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RESEARCH ARTICLE

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Disentangling the relationships between denomination of origin regulatory councils activities and Spanish wineries' export performance

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Abstract

World markets for quality differentiated agri-food products are highly competitive, presenting significant challenges for firms aiming to compete effectively. Government agencies and business organizations often implement various export promotion policies to address these challenges. This paper explores the role of Denomination of Origin Regulatory Councils in the export activities of Spanish wineries. Hypotheses are developed based on the Resource-Based View and Institutional-Based View, considering divergent theoretical predictions. Empirical findings from a comprehensive sample of Spanish wineries across all Denominations of Origin reveal positive associations between wineries' resources and Regulatory Councils' activities with export performance. However, these relationships vary depending on the specific resource or activity. These findings are consistent across different measures of export performance, highlighting the intricate relationships between institutions like Regulatory Councils and the internationalization of member firms.

Abbreviations: DO, Denomination of Origin; DOC, Qualified Denomination of Origin; IBV, Institutional based-view; RBV, Resource-based view; SMEs, Small and medium-sized enterprises.

KEYWORDS
denomination of origin, export performance, export promotion policies, Spain, wine

1 | INTRODUCTION

This paper delves into the intricate relationship between the activities of Denomination of Origin (DO) Regulatory Councils and the export performance of Spanish wineries, filling a notable gap in the existing literature and emphasizing the significance of understanding this dynamic.

Exporting can serve as a strategic business approach that fosters competitive advantages for firms. It increases the salary of workers in those sectors, raises firms' sales and profitability, and contributes to their survival (Atkin et al., 2017; Brambilla et al., 2017; Feenstra et al., 2019; Leonidou et al., 2002; Wang et al., 2018). Moreover, exports are also good for the economy as they spur growth and reduce poverty (Giles & Williams, 2000; Harrison & Rodríguez-Clare, 2009). Despite these benefits, exporting remains uncommon in many countries and economic sectors. In 2002, among the firms in sectors such as manufacturing, agriculture, and mining, only 15% of US firms exported (Bernard et al., 2007). This is often the case because world export markets are extremely competitive and firms face numerous hurdles that prevent them from accessing international markets. There are different kind of impediments to export, such as credit constraints (Muûls, 2015), demand uncertainty (Albornoz et al., 2012) or "red tape" impediments (Fontagné et al., 2020). Within this spectrum, requirements commonly addressed by Denomination of Origin Regulatory Councils, such as quality certifications, product adaptation demands, packaging standards, and invoicing protocols, pose significant challenges (Artopoulos et al., 2013). These challenges are particularly daunting for small and medium-sized enterprises (SMEs) in both developed and developing nations.

The literature on export activity is extensively researched in economics and international business, as highlighted in Chen et al. (2016). One commonly utilized framework in international business literature is the resource-based view (RBV), which posits that superior export activity arises from the acquisition and exploitation of a firm's unique resources (Sousa et al., 2008). In the realm of international trade economics, the modern theory of heterogeneous firms and trade, pioneered by Melitz (2003) and surveyed by Melitz and Redding (2014), provides a theoretical framework to understand firms' dynamics in international trade. Similar to the RBV perspective, the theory of heterogeneous firms also underscores that exporting firms are typically larger, more productive, utilize more capital and skills, and offer higher wages compared to nonexporting counterparts within the same industry. Empirical evidence generally supports the notion that firms' resources and capabilities, which are often correlated with productivity, are key drivers of competitive strategies that help position companies in export markets and influence their performance (Bloom et al., 2013; Love et al., 2016; Morgan et al., 2004). The relationship also holds in the wine industry, as several empirical papers have shown that resources significantly correlate with the export success of wineries in countries such as Greece (Karelakis et al., 2008), France (Maurel, 2009), and Portugal (Bashiri Behmiri et al., 2019). These studies indicate a strong association between a winery's resources and its ability to succeed in exporting.

Given the economic importance of export performance, it is unsurprising that many governments, chambers of commerce, and other industry-level organizations strive to enhance the export competitiveness of individual firms and entire economic sectors through export promotion policies. These policies encompass a wide range of initiatives, including country image-building activities (such as advertising, promotional events, and advocacy), export support services (such as exporter training and technical assistance), marketing activities (such as trade fairs and missions), and market research and publications, among others services (Lederman et al., 2010; Volpe Martincus & Sztajerowska, 2019). The empirical evidence regarding the relative effectiveness of these diverse export promotion policies remains inconclusive. However, overall, it suggests that these policies have a more

pronounced impact on small firms and those producing differentiated products (Cruz, 2014; Ruppenthal & Bausch, 2009; Volpe Martincus et al., 2010; Volpe Martincus, Carballo, 2012; Volpe Martincus, Carballo, Garcia, et al., 2012).

In the context of the agri-food industry, many of these export promotion policies are performed by the DOs. These entities are designed to safeguard geographical status and denote products specific to particular regions, ensuring the distinct quality of food products. DOs typically possess a code of practice, overseen by the Regulatory Councils, that outlines specific quality control rules, representing a valuable asset for agri-businesses (Sanjuán & Albisu, 2004). These institutions are integral to traditional wine-producing countries like Spain ("Denominación de Origen"), France ("AOC, Appellation d'Origine Contrôlée"), and Italy ("DOC, Denominazione di Origine Controllata"). DOs also offer technical assistance, aid in skill development for firms, and engage in export promotion activities. Despite their potential significance, only a limited number of studies have explored the relationship between DOs and firms' export performance. Two notable exceptions are Belletti et al. (2009) and Bardají et al. (2014). Focusing on the wine industry, Bardají et al. (2014) provides evidence of a negative relationship between institutional support and export performance. Conversely, Belletti et al. (2009) finds that DOs effectiveness depends on several factors, including the product's reputation and the reputation of its origin territory. Recently, Livat et al. (2019) investigates whether existing DOs serve as meaningful quality indicators for Bordeaux wine consumers, potentially impacting their market position internationally.

In 2022, Spain ranked as the world's second-largest wine exporter by volume and third by value (OIV, 2023). Notably, the export unit values for Spanish wines (1.42 euros per liter) significantly lagged behind those for its primary competitors, France (8.78 euros per liter) and Italy (3.56 euros per liter). Despite the sector's strategic goal to enhance value addition by emphasizing the exports of bottled wines under DO labels, diverting from bulk wine, it is surprising that few studies have explored the connection between the activities of DOs and export performance. Given the economic significance of agri-food products bearing Denominations of Origin in Spain, this research holds scholarly and practical value for both researchers and practitioners interested in the role of Spain's Denominations of Origin in export promotion.

The high number of DOs existing in Spain, their rapid growth in recent decades, and the notable differences observed among them (Esteban Rodríguez & Climent López, 2018) have attracted the interest of academic research. Spanish DOs also share similarities with geographical indications in other countries, as they are associated with specific production and processing area, making the geographical location the primary identity sign of the product.

Furthermore, considering the limited evidence on the effectiveness of export promotion policies, and the fact that many findings in the literature are drawn from cross-industry studies, our analysis, based on a large representative sample of the Spanish wine sector, is able to offer valuable context-specific evidence. Lastly, given the prevalence of geographical indications in other countries, we expect that the insights gleaned from Spain will be relevant and applicable to other European countries. Spain, therefore, is an interesting research setting in which to study the relationships between Denomination of Origin Regulatory Councils and the export activity.

This paper contributes significantly to the literature on firms' resources, institutional support, and exports in two key ways. First, following the recommendation of Williams and Spielmann (2019) in their study of the French wine industry, we adopt both an institutional perspective and a resource-based view to comprehend the factors enabling wineries to access international markets. Second, within the framework of the resource-based view and literature on the Spanish wine industry, this research addresses a notable gap in a body of scholarly work that has garnered considerable attention. Various papers within this emerging trend in the literature explore the determinants of vertical integration (Depetris-Chauvin, Hallak, et al., 2023; Fernández-Olmos et al., 2016), sources of competitive advantages (Lorenzo et al., 2018), triggers of wine organic production (Dejo-Oricain et al., 2022; Depetris-Chauvin, Fernández-Olmos, et al., 2023), drivers of sustainability strategies (Ferrer et al., 2022; Gázquez-Abad et al., 2015; Gilinsky et al., 2015), determinants of the export channel (Fernández-Olmos & Díez-Vial, 2014), variables influencing the speed of the internationalization process (Fernández & Malorgio, 2020), the role of green intellectual capital in innovation performance (Marco-Lajara et al., 2023), and factors affecting wineries' survival (Fernández-Olmos et al., 2024).

Notably, these studies tend to overlook the role of Regulatory Councils. To the best of our knowledge, this paper represents one of the initial efforts to explicitly assess the heterogeneity across DO entities and analyze the relationship between their activities and the export performance of affiliated firms. We challenge the prevalent notion in the literature that measures the association of DO affiliation solely through dummy variables (e.g., Bardají et al., 2014). Through a comprehensive examination of the institutional capacity developed by Regulatory Councils in exporting, marketing, and promotion, we formulate dominant hypotheses regarding the direct relationship of DO affiliation with firms' exports, contingent upon the characteristics of these firms.

The upcoming section of this paper formulates the theoretical framework for the study and introduces the hypothesis to be tested. In Section 3, we summarize and discuss the findings of the previous empirical literature. In Section 4, we present the survey data used in this paper, discuss the quantification of the variables, and elucidate the methodology applied in our analysis. Additionally, within this section, we present the empirical findings and discuss their implications in terms of the research objectives and hypothesis. Section 5 summarizes the key conclusions derived from this study, accompanied by an overview of its primary limitations and prospects for future research.

2 | THEORETICAL FRAMEWORK

The growing globalizazion of wine markets, in which Spain plays an important role, has been extensively examined in the economic literature (Villanueva et al., 2023). Previous studies have emphasized various macroeconomic factors influencing wine exports. The methodologies employed are diverse, with some papers employing the gravity model. They conclude that factors such as price, distance, tariffs on wine, a country's Gross Domestic Product, and sharing a common language play significant roles in wine trade (Castillo et al., 2016; Dal Bianco et al., 2016, 2017; Dascal et al., 2002; Gouveia et al., 2018). Others have assessed countries' export competitiveness using the comparative advantage index (Anderson, 2013), examined firms' international diversification through foreign direct investment (Outreville, 2016), taken a historical perspective on the wine trade (Ayuda et al., 2020; Villanueva et al., 2023), and explored horizontal diversification (Macedo et al., 2020). Notably, research has not solely focused on theoretical and empirical studies regarding the determinants of wine trade between countries but also includes micro-level approaches that scrutinize the role played by firms.

From a micro perspective, there is substantial evidence that acknowledges exporters' superior productivity compared to nonexporters (e.g., Bernard & Bradford Jensen, 1999; Clerides et al., 1998; Delgado et al., 2002; Tybout, 2003). However, consensus is lacking regarding the forces driving the differences between exporting firms and those focusing solely on domestic markets. In this section, we explore two possible but not mutually exclusive explanations put forward by the literature for the positive relationship between a firm's productivity and its participation in export markets.

First, some studies employing trade models with heterogeneous firms suggest that tariff reductions lead the least productive firms to exit the market, while the more productive ones expand into export markets (Baldwin, 2004). This supports the self-selection hypothesis, which is driven by the high entry costs for firms seeking access to foreign markets. Access to exporting markets, in turn, can reduce average production costs and improve productivity for firms (Head & Ries, 1999). Melitz (2003) further support the self-selection hypothesis by explaining the existence of the exporter premium with a theoretical model, stating that only the most productive firms self-select into the export market due to the presence of high export entry costs. In the wine industry, Crozet et al. (2012) found that high-quality producers participate in more international markets, charge higher prices, and achieve higher sales in each market.

Second, export activity exposes firms to learning spillovers of new knowledge and technology used by international partners. Endogenous growth theory analyzes the potential external effects, such as R&D investments and human formation, by one exporting firm that spills over and increases the stock of knowledge available to all firms. This aligns with the learning-by-doing effect, where accessing international markets allows firms to acquire

superior technologies and management techniques, leading to improved productivity (Baldwin & Gu, 2005). Several studies (e.g., Golovko & Valentini, 2011; Lileeva & Trefler, 2010) support the idea that innovation and export are complementary strategies for firm growth. Engaging in innovation activities increases the firm's probability of participating in international markets due to the fixed costs associated with innovation. This supports the hypothesis that more productive firms self-select into exporting. Likewise, engaging in export activities has been posited to affect innovation. Exporters tend to develop their innovative capabilities through absorptive capacity developed to incorporate foreign ideas and technologies. This supports the hypothesis of learning-by-exporting.

Theoretical and empirical literature strongly supports the existence of the self-selection effect, where more efficient firms self-select into the export market (Clerides et al., 1998). However, conclusions regarding the learning-by-exporting effect remain unclear. Therefore, our emphasis is on the notion that exporters outperform nonexporters. This notion aligns well with the resource-based view (Fox & Smeets, 2011), which emphasizes that productivity predominantly reflects certain attributes of a firm that are not easily bought or sold. Firm heterogeneity in resources is a fundamental aspect of the resource-based view of the firm, one of the most widely accepted theoretical perspectives in the field, especially when studying the determinants of export performance (Chen et al., 2016). This theory delves into how a sustained export competitive advantage is generated by the unique bundle of resources at the core of the firm (Barney, 1991; Dhanaraj & Beamish, 2003).

While previous literature in RBV concludes that firms' resources and capabilities may be crucial drivers of success in export markets (Bashiri Behmiri et al., 2019), it treats the external environment as an exogenous element in the firm's decision to export (Yi et al., 2013). Nevertheless, evidence suggests that this decision is also influenced by the institutional context (Faria et al., 2020; Mais & Amal, 2011; Peng et al., 2009; Sousa et al., 2008). In this context, the institutional-based view (IBV) emphasizes that institutional factors affect the behaviors of actors in a given business sector and region (Dunning, 2006; North, 1990; Yi et al., 2013). According to Yi et al. (2013), both RBV and IBV perspectives should be considered jointly to better understand export performance.

The empirical evidence regarding the impact of institutional support on firm export performance is inconclusive (Bardají et al., 2014; Ruppenthal & Bausch, 2009). While certain studies assert that the support offered by public institutions positively influence export performance (Alvarez, 2004; Durmuşoğlu et al., 2012; Gençtürk & Kotabe, 2001; Kang, 2011), others indicate a negative effect (Antonio belso-Martínez, 2006) or consider it insufficient (Howard & Herramans, 1988; Moini, 1998). One possible explanation for these inconsistent findings could be that many previous studies encompass firms across various industries. Hence, it is crucial to analyze specific industry sectors (Castaldi et al., 2004). The industry under focus for this study is the Spanish wine sector because it provides an ideal research setting to examine the relationships between Regulatory Councils and the export performance of wineries.

Wine quality has become increasingly significant within the wine sector. The competitiveness of wineries in both national and international markets hinges on their ability to adopt production processes that adhere to wine safety and quality requirements. While it is acknowledged that the concept of wine quality is closely tied to the notion of credence attributes, this aspect has received relatively less attention. Ensuring quality serves as a guarantee that agreed-upon specifications have been met (Holleran et al., 1999). It is worth noting that identifying and observing quality and safety attributes in the wine industry can be challenging. Specifically, these attributes are considered credence attributes because they are difficult or even impossible to measure (Starbird, 2007).

These attributes create information asymmetry between buyers and sellers, complicating the buyer's task of identifying quality (Bonroy & Constantatos, 2015). Consequently, Akerlof, (1970) argues that institutional guarantees, such as DO standards, are essential to counteract the effects of quality-identification and uncertainty. However, an excess of DOs, as seen in Bordeaux wines, cannot provide helpful quality signals to consumers (Livat et al., 2019).

Wine consumers lack information about the quality properties of most wines in the market. Even after purchase, they cannot deduce these properties. This constitutes a market failure, given that the availability of information is crucial for the proper functioning of the wine market. One explanation for this is that information is

typically considered a public good and, consequently, is undersupplied in the market (Henson & Traill, 1993). In this case, the spot market fails because prices do not reflect the attributes of products that consumers prefer. If wine production is to be driven by attributes that cannot be accurately priced, considering that winery quality entails higher costs, wineries will lack price incentives to produce the desired quality attributes (Ward, 2001).

While information is typically viewed as a public good due to its nonrival and nonexcludable nature, Antle (1999) argues that information can also be categorized as a club good, being nonrival but excludable. In this context, Regulatory Councils play a vital role in establishing the legal framework that enables consumers to access and utilize information (Menapace & Moschini, 2012). Therefore, one of their key objectives is to assure customers of the consistent delivery of wine characteristics and production processes

2.1 | The role of regulatory councils

Regulatory Councils are management entities that group together producers and farmers, overseeing the administration and promotion of the DO. They ensure its prestige and undertake legal defense in cases of improper use. In Spain, there are 70 DOs, with two of them, Rioja and Priorat, holding a special status that acknowledges their higher quality as "Denominación de Origen Calificada."

The purposes and functions of Regulatory Councils are numerous, outlined in Article 26 of Law 2472003 (BOE). Some of their most crucial functions can be categorized in the following blocks (Ruiz, 2009): management of the DO, defense, and promotion of the DO, control of the DO, and structuring the sector. Thanks to the efforts of Regulatory Councils, DO certifications convey positive connotations such as recognition, quality, reputation, and loyalty, recognized as the four multidimensional assets of brand equity (Aaker, 1991).

Research on the role of institutions in the wine industry has begun to shed light on the activities of Regulatory Councils for each DO. However, our understanding of whether these Regulatory Councils affect export performance in wineries remains inconsistent at best and distorted at worst. It is well-known that the instability of international demand, lack of knowledge about foreign markets, and risks associated with exporting act as inhibitors that hinder wineries. In this context, Regulatory Councils are expected to assist wineries in overcoming these barriers and consequently enhance export success. Activities contributing to export performance can be divided into three categories: export-supporting activities, skill-complementing activities, and technical assistance.

Export-supporting activities encompass all Council efforts designed to aid wineries in their exporting activity, ranging from sponsoring trade missions and preparing international market analysis to organizing international wine trade shows and events to address specific exporting problems (e.g., distributor search, export insurance, etc). The fundamental goal of these programs is to serve as an external resource for wineries, providing essential knowledge and experience crucial for a successful exporting process.

Through skill-complementing activities, Regulatory Councils can enhance the skills of wineries through continuous learning. This is particularly important post-COVID-19, given the new challenges facing wineries such as digitalization, increased demand for organic wines, and the growth of online sales. Regulatory Councils can collect and disseminate information about European Union agricultural subsidies, offer consulting services, and provide administrative services aimed at improving the functioning of both wineries and grape growers.

Finally, Regulatory Councils can play crucial roles in providing technical assistance, offering guidance on a wide range of topics, including aids to wineries' R&D investment, basic understanding of collaborative partnership building (e.g., with universities and research centers), organization of seminars, and financial support for startup business ideas.

The above discussion suggests that:

Hypothesis: Regulatory Council's support, including export-supporting activities, skill-complementing activities, and technical assistance, is positively related to winery export performance

According to the Spanish Wine Federation, the wine sector plays a fundamental economic role in Spain, contributing significantly to activity, employment, and exports. Despite the economic and social importance of Spain's wine exports, only a few studies have examined the determinants of Spanish wine exports. Olmos, (2011), employing the RBV theory, finds that advertising and size influence export activity among Rioja wineries. Suárez-Ortega and Álamo-Vera (2005) analyzes firms' resources and capabilities, managerial characteristics, and managerial attitudes and perceptions in a sample of 286 firms in the Spanish wine industry. They concluded that factors influencing export involvement depend on the export stage (i.e., export intention, export propensity, or export intensity). Bardají et al. (2014) show that the display of a DO label increases sales abroad for Spanish wineries.

However, unlike findings from other studies that have identified a positive correlation between the use of public export-support programs and export performance in the wine industry (Leonidou et al., 2007; Maurel, 2009), Bardají et al. (2014) did not observe any relationship between institutional support and export performance. One possible explanation for these differences could be the selection of the variable to measure institutional support. Some authors suggest using dummy variables to capture the support provided in different regions (e.g., Maurel, 2009), while others recommend qualitative variables to assess the relevance of public support (Bardají et al., 2014). We argue that adopting a multidimensional perspective offers a more comprehensive assessment than a simple dummy variable to evaluate the institutional support provided by the Regulatory Councils of each DO in Spain.

3 | EMPIRICAL LITERATURE REVIEW

Traditionally, studies have hypothesized that larger companies have size-related advantages that enable them to more effectively become exporters (Aaby & Slater, 1989; Bashiri Behmiri et al., 2019; Kim & Hemmert, 2016). However, empirical evidence is inconclusive, suggesting that firms may need to reach a minimum size before being able to export (Dean et al., 2000) or that the relationship between size and export is not necessarily linear (Bardají et al., 2014).

Another commonly analyzed variable to explain export performance is a firm's age. In line with the traditional Uppsala model, firm's internationalization takes place as an incremental learning process (Johanson & Vahlne, 1977; Surdu et al., 2021). Market knowledge can be defined as a function of psychic distance between home and host countries (e.g., differences across countries in language, culture, etc.) and the firm's accumulated experience in each given market. The model predicts that firms enter close countries (i.e., low psychical distance), moving gradually to more psychically distant countries only as they gain experiential knowledge from past international operations (Johanson & Wiedersheim-Paul, 1975). This hypothesis is empirically corroborated by some studies (Agnihotri & Bhattacharya, 2015; Kim & Hemmert, 2016). However, consistent with the argument that older firms tend to be more rigid in their behavior (Love et al., 2016), some authors obtained a null (D'Angelo et al, 2013; Ganotakis & Love, 2011) or negative relationship (Kirpalani & Macintosh, 1980) between age and export performance. In the context of the wine industry in Portugal, Bashiri Behmiri et al. (2019) find that age increases export intensity but decreases the probability to become an exporter.

Another winery's characteristic considered in the previous literature that has been found to be significantly related to export performance is the employees' foreign language ability. Fluency in a foreign language facilitates the decision to conduct business with foreigners (Haddoud et al., 2021). The rationale for this result is that fluency in a foreign language makes personal contact with foreigners possible, reducing the psychic distance (Nakos et al., 1998; Williams, 2011). Therefore, wineries that have employees that speak several foreign languages are expected to have higher export performance than wineries that have monolingual employees.

Differentiation strategy, in terms of the ability of the firm to differentiate its products in terms of product quality, product design, and unique product attributes, is considered to be a major factor when smaller firms engage in exporting (Fernández-Olmos & Díez-Vial, 2013; Kirpalani & Macintosh, 1980; Leonidou et al., 2002). In the wine industry, the globalization phenomenon and greater customer demand for differentiated and personalized wines

have led to increased competitive pressure via quality differentiation. Thus, it is widely accepted that the ability of a firm to manage such differentiation is of crucial importance to improve their competitiveness both in domestic and international markets (Cavusgil & Knight, 2015; Chen et al., 2014; Knight et al., 2020).

Vertical integration is often a strategy followed by firms to overcome market imperfections and thus enhance product quality, business procedures, and overall firms' performance. In the particular case of the wine industry, an important trade off exists: vertically integrated firms can better adapt to weather contingencies which are important to control product quality (Depetris-Chauvin, Hallak, et al., 2023) but vertical integration affect firms' competitive advantage by increasing the costs of supervision of the vineyards (Fernández-Olmos et al., 2009), and by reducing the potential volume and range of output, which are critical factors for competing in export markets (Villanueva et al., 2023). Therefore, the sign of the relationship between vertical integration and export activity is an empirical matter.

4 | EMPIRICAL ANALYSIS

4.1 | Data source

While single-industry studies may lack generalizability, they enhance validity of results by controlling for industry-specific factors. Hence, several studies in the export literature have focused on specific industries, such as the wine industry (e.g., Castaldi et al., 2004; Maurel, 2009). Our study focuses on the Spanish wine industry protected by DO due to the following reasons. First, Spain currently boasts 70 DO for wine. A DO serves as a system to control wine quality, with each region governed by a Regulatory Council. Therefore, it offers a suitable context to examine the role of Regulatory Councils in promoting exports. Second, Spain ranks as the world's second-largest exporter of wine in volume and third in value (behind Italy and France).

The data used in this paper are derived from two sources: a survey of wineries belonging to all DO and a questionnaire distributed to the regulatory council of each existing Spanish DO. Data collection took place throughout 2021. For the distribution of the wineries' survey, the population of 3661 wineries was obtained from the official list provided by each of the 70 DOs. To collect winery data, we sent an online questionnaire with a hyperlink to all wineries via email. This was followed by telephone calls to ensure responses. The winery survey achieved a response rate of 18.79%, a significantly high average response rate for an industrial-level survey (Baruch & Holtom, 2008; Krishnan & Poulose, 2016). Likewise, we collected data from Regulatory Councils by emailing them to which all Regulatory Councils responded. The samples selection was based on two criteria. First, the entire population is the sample for the Regulatory Councils to identify the heterogeneity across these institutions. Second, wineries were geographically stratified, and we aimed for a minimum 10% response rate in each DO. We worked closely with the implementing partners to secure a sample representative of the industry (Fernández-Olmos et al., 2024). Under these considerations and after discarding incomplete questionnaires, the total sample was 688 wineries corresponding to 68 DOs.[1]

The design of the questionnaires was based on previous studies conducted within the wine industry and the field of institutions, tailored to fit the Spanish wine industry with DO. Furthermore, a pretest of the questionnaire was carried out using a small number of wineries in Spain to ensure its comprehensibility before conducting the final survey. To mitigate common method bias, we incorporated semantic differential scales, 5-point Likert-type scales, and yes-no dichotomous scales. To assess the potential impact of sample selection bias in our winery questionnaires, we compared responses from early respondents to those from late respondents. No statistically

[1]"Málaga" and "Sierra de Málaga" denominations were joined into one due their small size. Similarly, "Jérez-Xérex-Sherry" and "Manzanilla-Sanlúcar de Barrameda" were also joined into one DO.

significant differences were found for some key variables. Thus, we can conclude that there is no evidence of obvious response bias in the sample of wineries.

Regulatory Councils were tasked with evaluating various aspects of their relationship with wineries using 14-item Likert scale. These items, subjected to factor analysis, yielded three factors characterizing the support provided by Regulatory Councils to wineries. The first factor, labeled *International_support*, is related to export commitment. The second factor, labeled as *Skills*, reflects the effectiveness of knowledge transfer, encompassing training, consulting, and information services. The final factor, labeled *Technical_support*, reflects the Regulatory Council's dedication to providing technology, equipment, and associated services. To gauge the reliability of the constructs, we calculated Cronbach's α for each factor, all of which were deemed satisfactory with a minimum value of 0.75 (see Table 1).

While numerous research efforts have been made to examine the influence of various determinants on export performance (e.g., Alvarez, 2004; Antonio belso-Martínez, 2006; Bardají et al., 2014), there is a lack of consensus in the literature regarding how researchers define and measure export performance (Beleska-Spasova, 2014). To address this issue, we consider three different measures of export performance (detailed in Table 2). The explanatory variables used in this paper to capture wineries' characteristics are explained in the following table:

Our objective is to analyze the relationship between Regulation Councils' activities and wineries' export performance. To achieve this, we classify DOs into three distinctive groups: *Group 1*, comprises denominations where firms have a low average export intensity (<20% of the total volume of production); Group 2 includes denominations with a medium average export intensity (≥20 and ≤30%); and Group 3 consists of denominations with a high average export intensity (>30%). These classifications allow us to identify three different profiles of Denominations of Origin and assess whether there are differences among winery characteristics among these groups[2] (see Table 3). We use the nonparametric Kruskal-Wallis test because it does not require the normality assumption; it tests for differences in the rank sums of the groups rather than directly comparing the medians. If the Kruskal–Wallis test yields significance, we employ Dunn's test to identify which groups are different.

The first profile can be categorized as the low-export intensity group, primarily comprising smaller wineries. These wineries exhibit characteristics such as lower language skills, minimal wine differentiation, and a low incidence of organic wine production. In contrast, the second profile, the medium-export intensity group, includes wineries with extensive market experience similar to the first group but notably larger in size. Other characteristics do not show significant differences compared to the first group. Moving on, the third profile, the high-export intensity group, mainly features wineries with a quality strategy centered on high wine differentiation and a substantial presence of organic wine production compared to the other groups. Additionally, employees in this group possess stronger language skills. Notably, medium-sized wineries are part of this high-export intensity group, indicating that both the resources and capabilities of the winery and the actions initiated by Regulatory Councils may play crucial roles in exporting success. The results from the Kruskal–Wallis tests indicate that there are no significant differences in wineries' age and the degree of vertical integration across these groups.

An important consideration when analyzing winery characteristics collected from DOs is that the data are obtained from a clustered sample, where wineries are nested[3] within DO. This means the observations within the same DO are typically correlated. Consequently, a key question arises: what is the appropriate unit of analysis, winery level or DO level? The appropriate approach is to consider both the winery and the DO as units of analysis. Therefore, we need to employ a model that accommodates more than one unit of analysis, specifically utilizing multilevel data analysis.

This implies that traditional statistical models are not suitable for analyzing clustered data, as they assume independence among observations. Specifically, single-level methods like OLS regression and analysis of variance encounter three challenges when applied to multilevel data: aggregation bias, misestimation of standard errors, and

[2]The mean of value intensity export is 25.50% and its median is 23.56% (24.61% and 20.8% for volume intensity export respectively).
[3]Several wineries experience their wine production in the same DO.

TABLE 1 Descriptive analysis of the variables explaining the activities of Regulatory Councils.

Name of construct	Items tapping each construct	Mean	Standard Deviation	Min	Max
International support	Offer support to the internationalization of the activity	3.221	1.302	1	5
Skills	Offer business training	2.853	1.200	1	5
	Information and support for the preparation and management of R&D&I projects	2.941	1.208	1	5
	Administrative and general services (advice for Common Agricultural Policy aids…)	2.897	1.575	1	5
	Consulting activities (technical, legal, accounting aspects…)	2.882	1.310	1	5
	Have collaboration and cooperation relationships in R&D&i with other entities	3.088	1.301	1	5
	To measure results indicators of DO management	2.868	1.257	1	5
	Facilitates scientific and technical services	3.059	1.280	1	5
Technical support	Offers support to the cooperative relations of the DO wineries with external entities (such as the University, research centers…)	3.515	1.086	1	5
	Offers equipment, facilities and infrastructure for shared use	2.794	1.472	1	5
	Support for the organization of seminars, workshops, conferences or meetings	3.955	0.871	1	5
	Information on R&D aid and scientific and technical events	3.118	1.355	1	5
	Logistical support in the organization of events (wine routes, local gastronomy…)	4.397	0.964	1	5
	Facilitates financing for the implementation of innovative ideas	1.632	1.131	1	5

Source: Own elaboration.

TABLE 2 Description of variables used in the models and descriptive statistics.

Name	Definition	Mean	Std. Deviation	Min.	Max.
Dependent variables					
Exportingstatus	A dichotomous variable indicating whether a winery is engaged in exporting activities or not.	0.696	0.460	0	1
Volumeintensityexport	The export intensity in volume, representing the share of export volume in total production volume.	26.095	28.167	0	100
Valueintensityexport	The export intensity in value, indicating the share of export value in total sales value.	27.145	28.571	0	100
Independent variables					
Winery_age	The number of years (in logarithm) that each winery has been active in the wine industry	34.451	36.107	2	301
Winery_size	The number of permanent employees (in logarithm) of the winery.	8.776	20.712	1	260
Languages	Calculated as the sum of different languages spoken by the winery's permanent employees.	1.330	1.111	0	6
Basic_wine	Measured by the percentage of the basic low-cost wine category (price lower than 9 euros) in total winery production.	59.291	41.352	0	100
Organic	A binary variable indicating whether or not the winery produces organic wine.	0.266	0.442	0	1
Vertical_integration	A dichotomous variable indicating whether the production of wine is entirely based on grapes from the winery's own vineyards.	0.510	0.500	0	1

Source: Own elaboration.

TABLE 3 Dunn's test of multiple comparisons (significant differences $^*p < 0.05$).

	Group 1	Group 2	Group 3	Mean	Kruskal–Wallis Test	Dunn's test
Winery_Age	36.333	35.157	31.967	34.451	0.047	
Winery_Size	3.901	10.589	9.099	8.776	0.000*	1–2, 1–3, 2–3
Languages	1.241	1.236	1.549	1.330	0.001*	1–3, 2–3
Basic_wine	64.418	61.607	52.019	59.291	0.001*	1–3, 2–3
Organic	0.234	0.207	0.387	0.266	0.000*	1–3, 2–3
Vertical_Integration	0.496	0.507	0.525	0.510	0.867	
Number of DOs	25	20	23			
Number of wineries	141	343	204			

Source: Own elaboration.

heterogeneity of regression (Lee, 2000; Warne et al., 2012). Heckman selection model was estimated (Vermeulen, 2004) for each dependent variable, *Volumeintensityexport* and *Valueintensityexport*. The results of Heckman selection models revealed that no evidence of selection bias can be found. A likelihood ratio test did not reject the zero correlation of the error terms of the regression equation and the selection equation, indicating that the decision by wineries to export is not distinct from the amount wineries then choose to export in a significant way.

The most common statistical method for clustered data is the hierarchical linear model (HLM) (Warne et al., 2012). Unlike traditional regression models, HLM captures adequately the nested structure in the dataset. In particular, it predicts values of the export performance as a function of predictor variables at more than one level (winery and DO), thus taking into account the nested, nonindependent nature of the data both within and between groups (Zouaghi et al., 2017).

Once we have established the superiority of an HLM over a single-level method, we can divide the estimation process into two steps. In the first step, we explore the characteristics of individual wineries associated with the respective dependent variable, export performance (level 1 HLM model). In the second step, we estimate the DO characteristics as influencers of export performance (level 2 HLM). The level-1 model (see Equation 1) represents the export performance for winery *i* in the Regulatory Council *j* as (Peugh, 2010):

$$\text{Export Performance}_{ij} = \pi_{0j} + e_{ij}, \tag{1}$$

where export performance is the average export performance of winery *i* in Regulatory Council *j*. π_{0j} is the mean export performance of each Regulatory Council *j*; e_{ij} is a random "winery effect" that measures the deviation of winery *ij*'s score from the Regulatory Council mean. These effects are assumed to be normally distributed with a mean of zero and variance σ^2. The subscripts *i* and *j* denote wineries and Regulatory Councils where there are *i*_ 1, 2…*n* wineries within Regulatory Council j.

The level 2 model represents the variability among Regulatory Councils. The Regulatory Council mean, π_{oj} varies randomly around a grand mean as presented in the following formula (see Equation 2):

$$\pi_{0j} = \beta_{00} + r_{oj}, \tag{2}$$

where β_{00} is the grand mean export performance across all Regulatory Councils; r_{oj} is the random "Regulatory Council effect," that is, the deviation of Regulatory Council's mean from the grand mean. These effects are assumed

to be normally distributed with a mean of zero and variance z_{π}. This simple two-level model partitions the total variability in the export performance into its two componentes: (level 1) among wineries within Regulatory Councils, σ^2; (level 2) among Regularoy Councils, z_{β}.

All explanatory winery and Regulatory Council variables are incorporated in Equation (1) as follows:

$$\text{Export Performance}_{ij} = (\beta_{00} + r_{0j}) + \beta 1 \cdot \text{WineryVariables}_{ij} + \beta 2 \cdot \text{DOVariables}_{j} + e_{ij}. \quad (3)$$

The model was fitted using maximum likelihood estimation, assuming a Gaussian distribution for the linear mixed-effects model. We contrast the null hypothesis that the random disturbance around the constant is zero, indicating a significant enhancement with the hierarchical structure model compared to a single-level model. The rejection of the null hypothesis ($p < 0.001$) in each model validates the superiority of multilevel regression for analysis over single-level regression.

4.2 | Results

Specifications (1)–(3) employ different measures of export performance: (1) focuses on the decision to export, (2) considers export intensity in volume, and (3) examines export intensity in value (see Table 4).

The coefficients associated with the age of wineries are not significantly different from zero in the three models. Consequently, there is no evidence suggesting that the age of the wineries is linked to export performance in the Spanish wine industry. While experience is generally expected to afford wineries greater maturity in entering international markets (Majocchi et al., 2005), older wineries in Spain appear to be characterized by a wine-growing

TABLE 4 Result of Hierarchical Linear Model.

	Model 1 *Exportingstatus*	*Model 2 Volumeintensityexport*	*Model 3 Valueintensityexport*
Variables describing wineries (Level 1)			
Winery_Age	0.149 (0.145)	−1.823 (1.185)	−1.785 (1.200)
Winery_Size	1.067*** (0.152)	6.270*** (0.960)	6.521*** (0.972)
Languages	0.471*** (0.124)	4.534*** (0.905)	5.240*** (0.916)
Basic_wine	−0.012*** (0.003)	−0.131*** (0.024)	−0.118*** (0.025)
Organic	0.914*** (0.305)	8.809*** (2.235)	8.195*** (2.264)
Vertical_Integration	−0.423* (0.234)	−2.751 (1.908)	−2.007 (1.931)
Variables describing DOs (Level 2)			
International_support	0.738* (0.417)	6.431** (3.117)	6.555** (3.175)
Skills	0.166 (0.584)	−4.948 (4.250)	−6.085 (4.326)
Technical_support	−0.156 (0.587)	8.923** (4.243)	9.510** (4.320)
Constant	−0.675 (0.577)	18.012 (4.700)	16.739*** (4.769)
Wald test	115.71***	221.53***	221.93***
LR test versus Logistic model	32.81***		

Note: $N = 688$. Coefficient and standard error in parentheses.

***, **, * significant at 1%, 5%, and 10%, respectively.

tradition, which could potentially be seen as an obstacle to participating in international markets. This observation aligns with the fact that the globalization of the wine sector accelerated in the late 1990s, resulting in the establishment of new wineries worldwide specifically targeting the export market (Depetris-Chauvin & Villanueva, 2024).

Export performance is frequently positively linked to firm size, as larger-sized firms tend to allocate more resources to exporting (Ha et al., 2020). Furthermore, within the wine industry, the growing influence of the distribution channel leads to crucial economies of scale and scope (Villanueva et al., 2023). The three models presented in Table 3 demonstrate a robust positive and statistically significant correlation coefficient between winery size and export performance. This finding aligns with similar outcomes observed in the French wine industry (Maurel, 2009).

Wineries equipped with foreign language skills are more likely to succeed in securing overseas business opportunities (Reeves, 1990). This advantage stems from their enhanced understanding of international business practices and their ability to negotiate effectively with foreign counterparts (Nakos et al., 2014). Consistent with this notion, our findings indicate that these wineries are not only more inclined to engage in exporting but also exhibit a positive correlation with higher export performance in terms of export intensity.

Our empirical findings provide evidence that a differentiation strategy is important in international wine markets. We observed a negative correlation between the production percentage of the lowest quality wines and our three categories of export performance. Spanish wineries adopting a cost leadership approach appear to face challenges in highly contested international market for bulk and entry-level bottled wines. In contrast, wineries with differentiated wines tend to foster brand loyalty, reduce customer sensitivity to price, and achieve better export performance (Cavusgil & Knight, 2015; Knight et al., 2020).

While organic wine production may lead to increased grape costs and potentially diminish a winery's profitability (Prajogo, 2016), it often shows a positive association with export performance. This is particullarly evident when wineries effectively communicate the environmental benefits of organic wine production to the international market. As a result, international consumers may be more inclined to purchase a bottle of organic wine at a higher price premium. Our estimations support this observation, with the coefficient associated with organic production being positive and significantly different from zero in all three specifications.

Our empirical findings do not provide evidence that a full vertical integration strategy is related to better export performance. The estimated coefficient consistently appears negative and only reaches marginal significance in the export status regression. This outcome aligns with our prior discussion of potential trade-offs and was, to some extent, anticipated.

The *international support* variable exhibited a significant relationship with improved export performance in all three regression models. This finding suggests that export-supporting activities may play a crucial role in explaining export performance, particularly in enhancing export intensity. Therefore, the potential role of Regulatory Councils as external resources for wineries in facilitating entry into foreign markets and achieving high market penetration is underscored.

The *skills-complementing* activities variable was not significantly different from zero in any of the three models. This implies that training courses may be ineffective if, for instance, a winery lacks the necessary resources to undertake export activity or if the courses are not appropriately designed or targeted to meet the specific needs of the wineries for engaging in exporting. While various trainings may be necessary for wineries to compete in international markets, our findings indicate that they alone are not sufficient to enhance export performance.

Finally, the last variable, labeled as technical support, shows an association with increased export intensity but is not related to the decision to export. This suggests that for dedicated exporters, the technical assistance offered by Regulatory Councils may help wineries navigate the complexities of expanded involvement in exporting. However, it does not play a critical role in determining the capabilities needed for the essential transition to becoming exporters.

TABLE 5 Variance components of Hierarchical Linear Model.

	Model 1 *Exportingstatus* Variance % Components	*Model 2 Volumeintensityexport* Variance % Components	*Model 3 Valueintensityexport* Variance % Components
Winery_Level	3.29 74.78	533.35 89.86	546.49 89.62
Regulatory_Council_level	1.11 25.22	60.25 10.14	63.33 10.38

Source: Own elaboration.

TABLE 6 Result of Hierarchical Linear Model with interactive term ($N = 688$).

	Model 4 *Exportingstatus*	*Model 5 Volumeintensityexport*	*Model 6 Valueintensityexport*
Variables describing wineries (Level 1)			
Winery_Age	0.134 (0.144)	−1.932 (1.183)	−1.890 (1.199)
Winery_Size	0.925*** (0.166)	4.920*** (1.180)	5.226*** (1.195)
Languages	0.471*** (0.123)	4.523*** (0.903)	5.230*** (0.914)
Basic_wine	−0.011***(0.030)	−0.127*** (0.024)	−0.114*** (0.025)
Organic	0.915** (0.304)	9.066*** (2.234)	8.442*** (2.263)
Vertical Integration	−0.407* (0.234)	−2.780 (1.903)	−2.032 (1.927)
Variables describing DOs (Level 2)			
International support	2.503** (1.125)	12.512** (4.416)	12.383** (4.482)
Skills	0.132 (0.574)	−5.443 (4.273)	−6.559 (4.344)
Technical support	−0.111 (0.577)	9.473** (4.269)	10.038** (4.341)
*International support*Small_size*	−1.844* (1.070)	−7.286** (3.744)	−6.989* (3.792)
Constant	−0.546 (0.575)	19.520*** (4.765)	18.192*** (4.833)
Wald test	104.69***	226.12***	226.06***
LR test versus Logistic model	32.05***		

Note: $N = 688$. Coefficient and standard error in parentheses.
***, **, * significant at 1%, 5%, and 10%, respectively.

Table 5 indicates the effect class estimation results for each model. The results show the dominance of winery-specific factors as drivers of export performance.

While the existing literature acknowledges the potential interdependency between a firm's internal resources and capabilities and export promotion policies, the scarcity of theoretical and empirical work on this relationship hinders the specification of its nature or direction. Recently, small family wineries in DOC Rioja[4] expressed discontent with their Regulatory Council, contending that its benefits primarily favor large wineries over small ones.[5]

To assess this argument, we analyze the combined relationship of *international support* from Regulatory Councils and the small size[6] of wineries, specifically focusing on the differential relationships with micro wineries (those with fewer than 10 employees). The results reported in Table 6 indicate that the interaction term between

[4]Rioja is the most important wine denomination in Spain.
[5]https://nuevecuatrouno.com/2021/05/26/bodegas-familiares-rioja-elecciones-consejo-regulador/

international support and the small winery dummy is negative and significantly different from zero in all three models of export performance. The remaining variables exhibit similar results to the models without interaction.

These findings seem to offer empirical evidence supporting the complaint raised by small family wineries in DOC Rioja. This prompts questions about when small is considered too small and highlights the necessity to better tailor export promotion policies to the specific needs of such firms. The results suggest that the interprofessional systems managed by DOs, in which small wineries struggle to influence decisions and are clearly underrepresented, are questionable. For instance, in DOC Rioja, representativeness[7] is exclusively recognized based on the volume of liters and kilograms of grapes produced, a criteria that appears to be at odds with the business model of small wineries.

5 | CONCLUSION

There is an extensive literature studying how a firm's resources and capabilities affect export performance. However, there is comparatively less research on export promotion, with only a handful of studies delving into the role of Regulatory Councils as institutional forces in the agri-food industry. This paper seeks to fill this research gap by examining the relationships between the activities of Regulatory Councils in the Spanish wine industry and the export performance of Spanish wineries. The distinctive institutional features and policies of Regulatory Councils may hold particular significance for the exporting decisions of wineries. These councils serve as gateways to essential resources, training, and knowledge about international markets, acting as a "push" mechanism for firms looking to internationalize.

This study offers contributions to existing literature. While it provides empirical validation for Resource-Based View (RBV) explanations of export performance in the wine industry, it goes further by empirically demonstrating that the export performance of wineries is linked to the activities of Regulatory Councils. This aligns with the growing call for empirical research that substantiates the institutional framework within the agri-food industry, as advocated by Barbosa (2021). This paper is one of the pioneers in exploring the interconnected relationship between winery capabilities and Regulatory Council activities with winery's export performance. This research area, considered highly necessary and promising by numerous scholars (Fernández-Olmos & Malorgio, 2020; Fernández-Olmos et al., 2021; Marco-Lajara et al., 2022), adds a valuable perspective to the existing body of knowledge.

Moreover, our empirical analysis underscores the importance of recognizing the diversity among DO in unlocking wineries' exporting potential. While the export-supporting activities of DO show a positive association with wineries' export performance, surprisingly, this study reveals that skill-complementing activities do not exhibit significant correlation. This suggests that researchers examining the impact of DO should not solely focus on the relationship of belonging to a DO but should also analyze the specific activities undertaken by these Denominations of Origin to enhance wineries' export performance.

Our findings provide important insights for winery managers seeking to comprehend how the internal resources of wineries and the activities of Regulatory Councils contribute to improved export performance. Our results suggest that, for exporting, a large winery size not only improves export performance in terms of individual resources and capabilities but also facilitates the utilization of the export-supporting activities offered by Regulatory Councils. Therefore, our empirical findings suggest that, rather than solely concentrating on the examination of resources and capabilities of wineries and the activities of Regulatory Councils separately, winery managers should prioritize understanding the interrelationships between these two types of dimensions.

[6]Small winery is measured as a dichotomous variable that takes a value of 1 when the winery is micro (i.e., <10 permanent employees). In the wine industry, a winery with more than 9 employees is not considered small.

[7]https://www.larioja.com/lomejordelvinoderioja/bodegas-familiares-abren-crisis-rioja-abandonar-consejo-20230906103716-nt.html

In addition, this paper also holds important implications for policymakers. Belonging to a DO that supports an international promotion strategy is an important factor for success in foreign markets. Despite recent efforts by DO to provide training to wineries, our findings suggest that the effectiveness of these courses, at least in terms of enhancing export performance, cannot be confirmed. Therefore, it is imperative to develop an effective strategy that empowers Regulatory Councils to support firms in achieving success in export markets.

Despite the implications of this work for researchers, entrepreneurs, and policy-makers, our work has a number of limitations that provide some directions for future research. The first one is related to the nature of the data used. Establishing causality is challenging using a cross-section of firms, no matter how rich the survey data is. Most papers in the vast literature on internationalization and export performance are solely based on correlations. Establishing causality requires exogenous variation in exporting or productivity. Moreover, it is important to note that our study does not attempt to compare firms based on their productivity. Future research could explore this aspect further by extending the data set to include sales or value-added data.

Another limitation of our work related to the data is our sole focus on the wine sector within a specific country. While industry-specific research inherently has a narrow scope, it allows focusing on the more winery-specific variables (Olmos, 2011) and provides a more structural explanation of the findings when establishing causality is not possible. Nevertheless, the outcomes of this study might be generalizable to other countries within the Old Word Wine Regions, such as France, Italy, or Portugal, where wines are linked to an appellation of origin. Future researchers should aim to validate (or even generalize) these findings in diverse contexts, including agri-food industries with quality differentiated products (such as cheese and olive oil) or replicate this study in other wine-producing countries belonging to the New World Wine Regions, such as Argentina, New Zealand, and South Africa. In these regions, there has been a recent effort to transition from a more standardized and mass production system to terroir-driven wines.

Our study delves into the examination of RBV and IBV shaping export performance, uncovering a negative interaction of firm's size with a specific institutional factor. However, it overlooks other potential factors that may interact between these perspectives. Future modeling efforts should aim to incorporate these interaction relationships into the configuration of the causal relationships. Another limitation of our work lies in our ad hoc hypotheses, as they are not derived from a structural model. While common in many research papers, future studies could improve this by establishing hypotheses through a more structural approach. Finally, there is room for improvement in the operationalization of the institutional factors. This could be achieved by developing more accurate indicators.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The authors have nothing to report.

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