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## INTERNATIONAL MARKETING STRATEGY AND EXPORT PERFORMANCE IN SPANISH WINE FIRMS

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**Abstract:** The objective of this paper is to study the importance that adjustments between the marketing mix of the company and the characteristics of the destination market have in improving export performance. Four adjustments have been analysed: channel, positioning, price and knowledge. The most novel aspect of this research is the use of exports on a firm level, basing their explanation on a combination of the internal decisions of the companies and the characteristics of the destination markets. The results reveal the importance of strategic positioning adjustment between the origin and destination as a key factor that favours exports.

**Key words:** Firms export performance, marketing mix, wine industry, wine exports

**JEL codes:** F14, M21, Q13, Q17

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## **1. Introduction**

The gradual specialisation of businesses has led many companies to sell in other markets in addition to their domestic markets, given that the smaller size of the home markets makes it difficult to obtain economies of scale, hindering the competitiveness of companies and, therefore, their survival (Samiee and Walters, 1991; Santiago-Merino, 2001; Shoham, 2021). In an increasingly global and interconnected world, companies seek to use their capacities beyond their country of origin, leading them to implement internationalisation processes. However, internationalisation is a challenge for the majority of companies, particularly for those that do not have sufficient resources and knowledge of foreign markets (Johanson and Mattsson, 2015). In the early stages of market selection, companies are conditioned by the physical and cultural distance. After evaluating a group of potential markets, the opportunities vary between one company and another, depending on their marketing mix policy and their adjustment to the destination market, enabling them to use their previous knowledge and obtain economies of scale (Wood and Robertson, 2000; Helm and Gritsch, 2014). The companies that best adapt to the preferences of the distributors and intermediaries and the tastes of the consumers have better opportunities in their internationalisation process (Vanegas-López et al., 2020; Gangurde and Akarte, 2013).

The objective of this study is to find empirical evidence to show the importance that adjustments between the marketing mix of the company and the characteristics of the destination market may have when improving export performance. . However, the truly novel aspect of this research is its approach to studying the adjustment between origin and destination. Research articles usually analyse macro factors of the origin and destination and evaluate the probability of companies to export. Other studies analyse the characteristics of the firm, its strategies or resources and capacities and how this can influence its probability to export. However, to the best of our knowledge, there are no articles that combine these two elements in the same study, how the individual decisions of the firm and micro elements that give rise to its marketing mix are adjusted to the characteristics of the destination market, that is, macro factors. Therefore, the econometric model combines data of the destination market and the purchasing decisions of the consumer, with an adjustment to the decisions of the company and its marketing mix with internal factors within it, such as resources and capabilities.

To do this, four adjustments are analysed: channel adjustment, positioning adjustment, price adjustment and knowledge adjustment (degree of product knowledge). In other words, the four defining elements of the marketing mix are studied together with their influence on export performance, using a representative sample of Spanish wineries and the principal destination markets. The study makes a relevant contribution to the understanding of the marketing strategies implemented by exporting wineries to improve their internationalisation. This is relevant in an increasingly interconnected world, in which the market is global, particularly for the wine producing countries of the Mediterranean, such as Spain, which, since 2011 has been exporting 60% of its wine volume (Anderson et al. 2017).

The data have been extracted from a survey conducted among wineries in Spain and importers of 49 countries. By crossing the information about the origin with that of the destination, a common database has been formed. In order to carry out the study, a Heckman model has been used, which analyses the factors that influence the probability and intensity of exporting, following the proposals of Roberts & Tybout (1997). Specifically, the effects of the product-market adjustment on the probability of exporting and the export intensity to very different destinations are analysed.

Spain is the country with the largest area of vineyards in the world with 961mha in 2020, although in terms of production, it holds third place with 40.7 mhl after Italy (49.1 mhl) and France (46.6 mhl). It is also the country with the largest increase in volume produced in 2020 with respect to that of 2019, specifically by 7.0 mhl (+ 21%) as opposed to the 1.5 mhl (+ 3%) of Italy and the 4.4 mhl (+ 11%) of France. Furthermore, for Spain, the volume of production in 2020 grew by 8% with respect to the previous five-year average. In Italy, the volume of production had similar values and in France the increase was +6% (OIV, 2021). With respect to consumption, there has been a strong declining trend beginning in the mid-1970s, when it reached a maximum of 70 litres per capita, to the present day with 15 litres (Fernández and Pinilla, 2018). In recent years, there has been a reduction in consumption in absolute terms in Spain from 14mhl in 2000 to 9.6 mhl in 2020. This fall in consumption has driven companies to sell the majority of their production in foreign markets (Serrano et al., 2022).

The study is structured as follows. First, a literature review is carried out on the product-market adjustment concept and we propose the hypotheses to test. In this review, we explain the pertinence of analysing the differences between markets. Next, the databases

and the econometric strategy followed and used are described. Finally, we present the results, their discussion and the conclusions.

## **2. Literature review and research hypotheses**

When companies consider internationalisation, in their decision to export, they must take into account the differences that exist between the market in the country of origin of the firm and that of the destination country. These differences may oblige them to change the characteristics of the product to be sold in order to adapt to the preferences of the destination country, which implies an additional cost of adaptation. Therefore, differences between the origin and destination markets influence the decision to enter a market and the cost of fulfilling these internationalisation objectives (Dunning, 1980). This leads firms to seek for destinations that are suited to the characteristics of their products (Baena-Rojas et al., 2021). In order to determine these characteristics, and select the market to enter, firms must analyse (Deaza et al., 2020; Erdil and Ozdemir, 2016; Papadopoulos and Martin, 2013) macroeconomic factors which refer to the physical or cultural distance between the markets of origin and destination (Bargain et al., 2022). However, microeconomic factors must also be considered. The latter refer to the characteristics of the company and its capacity to adapt to the specific competitive environment of its product in the destination market (Deaza et al., 2020; Erdil and Ozdemir, 2016). The interaction between these competitive elements defines the export decision (Cunningham, 1986).

In this paper, we consider the macro factors as the characteristics of the destination markets. We consider how consumers behave in a market, why they buy the product, their buying determinants, the characteristics of how consumers buy in the different markets. We consider the micro factors as the strategies of the firm. We attempt to determine how the characteristics of the market link with the characteristics of the firm, and also the positioning of the firm. For example, if a firm sells varietal wine, we have also asked the different markets how important it is to the consumers that the wine is a varietal. Therefore, if the firm enters a market where buying varietal wines is an important factor, then the firm is going to have to make an adjustment to the market. The adjustment is calculated by the characteristics of both the market and the firm.

This is an important point, as there is very little literature that combines characteristics of countries with firm data. There are studies that analyse the characteristics of the markets

and those that consider the characteristics of the firm in order to determine whether they should export or not; but there are no studies that combine both analyses. This separation between the two types of research can also be seen in the case of wine. Thus, when it comes to understanding wine exports and their determinants, many studies focus on macroeconomic aspects and trade policies (Anderson & Wittwer, 2018 and 2020; Ayuda et al. 2020a and 2020b; Bargain, 2020). However, the exports of wineries depend both on various kinds of exogenous comparative and cultural elements linked to national business models (Alonso-Ugaglia et al., 2019) and also on their own strategic decisions that are essential in determining their internationalisation (Bargain et al., 2018; Crozet et al., 2011; Ferrer et al., 2022; Maurel, 2009). This constitutes a gap in the literature that this paper tries to fill.

When entering a new market, the company should decide whether to carry out a strategy to standardise the product or whether to adapt it to the new market. This decision will imply the designing of a new marketing mix strategy (product, price, distribution and promotion), determining whether the firm will follow the same strategy as the one implemented in the market of origin or whether it will develop a different strategy. From an International Marketing point of view, there are three important approaches when determining how to enter a market (Vrontis and Thrassou, 2007; Silva and Santos, 2020): adaptation, standardisation or a contingency strategy.

The adaptation strategy considers the differences between the countries of origin and destination and seeks to adapt its marketing mix strategy to these characteristics. However, some authors (Theodosiou and Leonidou, 2003; Vrontis, Thrassou and Lamprianou, 2009, Silva and Santos, 2020) consider that these distances are very large, and it is not possible to adapt the marketing mix strategy to each of the countries in which the company wishes to enter (export), given the differences in aspects such as, for example, consumer needs, the culture or the legislation. Therefore, they prefer a standardisation strategy, as, due to the high degree of globalisation, markets are increasingly homogeneous and there is a greater convergence in consumer needs, tastes and preferences (Theodosiou and Leonidou, 2003; Vrontis, Thrassou and Lamprianou, 2009, Silva and Santos, 2020), which would enable companies to carry out a standardisation of their marketing mix strategies in the country of origin and that of the destination. Finally, the contingency strategy consists in companies conducting a mixed

standardisation and adaptation strategy (Vrontis and Thrassou, 2007; Vrontis, Thrassou and Lamprianou, 2009).

This discussion on the marketing mix strategy that the company should use when entering foreign markets has been developed over several years. According to the Nordic School, the selection of markets is limited by two key interrelated concepts: the psychic distance and learning-by-doing (Johanson, 1977; Johanson and Vahlne, 1977; Kogut and Singh, 1988; Fina and Rugman, 1996). When the markets are far apart, companies cannot use the standardisation of their products to enter the new destinations. The cultural distance means that their products are not valued in the same way which can lead to failure. Therefore, companies should opt for a strategy based on the adaptation of their marketing mix, which gives rise to a loss of economies of scale and is not always available to all companies (Helm and Gritsch, 2014; Baena-Rojas et al., 2021; Akgun et al., 2014). Adapting the marketing mix is particularly difficult in the wine sector, which is characterised by a predominance of small-sized wineries. Within this context, and in order to obtain the maximum standardisation of the characteristics of their marketing mix (product, price, distribution and promotion), companies prefer destinations with less physical and cultural distance (Erdil and Ozdemir, 2016; Akgun et al., 2014; Helm and Gritsch, 2014). In short, of the different markets which are possible destinations, they will opt for those in which their product and marketing strategy best adapt to the tastes, characteristics and customs of the destination country (Deaza et al., 2020; Helm and Gritsch, 2014).

It has been shown that the companies select markets that are similar and physically close to their national market, as they are easier to understand and learn about (Johanson and Vahlne, 1977; Nordstrom and Vahlne, 1994). Within this scenario, the product-market adjustment concept explains how the product is adapted (price, distribution, channels), the experience that the company has in its marketing and the characteristics of its positioning to enter foreign markets, its supply chains and the characteristics of its clients, suppliers and the institutional context. These are the key factors of internationalisation (Deaza et al., 2020; Vanegas-López et al., 2020; Erdil and Ozdemir, 2016). The companies select markets taking into account the segments that they are targeting, the products and/or services and the price at which they offer them, the channels they use and the potential customers to whom they aim their campaign (Vanegas-López et al., 2020; Gorecka and Szalucka, 2013; Papadopoulos and Martin, 2013). The research conducted

to date on the degree of adaptation of the product has generated contradictory results. Some authors find a positive relationship between the adjustment of the product to the local market and export performance (Calantone et al., 2006; Cavusgil and Zou, 1994), while others find that better results can be obtained with standardised products (Christensen et al., 1987; Zou et al., 1997).

The decision to export (export propensity) is a strategic decision for a firm, and it is different from the decision to determine the extent to which the firm is involved in exporting (export intensity), which depends on how the firm manages the process once it has decided to export (Panagiotis and Love, 2012). Therefore, different resources may be needed to accomplish these two decisions.

In conclusion, companies prefer to enter markets that are highly attractive with a low market risk and in which they can enjoy a competitive advantage (Vanegas-López et al., 2020; Gorecka and Szalucka, 2013). Therefore, we consider the following hypotheses:

H1: The product positioning (of the company) -market (destination) adjustment favours the export propensity of firms.

H2: The product positioning (of the company) -market (destination) adjustment favours the export intensity of firms.

Wine firms are small, and this makes it difficult for them to have or acquire the resources needed to accomplish their export strategy. Networks allow firms to share the knowledge and expertise of the firms belonging to a network (Coviello and Munro, 1997; Johanson and Mattsson, 1988). Therefore, if wine firms belong to a network, they can take advantage of the resources available in that network so that the decision to export will be easier, as they will have the support of the network.

### **3. Materials and Methods**

#### **3.1. Sample and variables**

The study uses two surveys that study the wine industry in Spain and the selection of export markets, developed with the finance of the European project Vinci and the Vinitrac survey conducted by Wine Intelligence for the years 2019 and 2020.

First, a survey was conducted among companies of the wine sector. The initial sample of companies was constructed by converging the existing records in the protected denominations of origin and those in the Iberian Balance Sheets Analysis system (SABI)

in section 11.02 (Manufacture of wine from grape) of the Statistical classification of economic activities in the European Community (NACE), which provided a complete view of the companies that operate in the wine sector in Spain. The initial sample was made up of 3,286 companies after a filtering process of lost cases (Spanos and Lioukas 2001), eliminating those data corresponding to repeated firms or those that did not have a valid telephone number or email address. Therefore, the initial sample was reduced to 2,540 companies.

In order to conduct the survey, an email was sent to the companies together with a letter of explanation with a reference email and support telephone number in order to clarify any doubts. After one month, follow-up phone calls were made to those companies which had not answered. This phase consisted in three rounds of calls over a period of six months, the total process of data collection ran from June 2020 to July 2021. The data in Table 1 and 2, show a sample distribution close to that of the universe of Spanish wineries.

Table 1 Wineries in Spain, according to the number of employees (Dec 2019) and their percentages, compared to the wineries in the sample.

| Source and type of company |            | Micro <10 | Small 10-49 | Medium 50-249 | Larger than 250 | Larger than 50 | n/a  | Total |
|----------------------------|------------|-----------|-------------|---------------|-----------------|----------------|------|-------|
| SABI                       | N          | 2,224     | 517         | 71            | 4               | 75             | 0    | 2,816 |
|                            | % of total | 78.9      | 18.3        | 2.5           | 0.2             | 2.7            | 0    | 100   |
| Survey                     | % of total | 71.5      | 24.4        | 4.0           | 0.0             | 4.0            | 0.02 | 100   |
|                            | N          | 246       | 84          | 14            | 0               | 14             | 7    | 351   |

Table 2 Wineries in Spain, according to the income of sales in 10<sup>6</sup> euros (Dec 2019) and their percentages, compared to the wineries in the sample.

| Source and type of company |                      | Micro <2 | Small 2-10 | Medium 10-50 | Larger than 50 |  | n/a | Total |
|----------------------------|----------------------|----------|------------|--------------|----------------|--|-----|-------|
| SABI                       | N                    | 2,005    | 379        | 108          | 18             |  | 306 | 2,816 |
|                            | % of total responses | 79.9     | 15.1       | 4.3          | 0.7            |  |     |       |
| Survey                     | % of total responses | 77.5     | 15.7       | 6.3          | 0.4            |  |     |       |
|                            | n                    | 183      | 37         | 15           | 1              |  | 115 | 351   |



Table 3 shows the distribution of the sample responses according to PDOs, the data from the PDO wineries (Mapama, 2022) and the sample data, showing how the sample, with different approaches, reflects the reality of the sector.

Table 3. Distribution of the main PDOs and their number of wineries in the universe and in the sample (Dec 2019-20).

| DOPs                   | Number of wineries<br>2019 per PDOs | Number of wineries in<br>the sample per PDOs | % sample over<br>PDOs Data |
|------------------------|-------------------------------------|----------------------------------------------|----------------------------|
| Rioja                  | 773                                 | 37                                           | 4.79%                      |
| Ribera del Duero       | 316                                 | 28                                           | 8.86%                      |
| La Mancha              | 246                                 | 18                                           | 7.32%                      |
| Penedés                | 180                                 | 16                                           | 8.89%                      |
| Rias Baixas            | 178                                 | 19                                           | 10.67%                     |
| Ribeiro                | 110                                 | 3                                            | 2.73%                      |
| Priorat                | 109                                 | 12                                           | 11.01%                     |
| Utiel-Requena          | 107                                 | 3                                            | 2.80%                      |
| Valencia               | 103                                 | 7                                            | 6.80%                      |
| Navarra                | 97                                  | 7                                            | 7.22%                      |
| Ribeira Sacra          | 94                                  | 9                                            | 9.57%                      |
| Subtotal               | 2,313                               | 159                                          | 6.87%                      |
| Other PDOs             | 1,818                               | 148                                          | 8.14%                      |
| Total DOPs             | 4,131                               | 307                                          | 7.43%                      |
| No PDOs or no response |                                     | 44                                           |                            |
| Totals                 |                                     | 351                                          |                            |

Source: own elaboration with data from MAPAMA (2021) and survey

Finally, 351 valid surveys were obtained, that is 14% of the sample. This number does not have problems of significance for the statistical results because the sample error is 5% in a confidence level of 95%, according to the variable of the number of wineries, resulting acceptable in accordance with other studies (e.g. Ferrer et al., 2018). The amount of total sales for the year 2020, with the total amount for the 351 companies was 555 million euros as opposed to the 6.516 million euros for the rest of the sector, according to the Iberian Balance Sheets Analysis System (SABI, 2022), which is considered appropriate for the study, 8.5%%.

Second, the survey was conducted among a sample of importers from different export destination countries. The survey was sent to a database of 2650 importers located across a wide number of markets in all of the countries. A total of 227 responses were obtained, which has allowed us to characterise consumer behaviour in 49 countries,

together with the results of the Vinitrac survey carried out by Wine Intelligence. The 49 destination markets represent more than 90% of the exports of the wine industry in Spain. As in the case of the survey among the wineries, an email was sent to the directors of the importing companies together with a letter of explanation with a reference email and support telephone number in order to clarify any doubts. After one month, follow-up phone calls were made to those companies which had not answered. This phase consisted in three rounds of calls over a period of six months. Vinitrac is a global survey of wine drinkers that monitors and tracks the attitudes, behaviours and consumer relationship with still and sparkling wine around the world.

The combining of the three databases with 351 wineries and 49 destinations gives rise to a maximum possible series of 17,199 data, which are not reached given that not all of the wineries sell in all of the markets. Table 4 shows the descriptive statistics of the variables and available data.

As previously mentioned, the companies select similar markets to the home market in terms of the behaviour of the channels in which they have experience (Johanson and Vahlne, 1977; Nordstrom and Vahlne, 1994). They look for consumers or segments to target that are similar to those of the market of origin of the exporting company and interact with clients of the supply chain who are also similar to those in the market of origin. Considering these characteristics, the closest markets are those that are easier to understand and penetrate (Johanson and Vahlne, 1977; Nordstrom and Vahlne, 1994).

The measurement of exports is carried out through the volume exported in thousands of euros. Four variables are used in the product-market adjustment in the origin and destination. Two define two basic elements of the company's marketing strategy (price and type of product) and another two present the product choice and defence factors in the market which we call positioning adjustment and product knowledge adjustment. The variables are the same in the survey for the destination and origin markets.

First, the model includes the **adjustment of the channel** to the destination market. To do this, a multiplicative variable was created with information about the companies which were asked about their experience in selling their products in hotels, bars and restaurants; supermarkets, hypermarkets, department stores, discount stores or similar; online sales platforms; direct orders from the winery; and other intermediaries.

Furthermore, in the destination countries, importers or consumers were asked, in the Vinitrac survey, how important these same channels were for selling wine.

Second, the **adjustment in the positioning** of the product to the destination market is introduced. To do this, a multiplicative variable was created with information drawn from the survey conducted among the wineries, which were asked to identify the five most important elements that they considered motivated consumers to buy wine (country of origin, grape variety, brand recognition, promotional offers, recommendations from friends, family, critics, store staff and finally price positioning). Moreover, in the destination country, the importers or consumers were asked, in the Vinitrac survey, how important the following parameters were in the purchase decision of the consumers in the market in which they operated: country of origin of the wine, grape variety, promotions, brand recognition, recommendations from different agents and, finally, price.

Third, the model includes the **adjustment in price** to the destination market. To do this, a multiplicative variable was created with information about the companies, who were asked to provide information about the price at which they sold their products, in three price bands. Furthermore, in the destination countries, importers or consumers were asked, in the Vinitrac survey, what were the price bands preferred by the consumers.

Finally, **the adjustment in the product knowledge** in the destination markets is included. To do this, the winery was asked which denomination of origin it belonged to and in the destination country, the importers or consumers, in the Vinitrac survey, were asked about their degree of knowledge of this denomination of origin.

With respect to the control variables, following the resources and eclectic paradigm approach of Dunning (1980), it is considered that the companies with resources and capacities can exploit their advantage in foreign markets (Lu and Beamish 2004). As a result, the model includes four control variables that characterise the tangible and intangible resources of the companies.

First, we explain the variables that capture tangible resources. In our case, they are technical and financial resources (Barney, 1991). From a theoretical point of view, most studies reveal an important relationship between technological resources and a greater internationalisation of the company. Technology enables the companies to achieve economies of scale and increase their competitiveness (Wagner, 1995; Abella and Salas, 2006). However, the empirical evidence is ambiguous, as some authors find a positive

relationship (Abella and Salas, 2006; Golovko and Valentini, 2011), while others find a negative relationship (Wakelin, 1998). In this study, the variable of technological resources evaluates the position of the company with respect to its competitors and values are classified on a scale from 1 “much weaker than the competitor” to 5 “much stronger than the competitor”.

In terms of the financial resources, there is a consensus among the authors that the small and medium-sized companies, making up the majority of the sample, prefer self-financing and the reinvestment of profits to any other source of financing (Zata-Poutziouris, 2001). Therefore, this variable is expected to have a negative effect on exports (Benito-Hernández et al, 2014). In this study, the variable of financial resources evaluates the position of the company with respect to its competitors with four indicators and the values are classified on a scale from 1 “much weaker than the competitor” to 5 “much stronger than the competitor”.

Furthermore, a second group of variables is included which seeks to control the access to intangible resources that influence exports (Abella and Salas, 2006). Marketing resources are measured through a variable that evaluates the position of the company with respect to its competitors and the values are classified on a scale from 1 “much weaker than the competitor” to 5 “much stronger than the competitor”.

Finally, network resources favour the propensity of a company to export (Boehe, 2013). Networks help companies to acquire knowledge and information, which reduces the uncertainty that may exist within the context of their activity and in the market in general (Phelps et al., 2012). Networks also allow risks and costs to be shared between companies (Chetty and Blankenburg Holm, 2000), which is particularly beneficial in those sectors in which a certain size constitutes a competitive advantage for obtaining profits (Johanson and Mattsson, 2015). Specifically, collaboration networks are highly useful in internationalisation processes as they facilitate access to new markets, providing finance, distribution channels, references and contacts (Coviello, 2006). In this respect, they enable companies to determine the costs of operating in a foreign market (Buchwald, 2014), adapt their product to the needs and demands of that market (Karelakis et al., 2008) and understand its institutions and regulations (Johanson and Mattsson, 2015). As a result, this resource is also introduced in the model to evaluate the position of the company with respect to its competitors and the values are classified on a scale from 1 “much weaker

than the competitor” to 5 “much stronger than the competitor”. Table 4 shows descriptive information of the sample used in the study.

**Table 4. Descriptive statistics**

| Variable               | Obs    | Mean      | Std. Dev. | Min  | Max      |
|------------------------|--------|-----------|-----------|------|----------|
| Export                 | 17,101 | 21.353    | 144.447   | 0    | 9000     |
| Channel adjustment     | 17,101 | 1,043.919 | 1,560.848 | 0    | 12,187.5 |
| Positioning adjustment | 17,101 | 16.134    | 12.791    | 0    | 56       |
| Price adjustment       | 17,101 | 19.284    | 25.894    | 0    | 137.5    |
| Knowledge adjustment   | 10,924 | 1.7209    | 0.778     | 0.75 | 4        |
| Techno_resources       | 16,366 | 3.059     | 0.866     | 1    | 5        |
| Marketing_resources    | 16,464 | 2.750     | 0.971     | 1    | 5        |
| Network_resources      | 16,317 | 2.958     | 0.841     | 1    | 5        |
| Financial_resources    | 16,415 | 2.979     | 0.906     | 1    | 5        |

**Source:** Elaboration based on Stata software, 2016.

The matrix of Spearman correlations (in appendix) not reveals multicollinearity problems.

### 3.2. Econometric model

Standard trade theory suggests that export behaviour can be understood as the net outcome of two firm-level decisions. The first is whether or not to enter foreign markets, known as “export propensity.” The second is how much to sell overseas, “export intensity” conditional on having entered. This setup is consistent with Melitz (2003) or Chaney (2008)-style models, which emphasise the existence of both an extensive and an intensive margin of trade.

This way of thinking about trade outcomes has important implications for the estimation of firm-level models that have exports as a dependent variable. There is extensive empirical research suggesting that the majority of firms do not export, which means that there is the clear potential for sample selection bias if only an intensive margin model is estimated. Similarly, estimating only an export propensity model as a binary choice outcome loses much of the richness in the data, and does not allow for overall trade impacts to be estimated.

Thankfully, there is a simple and well-established econometric technique that allows both models to be estimated simultaneously: Heckman-Probit model in a two-stage estimation procedure (Heckman, 1979). Two equations are estimated for this purpose. The first equation is estimated using a probabilistic model. This analyses the factors affecting the firm’s decision to export, while the second considers the determinants of export intensity

(percentage of export sales over total sales). First, all the models were tested using the Heckman methodology with the inverse Mills ratio to take the problem of selection bias into account. Second, when the selection bias was not significant, the model was regressed again without including the Mills' lambda. That is, a model in two stages, the first with the Probit model and the second with the linear regression. The use of the Heckman model allows us to ensure that the problem of selection bias is obviated, which is not possible when using a multivariate linear regression method directly.

The first equation is estimated using a probabilistic model (Probit).

$$D_i^{\text{exp}} = \begin{cases} 1(\text{export}) & \longrightarrow P(D_i=1) = f(\text{product-market adjustment} + \text{Control variables}) \\ 0(\text{no export}) & \text{otherwise} \end{cases} \quad (1)$$

Where the dependent variable ( $D_i^{\text{exp}}$ ) is a dummy variable taking the value 1 if firm  $i$  exported and zero otherwise.

Two models have been developed. In the first, the four adjustments are included independently in order to observe the specific effects of each adjustment (Table 5 of the results). In the second model, all of the adjustments are considered jointly (Table 6 of the results).

The second stage of the Heckman model, in equation (2), analyses the determinants of export intensity.

$$\text{Export\_Intensity}_i = \beta_1 \text{Channel\_adjustment}_i + \beta_2 \text{Positioning\_adjustment}_i + \beta_3 \text{Price\_adjustment}_i + \beta_4 \text{Knowledge\_adjustment}_i + \beta_5 \text{Technological\_resources}_i + \beta_6 \text{Marketing\_resources}_i + \beta_7 \text{Network\_resources}_i + U_i \quad (2)$$

As a joint model and four models for each of the adjustments have been developed in the first part of the Heckman model (Table 5 of the results showing four models, one for each type of adjustment and Table 6 of the results, showing the joint model).

The dependent variable in this second stage, Export Intensity, has been calculated as the volume of export sales in euros. This measure of export intensity has been widely used in the literature. In the literature on Heckman model, the use of an exclusion variable is often required. The variable “lack of financial resources” was selected. This variable plays a role in the decision process but not in the intensity value. We had tested that this variable had significant effect in the probit equation, but not in the regression part.

#### 4. Results

Table 5 presents the results of the two models analysed (probability of exporting and intensity of the exports) with our four variables of interest analysed independently (channel adjustment, positioning adjustment, price adjustment and knowledge adjustment) and the control variables. Both in the model that explains export propensity and the model that explains export intensity, channel adjustment, positioning adjustment, price adjustment, display statistical significance and a positive effect. The knowledge adjustment has negative importance in the probability to export but positive in the intensity of exports. The results in this first stage of the research reveal the importance of strategic positioning adjustment between the origin and destination.

Table 5. Product-market adjustment for export probability and intensity four specific models

|                                          | <b>Channel<br/>Adjust. Model</b> | <b>Position.<br/>Adjust. Model</b> | <b>Price Adjust.<br/>Model</b> | <b>Knowled.<br/>Adjust Model</b> |
|------------------------------------------|----------------------------------|------------------------------------|--------------------------------|----------------------------------|
| <b>d_export (selection<br/>equation)</b> | <b>Coef.</b>                     | <b>Coef.</b>                       | <b>Coef.</b>                   | <b>Coef.</b>                     |
| Channel adjustment                       | 0.0001***                        |                                    |                                |                                  |
| Positioning adjustment                   |                                  | 0.0109***                          |                                |                                  |
| Price adjustment                         |                                  |                                    | 0.0022***                      |                                  |
| Knowledge adjustment                     |                                  |                                    |                                | -0.1403***                       |
| Tech_res                                 | 0.0528***                        | 0.0595***                          | 0.0626*                        | 0.0610***                        |
| Markt_res                                | 0.0058                           | 0.0154                             | 0.0142                         | 0.0124                           |
| Network_res                              | 0.1214***                        | 0.1350***                          | 0.1402***                      | 0.1618***                        |
| Finan_res                                | 0.0296**                         | 0.0181                             | 0.0298**                       | 0.0096                           |
| _cons                                    | -1.5284***                       | -1.6334***                         | -1.5473***                     | -1.1417***                       |
| <b>Export (regression<br/>equation)</b>  | <b>Coef.</b>                     | <b>Coef.</b>                       | <b>Coef.</b>                   | <b>Coef.</b>                     |
| Channel adjustment                       | 0.0199***                        |                                    |                                |                                  |
| Positioning adjustment                   |                                  | 0.9441**                           |                                |                                  |
| Price adjustment                         |                                  |                                    | 0.5020**                       |                                  |
| Knowledge adjustment                     |                                  |                                    |                                | 21.6926**                        |
| Tech_res                                 | 21.5908***                       | 25.3297***                         | 25.3988***                     | 28.9422***                       |
| Markt_res                                | -9.6571                          | -8.9011                            | -8.3021                        | -10.3921                         |
| Network_res                              | 6.9010                           | 11.0951                            | 11.2429                        | 11.1056                          |
| _cons                                    | 32.4531                          | 4.1319                             | 12.9459                        | -17.1950                         |
| Number of obs.                           | 16170                            | 16170                              | 16170                          | 10357                            |
| Censored obs.                            | 12544                            | 12544                              | 12544                          | 7620                             |
| Uncensored obs.                          | 3626                             | 3626                               | 3625                           | 2737                             |
| Wald chi2(4)                             | 27.58                            | 23.89                              | 27.58                          | 24.98                            |
| Prob> chi2                               | 0.000                            | 0.000                              | 0.000                          | 0.000                            |

Source: own elaboration \*\*\*, \*\* and \* denote 1, 5 and 10 percent of the level of statistical significance, respectively.

Below, Table 6 presents the results of the two models analysed with our four variables of adjustment in the same econometric model. Furthermore, in order to present robust results in Annex 4, we have presented the results with exports to two subsamples: export to richer countries and to countries poorer than Spain

Table 6. Product-market adjustment for export probability and intensity general model

| <b>d_export (selection equation)</b> | <b>Coef.</b> | <b>Std. Dev.</b> |
|--------------------------------------|--------------|------------------|
| Channel adjustment                   | 0.0001***    | 7,76E-06         |
| Positioning adjustment               | 0.0023*      | 0.0013           |
| Price adjustment                     | -0.0006      | 0.0005           |
| Knowledge adjustment                 | -0.1597***   | 0.0182           |
| Tech_res                             | 0.0470***    | 0.0180           |
| Markt_res                            | 0.0069       | 0.0179           |
| Network_res                          | 0.1391***    | 0.0209           |
| Finan_res                            | 0.0072       | 0.0176           |
| _cons                                | -1.1441***   | 0.0755           |
| <b>Export (regression equation)</b>  | <b>Coef.</b> | <b>Std. Dev.</b> |
| Channel adjustment                   | 0.0201***    | 0.0036           |
| Positioning adjustment               | 0.4123       | 0.6143           |
| Price adjustment                     | 0.1698       | 0.2355           |
| Knowledge adjustment                 | 14.7721*     | 9.0398           |
| Tech_res                             | 23.1822***   | 7.9256           |
| Markt_res                            | -10.6740     | 7.9100           |
| Network_res                          | 5,8011       | 9.2329           |
| _cons                                | -12.2859     | 54.8310          |
| Number of obs                        | 10357        |                  |
| Censored obs                         | 7620         |                  |
| Uncensored obs                       | 2737         |                  |
| Wald chi2(7)                         | 57.19        |                  |
| Prob> chi2                           | 0.000        |                  |

Source: own elaboration \*\*\*, \*\* and \* denote 1, 5 and 10 percent of the level of statistical significance, respectively.



The results show how the channel adjustment influences the probability to export and the intensity of exports ( $P=0.000$ ). This result is robust for all types of models developed (Tables 5 and 6). The positioning adjustment, meanwhile, influences the decision to export ( $P=0.079>0.05$ ) but not the intensity in general. This can be observed in the subsamples presented in Annex 4. Therefore, Hypotheses H1 and H2 are validated for channel adjustment influences and only H1 is partially validated in the case of positioning adjustment.

Price adjustment is not relevant in either the probability to export or in the intensity of exports ( $P>0.2$  and  $0.5$ ). Despite its influence observed in the model that introduces the variable individually (Table 3), we cannot validate Hypotheses H1 and H2 for this adjustment.

Finally, the knowledge adjustment has negative importance (coefficient =  $-0.16$ ) in the probability to export ( $P=0.000$ ), but positive in the intensity of exports ( $P=0.10>0.005$ ). The results are corroborated in the analyses disaggregated by subsamples (Annex 4). Therefore, for knowledge adjustment only H2 is validated.

Table 7 presents a summary of the different adjustments analysed and the hypotheses considered, which are only partially validated.

Table 7 Hypotheses contemplated and their validation

| Adjustment             | H1(probability to export) | H2 (export intensity) |
|------------------------|---------------------------|-----------------------|
| Channel adjustment     | Effect ++                 | Effect ++             |
| Positioning adjustment | Effect +                  | Not robust Effect     |
| Price adjustment       | Not robust Effect         | Not robust Effect     |
| Knowledge adjustment   | Effect - -                | Effect ++             |

Effect ++ o - - for  $P<0.05$ , Effect + for  $P>0.05$  and  $\leq 0.10$ .

With respect to the resources and capacities of the company, introduced as control variables, we can observe that: the technological resources have a positive effect on the probability to export and the export intensity; the marketing resources have no effect on either the probability to export or the export intensity; the network resources have a positive effect on the probability to export, but their effect disappears in export intensity; finally, the financial resources have no effect on the probability to export (this variable has not been used in the export intensity, due to the requirements of the Heckman model which should have one variable less in the second phase).

## 5. Discussion and conclusions

The scenario faced by companies, with the intense internationalisation process of the economy, the digitalisation of distribution and technological change, means that the resources and skills based on knowledge are key factors for companies (Huerta-Arribas and Salas-Fumás 2012). Along these lines, our study places special emphasis on the level of knowledge of the international markets and the adjustment of the product to them as a source of opportunities for entering new markets. The analysis produces interesting results, offering new evidence of the role played by the product-market adjustment. We have analysed the relationship between the product-market adjustment, the probability to export and the intensity of these exports. To do this, a representative sample of 351 Spanish wineries and importers and consumers of 49 countries has been used. The product-market adjustment, based on the marketing-mix characteristics of the company of origin and how this is valued in the destination country has been embodied in four adjustments; distribution channel adjustment, product positioning adjustment, price adjustment and product knowledge adjustment. The resources and capacities of the companies of origin, technological, marketing, network and financial resources have been taken as control variables.

The study highlights the importance of the channel knowledge of the company with the destination market, an element which has already been examined in previous studies (e.g., Wood and Robertson, 2000; Helm and Gritsch, 2014, Vanegas-López et al., 2020; Gangurde and Akarte, 2013). We have advanced the analysis by emphasising the importance of the adjustment between the policies of the origin company and the destination market, which, until now, have only been analysed generically. This adjustment facilitates the success of the company as it standardises its marketing policies and obtains economics of scale in this respect (Deaza et al., 2020; Erdil and Ozdemir, 2016).

Of all the adjustments analysed: channel, positioning, price and knowledge, only the adjustment in the channel seems to present a robust positive effect for different stages of export. The first adjustment analyses the intersection between the product marketing channels normally used by the wineries (restaurants bars, supermarkets, online sales, etc.) and the preference of the places of purchase in the destination countries. Although it seems obvious, the results reveal how it is necessary to understand consumer behaviour

in the destination markets before embarking on an export venture (Papadopoulos and Martin, 2011).

With the positioning adjustment, our study confirms its influence in the export probability having a positive effect in the new export market selection stage. Future studies should analyse in greater depth its effects on export intensity. The fact that these characteristics have not been studied independently constitutes a limitation of this study and leaves a door open for its future extension.

With respect to knowledge, focused on the denomination of origin, the analysis produces a weak result. And also a result that can seem contradictory; negative with respect to the market selection stage, but positive for increasing the export intensity in those markets in which the wineries have a presence. In the case of the negative sign, it seems that, in the markets with a high degree of knowledge of the DO, and therefore with a presence of competing companies from this region, the markets are less attractive than those with a lower penetration of regional competitors. With respect to the positive sign in the second stage, the importance of the DO, as a brand and a network to which the wineries belong, when addressing success in terms of export intensity, has already been indicated in previously studies, which show that export intensity is more relevant than the probability to export (Serrano et al., 2022, Ferrer et al, 2021). In any case, we have already commented that it is a result that is not robust for all types of models.

With respect to the resources, the importance of technological resources is confirmed, with a positive effect on the export propensity and intensity of the company. Internationalisation requires companies to be able to access the appropriate resources, to possess specialised management resources and exploit economies of scale in order to be able to assume the additional costs necessary to sell in foreign markets (Samiee y Walters, 1991; Santiago-Merino, 2001; Shoham, 2021).

The study also shows the importance of network resources in export success, as previously mentioned, when referring to knowledge adjustment based on the denomination of origin. The importance of the DOs in the life of the wineries has been indicated as being highly relevant in export success in other studies (Serrano et al., 2022; Ferrer et al. 2021), which have emphasised the importance of belonging to domestic collaboration networks in the internationalisation process of companies (Montoro-Sánchez et al., 2018).

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## **SUPPLEMENTARY MATHIERIAL**

### **ANNEX I. SURVEY QUESTIONS**

(Own elaboration base on Winitrac and previous studies of Spanos and Lioukas (2001); Ortega (2010); and Ferrer et al. (2018).

#### **I. WINERIES**

1. What type of wine do you produce), indicate the different types, 1) red; 2) rosé; 3) white; 4) sparkling-cava; 5) sweet wine; and/or 6) fortified wine
2. What kind of wine do you produce? Indicate the different types, 1) bulk; and/or 2) bottled.
3. What type of wine do you produce? Indicate the different types, 1) standard; 2) biodynamic; 3) organic; 4) sustainable; 5) fair trade; 6) vegan; and/or 7) other.
4. How would you rate the wines you produce in terms of retail price? Mark one option.  
1) economic less than 8 euros; 2) Commercial-Premium, between 8 and 13 euros; 3) Premium. More than 13 euros
5. What type of wine do you make? 1) Varietal; 2) non-varietal
6. Differentiated quality, its wines belong to: 1) Denomination of Origin; 2) Geographical Indication; and/or 3) None.
7. To which PDO does your company belong?
8. With respect to where your company's wine is sold, indicate the approximate percentage of each of the following. 1) none; 2) between 0 and 25%; 3) between 25 and 50%; 4) between 50% and 75%; and 5) more than 75%.
  - Hotels, bars, restaurants.
  - Supermarket, hypermarket, big store, discounter, duty free, etc
  - In a wine shop
  - Internet
  - From the wine producer's cellar
  - Other
  - I do not know
9. Identify the five most important elements for which your wine is chosen
  - The country of origin (France, Spain, Portugal, ..)
  - Grape variety (cabernet, garnacha,...)
  - Promotional offer
  - A brand the are aware of
  - Recommendation by friend or family
  - The region of origin

- Appel for the bottle and/or label design
- Whether or not the wine has won a medal or award
- Recommendations from shop staff or shop leaflets
- Recommendation by wine critic or writer
- Taste or wine style descriptions displayed on the shelves or no wine labels
- Alcohol content
- Wine matches or compliments food
- Price
- Other

10. What is the position of your company with respect to the competition, mark from 1 to 5. 1) much worse; 2 worse; 3) the same; 4) better; and 5) much better.

- Technological resources (state-of-the-art equipment and facilities, efficient production)
- Marketing resources (advertising, market knowledge, access to channels and competitors).
- Network resources (supplier agreements, distributors)
- Financial resources (access to credit)

11. Exports. Sales in euros as a percentage of total annual sales in euros. Indicate the percentage. 1) less than 5%; 2) between 5 and 10%; 3) between 10 and 15%; 4) between 15 and 25%; 5) between 25% and 35%; 6) between 35% and 45%; and 7) more than 45%.

## **II. IMPORTERS**

12. In which country do you carry out your activity as a wine importer? If you operate in more than one country, please fill out a survey for each country.

13. Wine consumption. What % of consumers have drunk the following beverages in the last 3 years? Has Consumption grown? You can choose more than one option. 1) No one; 2) between 0 and 25%; 3) between 25 and 50%; 4) between 50 and 75%; 5) more than 75%; and 6) Yes, it has grown.

- Red wine
- White wine
- Rosé wine
- Champagne
- Cava
- Other sparkling wine
- Port
- No one of the above

14. Wine prices. What % of consumers pay these prices (average)? (in dollars). 1) No one; 2) between 0 and 25%; 3) between 25 and 50%; 4) between 50 and 75%; 5) more than 75%;

- Less than 5
- Between 5 and 10
- Between 10 and 15
- Between 15 and 25
- Between 25 and 35
- Between 35 and 45
- More than 45

15. Wine-buying channel usage. What % of consumers have purchased through the following channels. 1) No one; 2) between 0 and 25%; 3) between 25 and 50%; 4) between 50 and 75%; 5) more than 75%.

- Supermarket, hypermarket, big store, discounter, duty free, etc
- In a wine shop
- Internet
- From the wine producer's cellar
- Other
- They do not buy wine to drink at home

16. Wine consumption. Which channels are used (%) to reach consumers? 1) No one; 2) between 0 and 25%; 3) between 25 and 50%; 4) between 50 and 75%; 5) more than 75%.

- Restaurant, bar or pub
- Retail store, supermarket, internet, etc.

17. Wine-buying choices cues. What importance (%) do each of the attributes have for the consumer when they buy wine? 1) No one; 2) between 0 and 25%; 3) between 25 and 50%; 4) between 50 and 75%; 5) more than 75%.

- The country of origin (France, Spain, Portugal, ..)
- Grape variety (cabernet, garnacha,..)
- Promotional offer
- A brand the are aware of
- Recommendation by friend or family
- The region of origin
- Appel for the bottle and/or label design
- Whether or not the wine has won a medal or award
- Recommendations from shop staff or shop leaflets
- Recommendation by wine critic or writer
- Taste or wine style descriptions displayed on the shelves or no wine labels
- Alcohol content
- Wine matches or compliments food
- Price

18. Region of origin awareness among consumers. % of knowledge of wine producing region. 0) No one; 1) between 0 and 25%; 2) between 25 and 50%; 3) between 50 and 75%; 4) more than 75%.

- Aragón (Cariñena, Calatayud, Campo de Borja, Somontano)
- Castilla La Mancha (La Mancha, Valdepeñas, Jumilla, Mentrída, Manchuela, Ribera del Júcar, Ucles)
- Catalonia
- Cava
- Navarra
- Ribera del Duero
- Rioja
- Rueda

## ANNEX 2. CONSTRUCTION OF THE VARIABLES

**Export** is equal to the value of exports of the company in euros to each of the 49 countries.

**Channel adjustment** corresponds to question 8 to the wineries and questions 15 and 16 to the importers. It is made up of six items with a response scale from 1 to 5. The maximum possible cases are 17,199 (351 wineries x 49 destinations countries). If two responses coincide in terms of place and percentage, they generate a one, if they do not coincide, they generate a 0. The average number of coincidences is 1043. In other words, a winery in an average market has an average number of coincidences of 21.3 (1043/49) places of sale and percentage of sales of a possible 30 (6 places and 5 scales).

**Positioning adjustment** corresponds to question 9 to the wineries and question 17 to the importers. It is composed of a total of 14 items, with a response scale from 1 to 5. The maximum possible cases are 17,199 (351 wineries x 49 destination countries). If two responses coincide in terms of place and percentage, they generate a one, if they do not coincide, they generate a 0. The average number of coincidences is 16.3. In other words, a winery in an average market has an average number of coincidences of 0.33 (13.3/351) in the sales attributes of its wine and the attributes preferred in the destination market (14 items and 5 scales).

**Price adjustment** corresponds to question 4 to the wineries and question 17 to importers. It is made up of a total of 3 items, with a response scale from 1 to 5. The maximum possible cases are 17,199 (351 wineries x 49 destination countries). If two responses coincide in terms of place and percentage, they generate a one, if they do not coincide, they generate a 0. The average number of coincidences is 19.3. In other words, a winery in an average market has an average number of coincidences of 0.39 (19.3/49) between the price of its wine and the price of the wine preferred in the destination market (3 items and 5 scales).

**Knowledge adjustment** corresponds to question 7 to the wineries and question 18 to the importers. It is composed of one item, with a response scale from 1 to 5. The maximum possible cases are 17,199 (351 wineries x 49 destination countries). If the PDO to which the winery belongs is not known, it generates a 0, if it is known by more than 75% of the consumers, it obtains a 4. The average number of coincidences is 1.72. In other words, a winery in an average market has

an average number of coincidences of 0.035 (1.72/49) between the PDO to which it belongs and the level of awareness of its PDO in the country of origin (1 item and 5 scales).

**Techno resources** is the value of the response to question 10a<sup>a</sup> (position of technological resources with respect to the competition) with a response scale from 1 to 5, where 1 is much worse than the competition and 5 is much better than the competition.

**Marketing\_resources** is the response value to question 10b (position of marketing resources with respect to the competition) with a response scale of 1 to 5, where 1 is much worse than the competition and 5 is much better than the competition.

**Network\_resources** is the response value to question 10c (position of network resources with respect to the competition) with a response scale of 1 to 5, where 1 is much worse than the competition and 5 is much better than the competition.

**Financial\_resources** is the response value to question 10d (position of financial resources with respect to the competition) with a response scale of 1 to 5, where 1 is much worse than the competition and 5 is much better than the competition.

### ANNEX 3. Spearman correlations for each of the independent variable used

|                            | 1       | 2      | 3       | 4       | 5       | 6      | 7      | 8      | 9 |
|----------------------------|---------|--------|---------|---------|---------|--------|--------|--------|---|
| Export (1)                 | 1       |        |         |         |         |        |        |        |   |
| Adjustment_channel (2)     | 0.1524  | 1      |         |         |         |        |        |        |   |
| Adjustment_positioning (3) | 0.0394  | 0.1146 | 1       |         |         |        |        |        |   |
| Adjustment_price (4)       | -0.0034 | 0.2731 | 0.0883  | 1       |         |        |        |        |   |
| Adjustment_knowledge (5)   | -0.0901 | 0.0597 | -0.0063 | 0.1565  | 1       |        |        |        |   |
| Techno_resources (6)       | 0.1068  | 0.1255 | 0.116   | 0.0056  | -0.0263 | 1      |        |        |   |
| Marketing_resources (7)    | 0.11    | 0.1675 | 0.0682  | -0.0039 | -0.0572 | 0.3649 | 1      |        |   |
| Network_resources (8)      | 0.1459  | 0.1772 | 0.1171  | -0.0098 | -0.0525 | 0.3991 | 0.5876 | 1      |   |
| Financial_resources (9)    | 0.0791  | 0.0892 | 0.1401  | -0.007  | 0.0268  | 0.3682 | 0.2865 | 0.3835 | 1 |

\* Significant at the 10% level

**Annex 4. Product-market adjustment for export probability and intensity. Low-income countries (GDP lower than that of Spain). High-income countries (GDP higher than that of Spain).**

| LOW-INCOME COUNTRIES          | Coef.              | Std. Dev. | HIGH-INCOME COUNTRIES         | Coef.               | Std. Dev. |
|-------------------------------|--------------------|-----------|-------------------------------|---------------------|-----------|
| d_export (selection equation) |                    |           | d_export (selection equation) |                     |           |
| Channel adjustment            | 0.0001***          | 0.0000    | Channel adjustment            | 0.0001***           | 7,72E-06  |
| Positioning adjustment        | 0.0092***          | 0.0000    | Positioning adjustment        | 0.0003              | 0.0018    |
| Price adjustment              | -0.0016*           | 0.0036    | Price adjustment              | -0.0001             | 0.0007    |
| Knowledge adjustment          | -0.1262***         | 0.0182    | Knowledge adjustment          | -0.2041***          | 0.0240    |
| Tech res                      | 0.1243***          | 0.0280    | Tech res                      | -0.0020             | 0.0241    |
| Markt res                     | -0.0256            | 0.0282    | Markt res                     | 0.0279              | 0.0239    |
| Network res                   | 0.1195***          | 0.0328    | Network res                   | 0.1615***           | 0.0278    |
| Finan res                     | -0.0284            | 0.0270    | Finan res                     | 0.0288              | 0.0235    |
| _cons                         | -1.5348***         | 0.1176    | _cons                         | -0.8826***          | 0.1006    |
| Export (regression equation)  |                    |           | Export (regression equation)  |                     |           |
| Channel adjustment            | 0.0129***          | 0.0000    | Channel adjustment            | 0.0232***           | 0.0000    |
| Positioning adjustment        | -0.0811            | 0.7172    | Positioning adjustment        | 1.0400              | 0.9169    |
| Price adjustment              | 0.3669             | 0.2693    | Price adjustment              | 0.0265              | 0.936     |
| Knowledge adjustment          | -11.7604           | 10.9577   | Knowledge adjustment          | 33.746***           | 12.5599   |
| Tech res                      | 5.3381             | 10.2245   | Tech res                      | 35.3608***          | 10.2245   |
| Markt res                     | 4.0222             | 9.5272    | Markt res                     | -18.0793            | 10.8255   |
| Network res                   | -2,8542            | 10.8741   | Network res                   | 10.3063             | 12.7071   |
| _cons                         | 75.0902            | 96.5150   | _cons                         | -78.0608            | 62.9000   |
| Number of obs 4870            | Censored obs 3954  |           | Number of obs 5487            | Censored obs 3666   |           |
|                               | Uncensored obs 916 |           |                               | Uncensored obs 1821 |           |
| Wald chi2(7) 12.62            | Prob> chi2 0.0819  |           | Wald chi2(7) 57.66            | Prob> chi2 0.0000   |           |

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