri-food goods exported by Spanish companies in 2022, 178 were already sold at the beginning of the period, with export revenue from new products amounting to EUR 48.07 million, accounting for 0.06% of the total. In Portugal, 162 types of products were exported in 2022, 11.72% more than in 2008, with the share of new products in total export revenue being only 0.46%.

Table 3. Number of agricultural products exported defined at the four-digit level (SA-2007) by Spain and Portugal in 2008 and 2022, and concentration index (CI).

	No. of Exported Products (2008)	No. of New Exported Products (2022)	No. of Products Not Exported (2022)	No. of Exported Products (2022)	CI (2008)	CI (2022)
Spain	180	8	2	186	0.17	0.16
Portugal	145	18	2	161	0.20	0.18

Source: [39].

From the analyzed data, it can be inferred that it is not new products that explain the recent evolution of exports from these two economies: quite the contrary, it may be due to a consolidation of their commercial activity in traditional markets or, conversely, in new markets (this will be clarified in the following section).

Table 4 presents the shares of the top 10 categories of agri-food goods exported by Spain and Portugal in 2008 and 2022, along with the differential effect (DE) of each one. Analyzing these figures reveals some interesting characteristics of their agri-food exports. Firstly, in both countries, wine of fresh grapes (HS code 2204) and olive oil and its fractions (HS code 1509) stand out as the main contributors to export revenue, with the two categories combined accounting for an estimated 10.59% in the case of Spain and 18.54% for Portugal in 2022. Moreover, in both countries, the activity in the international markets of the olive oil subsector far exceeds that of the wine subsector during this period. Specifically, in Portugal, exports of HS code 1509 in 2022 rise to a share of 9.25%, contributing very positively to the increase in export revenue for the entire sector. The Spanish olive oil subsector more than doubles the value of its sales during these years (127.41%), although it presents a negative differential effect compared to the overall sector.

Table 4. Shares of the top 10 agri-food products exported by Spain and Portugal in 2008 and 2022 and differential effect (de).

Tariff Code	Product	2008 (%)	2022 (%)	de (%)
	Spain			
0805	Citrus fruit, fresh or dried	8.51	5.35	−0.90
2204	Wine of fresh grapes, including fortified wines; grape must be other than that of heading 2009	6.85	4.51	−0.82
1509	Olive oil and its fractions, whether refined or not, but not chemically modified	6.45	6.08	−0.14
0203	Meat of swine, fresh, chilled, or frozen	5.82	8.65	1.17
0709	Other vegetables, fresh or chilled	3.78	3.91	0.08
0702	Tomatoes, fresh or chilled	2.98	1.65	−1.08
2005	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen, other than products of heading 2006	2.54	1.84	−0.67
0809	Apricots, cherries, peaches (including nectarines), plums, and sloes, fresh	2.51	1.78	−0.70
0810	Other fruit, fresh	2.17	2.99	0.91
0303	Fish, frozen, excluding fish fillets and other fish meat of heading 0304	2.12	1.25	−0.99
	Portugal			
2204	Wine of fresh grapes, including fortified wines; grape must be other than that of heading 2009	14.48	9.29	−0.72
2402	Cigars, cheroots, cigarillos, and cigarettes, of tobacco or of tobacco substitutes	7.43	7.05	−0.10
0401	Milk and cream, not concentrated nor containing added sugar or other sweetening matter	3.44	0.84	−1.52
2203	Beer made from malt	3.43	1.51	−1.13
1509	Olive oil and its fractions, whether refined or not, but not chemically modified	3.36	9.25	3.52
1701	Cane or beet sugar and chemically pure sucrose, in solid form	3.31	1.40	−1.16
1604	Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs	2.99	2.79	−0.14
2002	Tomatoes prepared or preserved otherwise than by vinegar or acetic acid	2.92	3.26	0.23
1905	Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa; communion wafers, empty cachets of a kind suitable for pharmaceutical use, sealing wafers, rice paper, and similar products	2.87	3.11	0.17
0302	Fish, fresh or chilled, excluding fish fillets and other fish meat of heading 0304	2.26	1.61	−0.58

Source: [39].

In Spain, there is a notable change in the sale of fresh pork meat, which more than triples, registering a share of 8.65% of the total in 2022. On the contrary, a traditional exporting sector such as fresh fruits and vegetables (comprising products under HS codes 0805, 0702, 0809, 0810) records a decline in its share, despite the increase in exports of HS code 0810, which includes strawberries and berries, and 0709, which groups various products such as eggplants, spinach, and mushrooms. Also losing prominence are products of HS codes 2005 (other prepared or preserved vegetables) and 0303 (frozen fish).

In the export dynamics of the main products exported from Portugal, the positive variation observed in certain foods contrasts with the decline in sales of traditional goods

such as grape wine (HS code 2204), which accounts for 9.29% of the total in 2022, milk and cream (HS code 0401), cane or beet sugar and chemically pure sucrose (HS code 1701), or malt beer (HS code 2203). Among the agro-industries that increase their international sales are olive oil (HS code 1509)—which nearly triples its share; bakery, pastry, or biscuit products (HS code 1905); and prepared or preserved tomatoes (HS code 2002).

Data provided in this research reveal that, overall, there have been no major changes in the export structure of the agri-food sectors of Spain and Portugal between 2008 and 2022. Both sectors have traditionally been quite diversified, exporting a wide portfolio of products. However, certain shifts are observed. In Spain, the relative importance of fruits and vegetables and grape wine has declined in favor of olive oil, pork meat, and others. In Portugal, it is olive oil, bakery and biscuit products, and prepared or preserved tomatoes that show a positive differential, in contrast to the negative values recorded for the rest of the goods considered in Table 4. Overall, the changes that have occurred have led to an increase in the similarity index of the two countries' export structures of agri-food products in this period, rising from a value of 51.64% in 2008 to 58.04% in 2022.

3.3. Export Markets

According to various authors [14–16], the strengthening and consolidation of the internationalization process of a national economy is manifested in its ability to export to a greater number of countries. In this section, we analyze whether there has been an increase in the number of destination markets to which the agri-food sectors of Spain and Portugal have sent their exports between 2008 and 2022. Data presented in Table 4 confirm a significant increase in the number of trading partners, at first glance indicating a greater geographical diversification in the destination of sales made outside national borders. It is worth noting that, for the purposes of this study, a country must receive exports of more than EUR 400,000 to be considered a new destination. In 2022, the geographic concentration index for Spain registers a value of 0.26, with 175 countries receiving exports from Spanish companies. The 25 new countries receive 0.10% of Spain's total exports in 2022. However, Portugal shows a higher concentration coefficient, reaching 0.43 in 2008 and 0.42 in 2022. In this case, although the absolute number of destination markets has grown by 51 to reach a total of 132 markets, a few EU-27 partners account for almost three-fifths of its exports abroad (see Table 5).

Table 5. Number of destination countries to which Spain and Portugal export agri-food products in 2008 and 2022 and concentration index (CI) of agri-food product exports in 2008 and 2022.

	No. of Countries Exported to in 2008	No. of New Countries Exported to in 2022	No. of Countries Not Exported to in 2022	Total Number of Countries Exported to	CI (2008)	CI (2022)
Spain	158	22	5	175	0.31	0.26
Portugal	81	54	3	132	0.43	0.42

Source: [39].

Data in Table 6 show the distribution of agri-food product exports from Spain and Portugal in 2008 and 2022 among the EU-27 countries and non-EU-27 countries. All countries that had a share greater than 1% at the beginning of the period are included in the analysis. The table also presents the differential effect by country. Data reveal several noteworthy aspects. Firstly, both countries show a notable orientation towards the European market. However, whereas an increasing prominence of EU-27 economies is observed for Portugal, the share of this bloc of 27 European partners as a destination for exports from Spain declines, with a negative differential effect of −0.25. Data represented in Figure 2 confirm a continued process of diversification in Spanish exports outside the EU-27. On the other hand, the process of regionalization and concentration in favor of EU partners is consolidated in Portugal from 2014 onwards.
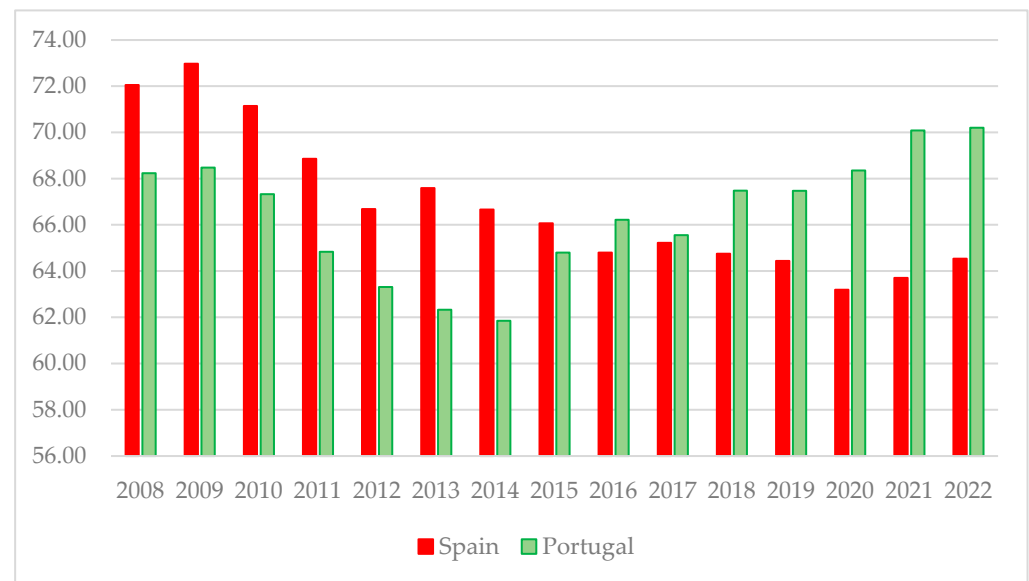
Figure 2. Shares of EU-27 countries in the destination of agri-food product exports from Spain and Portugal between 2008 and 2022. Source: [39].

Table 6. Distribution by country of agri-food product exports from Spain and Portugal in 2008 and 2022 (in %) and country-specific differential effect (de).

Spain	2008	2022	de	Portugal	2008	2022	de
EU-27	72.05	64.53	−0.25	**EU-27**	68.23	70.2	0.06
Belgium	2.51	2.35	−0.16	Belgium	2.35	1.98	−0.32
Bulgaria	0.18	0.33	1.95	Bulgaria	0.02	0.13	14.38
Czechia	0.85	1.07	0.65	Czechia	0.38	0.23	−0.81
Denmark	1.06	0.94	−0.28	Denmark	0.61	0.54	−0.24
Germany	11.89	10.8	−0.22	Germany	2.91	3.42	0.35
Estonia	0.1	0.11	0.17	Estonia	0.06	0.07	0.24
Ireland	0.46	0.56	0.55	Ireland	0.41	0.33	−0.38
Greece	1.12	0.86	−0.57	Greece	0.34	0.38	0.25
France	19.16	15.34	−0.48	Spain	38.38	39.05	0.04
Croatia	0.19	0.31	1.46	France	9.4	9.36	−0.01
Italy	11.81	9.8	−0.41	Croatia	0.01	0.07	24.37
Cyprus	0.17	0.11	−0.96	Italy	6.72	6.57	−0.05
Latvia	0.15	0.19	0.64	Cyprus	0.09	0.08	−0.25
Lithuania	0.27	0.22	−0.37	Latvia	0.01	0.1	15.85
Luxembourg	0.09	0.06	−0.75	Lithuania	0.04	0.07	1.62
Hungary	0.39	0.6	1.29	Luxembourg	0.68	0.59	−0.26
Malta	0.11	0.11	−0.06	Hungary	0.09	0.14	1.15
Netherlands	4.91	4.86	−0.02	Malta	0.02	0.09	6.11
Austria	0.62	0.67	0.21	Netherlands	3.67	3.96	0.16
Poland	1.85	2.43	0.77	Austria	0.38	0.3	−0.45
Portugal	11.93	10,00	−0.39	Poland	0.57	1.54	3.45
Romania	0.4	0.82	2.57	Romania	0.17	0.19	0.28
Slovenia	0.14	0.16	0.21	Slovenia	0.01	0.06	7.18
Slovakia	0.2	0.35	1.67	Slovakia	0.01	0.09	14.81
Finland	0.41	0.38	−0.18	Finland	0.34	0.26	−0.48
Sweden	1.07	1.09	0.04	Sweden	0.57	0.63	0.19
Rest of the world	27.95	35.47	0.65	Rest of the world	31.77	29.8	−0.12
United Kingdom	8.27	6.63	−0.48	Angola	9.99	2.93	−1.42
United States of America	2.88	4.47	1.34	United Kingdom	5.77	4.05	−0.6
Russia	1.76	0.4	−1.87	Brazil	3.65	5.03	0.76

Table 6. *Cont.*

Spain	2008	2022	de	Portugal	2008	2022	de
Switzerland	1.24	1.1	−0.26	United States of America	1.96	2.69	0.75
Japan	1.16	1.93	1.62	R. of Cape Verde	1.27	1.1	−0.28
Morocco	0.53	1.48	4.34	Canada	1.1	0.88	−0.42
China	0.39	3.57	19.51	Switzerland	1.09	1.27	0.32
South Korea	0.29	1.37	9.13				
Philippines	0.14	1.00	14.70				

Source: [39].

Secondly, there are significant differences in the differential effects shown by various countries as importers of agri-food products from Spain and Portugal. For Spanish products, a positive differential due to the boost in sales is observed primarily from a majority of countries that joined the EU after 2004, such as Slovakia, Slovenia, Romania, Poland, Hungary, Croatia, Estonia, Czechia, and Bulgaria), more distant Asian markets (China, South Korea, Japan, and the Philippines), the United States, and Morocco. In contrast, a negative differential is recorded for traditional EU-27 markets (France, Germany, the Netherlands, Portugal Luxembourg, Greece, Denmark, or Belgium); and beyond the EU, for the United Kingdom, due to changes in trade policy following its exit from the EU in February 2020, and Russia, due to the sanctions imposed by the EU-27 following the start of the Ukraine War in 2022.

In 2022, 70.20% of Portugal's exports were concentrated in the EU-27 market, with its main trading partners being Spain (39.05%), France (9.36%), Italy (6.57%), the Netherlands (3.96%), and Germany (3.42%). In contrast, the new partners have relatively small shares. Outside this trade bloc, a negative differential effect can be observed for Angola, which reduces its share to 2.93% in 2022, the United Kingdom, and Canada, contrasting with the increase in exports to Brazil, the United States, and Switzerland.

3.4. Panel Data

Table 7 shows the results of the estimations using the Pooled Cross-Sectional and Time Series Estimation model (PCSE) for Spain and Portugal. The model is estimated using data from 74 countries, with a total of 1110 observations, for the period 2008 to 2021. The optimum model is chosen by testing a number of econometric models to identify the best one. First, we estimate the model with pooled data, comparing it with the random effects model. To decide which is better, the Breusch Pagan Lagrangian Multiplier Test is performed, which rejects the hypothesis that there is no variation across countries. Accordingly, the random effects model is chosen. Then, the estimation is carried out with fixed effects, with the Hausman test being conducted to compare the fixed and random effects models, as a result of which the fixed effects model is chosen. The other tests applied are the Wooldridge test (to control for autocorrelation or first-order serial correlation), the modified Wald test (for groupwise heteroscedasticity), and the Breusch–Pagan test for cross-sectional independence (for contemporaneous heteroscedasticity). The absence of autocorrelation and heteroscedasticity is thus confirmed; however, the Breusch–Pagan test for cross-sectional independence shows that the correlation matrix of residuals is singular, meaning it is not possible to use this test. Consequently, the Pesaran test for cross-sectional independence has been used, with the results indicating that it is necessary to correct the contemporaneous correlation. To solve all these problems, the PCSE model is applied, since it is the recommended option for fixed effects [58].

The results are different for Spain and Portugal. The panel data results for Spain show that all the variables are significant, confirming the link with the dependent variable, exports of agri-food products: the variables capturing demand in the destination country (GDP), demand in the importer country (GDPpc), EU membership, and having a trade agreement are all positive and significant at 5%; the distance variable and the size of the target market, approximated by GDP, are also significant at 5%, showing a negative

relationship with the volume exported. Therefore, the expected relationship is confirmed in all the cases. In the model using Portugal data, only two variables can be confirmed as significant at 5%, showing the expected positive sign, GDP, and distance.

Table 7. Panel data estimates.

EXP	Spain (PCSE)			Portugal (PCSE)		
	Coef.	Z	*p*-value	Coef.	Z	*p*-value
GDP	0.55	17.97	0.000	0.42	9.65	0.000
GDPpc	0.22	3.69	0.000	0.12	1.61	0.108
Dist	−0.01	−8.07	0.000	−0.01	−8.29	0.000
EU	0.44	4.14	0.000	0.29	1.45	0.148
Trade_Ag	0.18	2.33	0.020	−0.06	−0.42	0.675
Constant	−4.14	−4.63	0.000	−2.03	−1.89	0.059
Observations	1110			1106		
No. of entities	74			74		
Wald chi^2	Wald chi^2 (5) = 654.99 Prob > chi^2 = 0.000			Wald chi^2 (5) = 226.23 Prob > chi^2 = 0.000		
Hausman test	Chi^2(4) = (b-B)′[(V_b-V_B)^(−1)](b-B) = 148.73 Prob > chi^2 = 0.000			Chi^2(4) = (b-B)′[(V_b-V_B)^(−1)](b-B) = 119.34 Prob > chi^2 = 0.000		

Source: Own elaboration.

4. Discussion

The years following the 2008 financial crisis witnessed slow growth in international trade flows, with an uneven impact by product type and countries. Trade barriers imposed by national economies were one of the elements that can explain this evolution [59,60]. In this context, the exports of agri-food products from Spain and Portugal increased in real terms by 141.71% and 101.32%, respectively, between 2008 and 2022. This confirms the export specialization of their agri-food sector, particularly in the case of the Spanish economy, indeed, Spain accounted for 14.56% of the total volume of agri-food products sold in international markets by the EU-27 countries in 2022. These results are consistent with the export growth of partner countries in the community process, as evidenced by [20,21,35], and reflect the findings reported for Spain. In fact, the agri-food sector of the two Iberian countries demonstrates significant resilience, as argued by [61] for Spain and [62] for Portugal.

In 2022, Spain and Portugal placed a wide variety of agri-food products in international markets, a total of 186 in the case of Spain and 161 for Portugal. Furthermore, none of the product categories considered accounted for more than 10% of the total revenues of the agri-food trade balance of these two countries in 2022. This diversification enhances their competitiveness, as argued by [28,36]. According to [18], cooperation among small-scale enterprises has facilitated the internationalization of the Spanish agri-food sector, potentially contributing to an increased variety of goods sold in international markets. Additionally, there is a process of differentiation and sophistication in the type of goods sold by the agri-food sector, similar to what is happening in Italy [63], contributing to the increase in exports of organic products [64] and certified quality products [65]. Overall, a series of changes occur in the analyzed period, as indicated by [36], leading to improvements in the quality of these countries' export structures. The diversification of the portfolio of goods sold abroad helps to consolidate the comparative advantage of the agri-food sector [27], promotes sustained growth in productive activity, and thus helps grow the national economy [13].

Between 2008 and 2022, there has also been a process of diversification of destination markets. The number of countries to which Spanish companies sell their products has increased to 175, and the corresponding total for Portuguese companies has reached 132. In the case of Spain, it is more distant markets, particularly those not involved in the European integration process, which have contributed most to export growth, in line with

the arguments put forward by [66]; however, this finding contradicts the concentration of trade in the integrated zone reported by [20,21]. Two key components are identified in the changes in the spatial distribution of Spanish exports. On the one hand, there are the countries with which the EU-27 has trade agreements, such as Japan and Morocco, and on the other hand, large-scale markets, notably the United States and China. These two countries show a positive differential in their imports, despite the restrictions their governments have imposed in recent years on imports of agri-food products and the need to adapt products to local regulations [21]. The evolution of Spanish exports coincides with that identified in the recent trajectory of Polish exports of agri-food products [67,68]. The spatial diversification of Spanish exports is due to the consolidation of the sector's internationalization process, which has allowed companies to overcome entry barriers in destination markets [69], while addressing the issue of transaction and coordination costs by having a presence in a wider variety of countries [70] and leveraging economies of experience, as noted by [71].

Despite the situation described above, it is worth noting that, in general, the exports of agri-food products from these two countries remain highly dependent on geographically close markets, with higher GDP, as evidenced by the results of the gravity model estimated for Spain and Portugal. In the case of the Spanish economy, in line with previous research [35,36], exports are positively influenced by the trading partner's per capita GDP, membership of the EU-25, and, to a lesser extent, having a trade agreement in place between trading partners. In 2022, four members of the EU-27 (Germany, France, Portugaland the Netherlands) and the United Kingdom accounted for 47.63% of the total exports from Spain. That same year, Portugal sent 39.05% of its total exports to its eastern neighbor. This situation means that the agri-food sectors of the Iberian countries are highly dependent on the evolution of the EU market, as is the case in other EU countries, such as Poland [67].

However, this market is facing a particularly unfavorable situation due to several factors. Firstly, the fall in demand, attributed to the low population growth rate [72] and the aging process, negatively influences food consumption [73]. The second factor is the strong competition from partner countries [29] and nearby economies in the northern and southern Mediterranean [74–78], as well as more distant African [79] or Asian economies [80]. The conditions of the European agri-food market negatively affect the evolution of export revenues for Spain and Portugal, making it more difficult for their companies to do business outside the domestic market.

5. Conclusions

Using quantitative information provided by different databases from international institutions such as Eurostat [39,43], the World Bank [42], and CEPII [44], this study analyzes the recent evolution of agri-food exports from Spain and Portugal, two Southern European countries that have traditionally shown productive specialization in this sector. The aim is to help explain the dynamics of agri-food product exports by two EU-27 partner countries in a period of consolidation of European integration, identifying similarities and differences between the two countries.

The results of the study allow us to answer the questions raised in the introduction, confirming the agri-food specialization of both economies, the dynamics characterizing the recent evolution of these sectors, and the diversity of products they place in international markets year after year, which positively contributes to the strength of these countries' agri-food sectors. In both countries, the olive oil and wine subsectors continue to hold prominent positions, although the former is on the rise while the latter has declined.

In terms of geographical trajectories, these two Iberian Peninsula countries continue to show a marked dependence on the EU-27 market, although the Spanish agri-food sector has managed to reduce this dependence by focusing on new non-EU markets that are geographically more distant and have higher per capita income. In contrast, Portugal has reinforced its dependence on EU partners, particularly neighboring Spain. Overall, this situation influences the short- and medium-term evolution of exports from Spain and

Portugal, requiring an appropriate marketing strategy that allows them to leverage their comparative advantages, boost their competitiveness, and take advantage of the import dynamics of third countries, even though this is considered much riskier than exporting to traditional markets.

Based on the uneven performance of agri-food product exports across different countries, it appears evident that the countries comprising the sector's international customer base are directly responsible for the evolution of foreign sales. A sector that sends its products to destinations experiencing a marked increase in imports has significant opportunities for rapid growth in export revenues. Therefore, the selection of appropriate destination countries to support their international expansion is essential for the Spanish and Portuguese agri-food sectors, which must consolidate their competitive position in the world. A crucial objective is the expansion and consolidation of new target markets, especially those with strong purchasing power. This can have various positive effects, such as the ability to offset recessive cycles in some markets with expansion in others; enhanced export stability; the development of wide-ranging experience, which enhances the competitiveness of sector companies; and the possibility of product differentiation according to the demand of each country [81].

The study has some limitations, primarily stemming from the data aggregation process for the entire agri-food sector of Spain and Portugal when running the gravity models. Although this aggregation allows for an analysis of their overall export activity, it does not account for particular aspects of different types of products, which should be addressed in further research. Secondly, the identified dynamics have been conditioned by trade restrictions resulting from the COVID pandemic, external climatic events (widespread floods and droughts), the effects of the Ukraine War, and the sanctions imposed by the EU on Russia and Belarus in 2022, negatively affecting exports from the two countries analyzed. Despite these limitations, this work opens the field for future research on the competitiveness of the agri-food sector in the Iberian Peninsula countries, which are part of the EU-27—a major agricultural trading power and net food exporter.

In this regard, it is worth researching whether there are significant differences between the goods exported to EU partners and those that companies place in more geographically distant markets, such as the United States or China. Likewise, bilateral trade in agri-food products between Spain and Portugal must be studied and the sectoral and business-type factors that condition it must be investigated, following the methodology of [82]. This may reveal insights into the development of value chains at the level of the Iberian Peninsula. Another suggested future line of research is to examine the possible relationship between the recent evolution of imports of agri-food products from non-EU countries and exports of these products by Spain and Portugal, identifying similarities and differences, particularly in the case of fresh fruits and horticultural products.

Finally, regarding the implications of the study, the recent changes identified in the export structure of the Spanish and Portuguese agri-food sectors, both of which are major contributors to the balance of payments of their respective countries, will be of interest to relevant institutional decision-makers. They must develop policies and programs that help consolidate the geographical diversification of sector companies in international markets. To achieve this, it is essential to implement comprehensive plans that include promotion actions at the destination of exportable products; training and advice to companies with export potential; collaboration between public and private entities, to facilitate access and consolidation of the business in new markets; analysis and assessment of transaction and coordination costs derived from business expansion in more distant countries; identification and knowledge of cultural and institutional barriers; etc.

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