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INDIVIDUAL AND COLLECTIVE REPUTATION: LESSONS FROM THE WINE MARKET

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Individual and Collective Reputation: Lessons from the Wine Market

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Abstract

The concept of reputation has been used in every field of economic research, given its capacity to affect the outcome of all economic and financial transactions. The theoretical debate on reputation is very rich, but the mechanisms of reputation building have not been explored enough from the empirical viewpoint. In this paper we investigate the determinants of firm reputation taking into consideration the interactions between individual and collective reputation. This paper is one of the first attempts to provide robust evidence on the determinants of firm reputation using a large set of controls applied to a database not affected by self-selection bias. In fact, we constructed a new database containing the *universe* of wineries located in four regions of the North-West of Italy with an established national reputation and focus on the determinants of the "jump" from national to international reputation. Our research confirms the prediction of the theoretical literature and shows the positive effect of firm age, size, investments and producer's intrinsic motivations, and of collective reputation on individual firm reputation. Cooperatives seem to decrease their reputation when the number of associated members rises, due to free-riding and traceability problems. In contrast with previous research, relying on well-known external consultants does not acquire any outside reputation. Finally, by comparing the regression results on the determinants of national and international reputation it emerges the relevance of the mechanisms of the evaluation process: the higher proximity to the wineries of a national observer permits a better and more technical knowledge of the quality provided, allowing small *niche* producers with very low productivity to emerge and be known. For the same reason, the national classification system (i.e. the DOCG system) exerts a significant effect only on the international reputation of wineries, but not on the national one where the effect of collective reputation (i.e. the reputation of single denominations like Barolo) seems to prevail.

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1. Introduction

Reputation is almost ubiquitous in economy. Its concept has been used in every field of economic theory since it affects the outcome of economic and non-economic transactions of agents, where the latter can be firms (Kreps, 1990), minority shareholders (Gomes, 2000), managers (Yermack, 2004), central banks (Barro and Gordon, 1983), public debt managers (Drudi and Prati, 2000), banks (Gorton, 1996), participants to auctions (Houser and Wooders, 2006), internal auditors (Sridhar, 1994) and even criminals (Lott, 1996).

The concept of reputation has to do with a situation of incomplete information where consumers/agents cannot observe all the relevant attributes of the product/principal's behavior before purchase/transaction. The importance of reputation for the price a seller is able to charge has been recognized already by Akerlof (1970), who demonstrated that markets where sellers cannot reliably signal product quality may experience failure. In this vein, Shapiro (1983) showed that the quality chosen by a firm when consumers hold imperfect information is lower than that in a perfect information setting. Therefore, there is an incentive for firms to reduce the quality in order to obtain short-run gains before buyers catch on. This might prevent some consumers from buying the goods, which would distort the market.

This context creates room for reputation, i.e. "Reputations are assets in which individuals and firms invest, requiring them to trade short-term pay-offs for long-term benefits" (Wilson, 1985). Reputation is an expectation of quality which reflects long-term cumulative investments, but it can change as a result of short-term accidental or intentional actions (Fombrun and Shanley, 1990). Price premiums attached to good reputations compensate sellers for their investment in quality and reputation (Barney, 1991).

Therefore, it is not surprising that several empirical studies confirm the expected benefits associated with good reputations (Roberts and Dowling, 2002). For instance, Internet sales have provided a favorable environment to test the impact of individual reputation on buyers' willingness to pay. In fact, while in traditional markets buyers can usually inspect the quality of the products and get a feedback from the local community, sales over the internet lack these properties. However, over time sellers build their reputation through the feedback and the comments buyers can leave on the web after the purchase. The seller is often associated with a very precise measure of reputation, that is, the percentage of satisfied clients. Over the last years a growing number of empirical (see, among others, Melnik and Alm, 2002) and experimental (Keser, 2003, Resnick et al., 2006) studies found a positive price premium due to individual seller's reputation in the E-commerce. Resnick et al. (2006, p. 81) conducted a randomized controlled field experiment of an Internet reputation mechanism and found an 8.1% higher willingness to pay for goods provided by high-reputation sellers. In a similar vein, Banerjee and Duflo (2000), using data on 230 projects carried out by 125 Indian software companies, show that reputation determines contractual outcomes.

In spite of the richness of the theoretical debate on reputation[1] and the presence of a bulk of papers exploring the relation between reputation and performance[2], much remains to explore as to the

[1] Over the last three decades the theoretical literature has extensively explored the conditions under which, in a context of asymmetric information, reputation can be built and repair the market distortions. Theoretical models have usually predicted a positive effect of seller's reputation on price (see, among others, Klein and Leffer, 1981, Shapiro, 1983, Rogerson, 1983, Allen, 1984, and Houser and Wooder, 2006). See also Chu and Chu (1994) for the role of retailers' reputation in signaling the quality of manufacturers without own reputation, Cabral (2000) for the launch of a new product, Horner (2002) for the effect of competition on reputation building, Maksimovic and Titman (1991) and Roberts and Dowling (2002) on the effect of financial policy on a firm's reputation.

[2] The reasons why firm performances differ so much is a fundamental and debated topic also in strategic management. Firm reputation has been often found as a crucial asset, able to increase quality, sales, prices, revenues and rents, so that to explain

mechanisms of reputation building. Too often reputation is either taken as exogenous or analyzed within a simplified and not validated conceptual framework. So, this paper aims at investigating thoroughly the determinants of the reputation building process. In order to do this we concentrate on the wine market, which is an ideal context to study reputation and its determinants.

In the wine market, asymmetric information problems dominate economic interactions in such a way that multiple responses have been developed in order to prevent market failures caused, for instance, by wine frauds (see Unwin 1991). Indeed, we can define at least three different sources of reputation: institutional (provided by international, national, regional and local institutions), collective (provided by coalitions of producers), and individual (provided by single wineries). First, wine classifications represent an institutional response aimed at guaranteeing consumers a minimum expected quality level. In particular, in the EU there exists a classification of wines based on two broad categories, quality wines (i.e. VQPRD, Vins de Qualité Produits dans les Regions Determinées) and table wines, where quality wines are mainly identified with the origin of grapes.

Second, wines are generally awarded with a denomination, which is a coalition of producers operating within the same local area. The members of the denomination set minimum quality standards by defining production disciplines which regulate aspects such as growing practices, yields, grape varietals, minimum alcohol content, and ageing practices. Each denomination has a reputation that depends on (i) the specific rules its members have adopted (i.e. minimum quality requirements), (ii) members' past and present behavior, and (iii) the effectiveness of the monitoring procedures. Thus consumers have beliefs on the quality value of wineries belonging to a denomination depending on the reputation of the denomination itself. Third, a single winery may incur in investments in reputation whose target is indicating a high quality product to consumers, and thus at selling at higher prices. Wineries may reach this reputation goal in many ways. They may realize costly investments in order to achieve agronomical and oenological improvements (e.g. restricted yields), hire prestigious consultants providing their expertise as well as reputation, or finally invest in marketing and brand building activities.

We are able to test the impact of all these potential determinants on the reputation of Italian wineries. In this respect it is worth noticing that Italian wineries are at the first place for the production and export of wine all over the world and that Italy represents, thanks to its dimension, the second market in the world. Furthermore, by analyzing the differences between international and national reputation we are also able to disentangle the effect exerted by different reputation evaluators. Indeed, the reputation does not depend only on the behaviours and strategies of the subject examined, but also on the judge's characteristics and on the criteria adopted.

The remaining part of the paper is organized as follows. In Section II we analyze possible determinants of firm reputation, looking at previous works on collective and individual responses to quality uncertainty. In Section III we present the empirical analysis we carried out in order to collect data on the reputation of wineries and its determinants; we created a robust sample of Italian enterprises that avoid some problems that often undermine quantitative analysis results, such as the sample selection bias. In this section we also illustrate dependent and explanatory variables of econometric models. Section IV shows empirical results of different models, while in Section V we sum up the conclusions.

much of performance variance. As summarized by Fombrun and Shanley (1990, p. 233), "by signaling consumers about product quality, favorable reputations may enable firms to charge premium prices, attract better applicants, enhance their access to capital markets, and attract investors".

2. An appraisal of the determinants of reputation

In an economic context, reputation is the overall estimation of the quality of a firm/agent generally held by those who know it/her (see the Business dictionary). Therefore, reputation is not only influenced by the aspects of the firm/agent that impact on its/her perceived quality (strategies, behavior, eventual belonging to a collective coalition, etc.), but also by the characteristics of the judgment process.

Process of judgment. Thus, as a preliminary remark, all the modalities leading to the reputation judgement may exert some influence on the judgment itself. In this sense, the prior knowledge and information set of the person entitled to the firm/agent's evaluation, and the number of interactions between the two parties are key features in the reputation building process.

Having said this, the assessment of reputation depends on various informational signals emanating, directly and indirectly, from the firm/agent.

Age. The first aspect is the age, meaning the number of years the agent/firm operates in the market. Banerjee and Duflo (2000), in their study on the role that reputation plays in determining the contractual outcomes of Indian firms, provide three different proxies for reputation: age of the firm, previous work activity with the client and ISO certification. Melnik and Alm (2002) find that the price of Ebay auctions of U.S. $ 5 golden coins is positively affected by the seller's reputation measured by the number of positive and negative feedback left over time by previous buyers. It is evident that reputation built over time through good track records can influence the choice of consumers and their loyalty towards the brand. Consumer learning is a crucial element of the process of reputation building. In the markets of the so-called "experience goods", consumers can assess the quality only after purchase. Nondurables such as wine, durables such as appliances and cars, and most service providers such as lawyers, mechanics, and airlines are an example. "In these settings, a consumer's experience with a particular product becomes a precious guide providing imperfect information about a combination of seller's efforts, ability, and luck. In these markets a seller's reputation for quality therefore becomes a valuable asset" (Horner, 2002, p. 644)[3]. In all these cases age clearly plays a key role in establishing a firm reputation.

Size. Firm size is another important determinant of individual reputation for several reasons. First, large firms have higher financial resources and can sustain higher investments in quality and advertising campaigns (see also investments). Therefore, they are able to attract the attention of the media and gain visibility: "large firms tend to receive much public scrutiny. The availability of information may benefit large firms disproportionally by inflating audiences' familiarity with their activities" (Fombrun and Shanley, 1990, p. 240). Second, since size is positively correlated with age and since it takes time and money to build connections and reputation, it turns out that size is positively correlated with reputation. Third, size is expected to depress exits (Rao, 1994), even in the light that governments usually intervene when big companies face troubles in order to avoid significant job losses and domino effects on other companies. The idea that big companies are "too big to fail" might contribute to improve the confidence towards these firms.

[3] Reputation crucially depends on the speed with which consumer learning occurs. Fixed costs of information provision and credibility problems for private information sources reduce the information flow. Shapiro (1983) shows that if reputation can reward high quality production only with a lag, quality levels must lie below the perfect information quality level. Therefore, policies able to influence the speed of information flow are very important to increase product quality. Furthermore, quality can change from time to time and consumers can have limited evaluation ability: "the combination of observer error and actual quality variance makes it difficult for consumers to evaluate correctly the quality of service that a firm produces" (Rogerson, 1983, p. 508). The author analyzes the importance of word-of-mouth advertising from satisfied consumers for reputation building and market outcomes: high quality firms have more clients because over time consumers leave positive word-of-mouth advertisings which perpetuate and increase the sales.

Investments. Strictly linked to size is the relation between reputation and firm investments in quality and advertising. Fombrun and Shanley (1990) focus their attention on the relevance of market, accounting, institutional and strategy signals for firm. Using data on 292 large U.S. firms the authors test the models of reputation building and find that assessments of reputation depend on various informational signals emanating from firms and their audiences. Economic performance clearly affects reputation, although there may be some endogeneity problem among the two variables. However, as noticed by McGuire, Sundgren and Schneeweis (1988), in the sort run it is more reasonable to consider the causality direction going from financial performance to reputation than the reverse. Goldberg and Hartwick (1990) analyze the importance of the reputation of advertising firms and the extremity of the advertising claims for the success of an advertising campaign. Firms which are often non-negatively mentioned by the media might develop a better reputation because they occupy more central positions in a social network (Burt, 1983). In sum, any investment affecting firms quality and its perception from outside figure prominently in the process of reputation building.

Motivations. Effort and behavior in the economic transactions depend on extrinsic and intrinsic motivations. While the first are of economic kind, based on rewards and punishments, the second are of psychological type, based on the agent's moral values, ideals, interest in the activity, desire to perform well, need of prestige, personal involvement and convincement over the social relevance of the activity undertaken. Psychologists, sociologists and experts of human resources stress the importance of intrinsic motivations, claiming that punishments and rewards can be considered as a principal's signal of lack of trust, therefore demotivating the agent and reducing in the long term the confidence in his own abilities. On the contrary, economists focus on the relevance of incentive mechanisms for the success of economic transactions.

The importance of intrinsic motivations is probably maximized when considering voluntary work and no-profit/social enterprises (Mirvis, 1992), but is present in many other types of firms. For example, Scott Morton and Podolny (1997) distinguish wine producers whose objective is profit maximization from those who care also about the quality and the prestige of the wine produced. Owners who derive strong non-financial returns from wine quality tend to locate at the higher end of the quality spectrum and are also unlikely to make lowest quality wines. Instead, the effect of economic incentives is less clear. In the literature there are plenty of examples of situations where rewards work, but there are also counterexamples like Kohn (1993) who analyzes the effectiveness of several programs aimed at improving the population's health both with and without rewards. His findings show a weak positive effect of rewards in the short term, but a significant negative effect in the long term. Tirole (2003) tries to reconcile these two theories analyzing the conditions under which rewards and punishments work.

Cooperative. The effect of cooperativism on quality and reputation is still source of debate. On one hand, belonging to a cooperative allows division of labor, specialization and significant savings. Furthermore, it improves efficiency, especially when firms are very small and the physical capital (e.g. land in agriculture) is disperse among many producers, thereby preventing an efficient capital utilization. On the other hand, there are clear free riding problems. In fact, if costs are sustained by each producer but revenues are equally shared among all the members according to the quantities produced (same price irrespectively of quality), in absence of firm traceability (see Winfree and McCluskey, 2005), minimum quality standards (Fleckinger, 2007 and McQuade, Salant and Winfree, 2008), high social capital (Benchenkroun and Van Long, 2008), effective social norms (Kandori, 1992) and frequent controls, some firms will deviate from the virtuous behavior and lower the quality in order to minimize costs and maximize profits.

When firm traceability is difficult and the number of members high, the cooperative faces a trade-off between frequent controls and costs reduction. If the bylaws of the cooperative do not allow the rejection of any new application, the growing number of producers associated may either reduce the

average product quality or become economically inefficient. In addition, it is sometimes believed that cooperatives invest less in physical capital than conventional firms, the reason being the lack of property rights which prevents members from selling an ownership share when leaving the cooperative. In such a context, some members would prefer to reduce the investments in fixed capital in order to maximize the short term profits. At the aggregate level this would lead to the undercapitalization of cooperative firms (Mosheim, 2002)[4].

Acquisition from the market. Firms may also purchase reputation from the market. In the wine market the hiring of external winemakers is a standard business practice aimed at improving both the quality of wines and their reputation (Delmastro, 2005), where the second effect may be of a significant and even larger magnitude (Roberts et al., 2008).

Collective reputation. Collective reputation is another form of establishing an individual reputation using external sources. The literature about collective reputation is still in its infancy, even though there are already a bulk of papers analyzing this issues both theoretically and empirically. Collective reputation builds on the difference between two categories of informal enforcement (Kandori, 1992): *personal enforcement*, which is caused by the reaction of the victim of the misbehavior, and *community enforcement* (social norms), where agents change their partners over time and dishonest behavior is sanctioned by other members of the society. The author studies the mechanisms through which self-interested community members sustain such a rule in a context where agents care only about their own interests, analyzing both the incentives for the entrepreneur to behave honestly and for the other agents to punish the individual who deviates from the virtuous path. The crucial issue for social norms to be effective is information transmission, which is clearly easier in small communities: the higher the number of community members, the less effective social norms. Informal sanctions can improve the behavior in infrequent trades: a simple action rule and local information transmission are shown to be sufficient to induce a mutually beneficial outcome.

In this vein, Tirole (1996) models collective reputation as an aggregate of individual reputations. In his paper, individual and collective reputations influence each other. The better the group reputation is, the higher the private incentive to remain in the group. If the group reputation is bad, the incentive for good producers to remain in the group decreases, which perpetuates or even worsens the bad reputation of the group. In order to keep reputation, it is necessary a strong discipline which is maximized when it is sustained by the treat of exclusion from the group. Furthermore, collective reputation is long-lasting because new members inherit the reputation of the elders. Negative shocks in collective reputations can take long time to recover their previous level, and sometimes they do not even recover.

Winfree and McClucskey (2005) show that when collective reputation does not have firm traceability, firms will extract too much from the stock of reputation, selling low-quality products at high prices justified by the high past levels of quality. In contrast to previous work[5] the authors claim that

[4] However, Maietta and Sena (2008), using an unbalanced panel dataset on 979 conventional and cooperative Italian wine firms from 1996 to 2003, do not find any difference between the investment levels of the two groups.

[5] The literature on minimum quality standards (MQS) has led to mixed results. Leland (1979) and Shapiro (1983) find that consumers who usually buy low quality products might lose from the imposition of MQS since the supply of the goods they usually buy decreases or disappears. Bockstael (1984), in a model which does not consider collective reputation and which assumes that consumers know *ex-ante* the quality of each good, concludes that minimum quality standards lead to social loss since it cannot increase neither social welfare nor producer returns. Producers can earn only at the expense of consumers. Maxwell (1998) argues that previous research does not take into account the dynamic nature of the regulation: quality standards increase over time, therefore if regulators increase MQS, the profitability of innovations decreases. Scarpa (1998) extends the previous literature on duopolistic market to a model set-up with more than two firms. The author shows that, even if consumers increase their surplus, the decrease in quality and profits reduces the social welfare. Valletti (2000), by simply changing the nature of the competition from Bertrand to Cournot in the last stage of the game, finds that MQS reduce social welfare.

minimum quality standards for producer groups and regional and specialty products are necessary in order to avoid excessive collective reputation extraction. Using data about the Washington apples, they illustrate the consequences of producers' incentives not being aligned with those of the collective group and discuss findings of declining reputation.

Evans and Guinnane (2007) focus on the relationship between collective reputation, professional regulation and franchising. Many professions are subject to occupational licensing and quality regulation, whose standards are often set by the professional groups themselves. Most economists believe that such a practice is meant to increase the producers' incomes at the expense of consumers, while a minority believes it to be a solution to the asymmetric information problem between producers and consumers. In this latter view, introducing minimum standard requirements can increase clients' trust and lead to a Pareto-improvement, if the risk to meet an incompetent or fraudulent producer diminishes. In their work, Evans and Guinnane (2007) analyze the conditions under which groups of heterogeneous producers can create a Pareto-improving collective reputation. The authors conclude that if the regulator or franchisor cannot build his individual reputation, then a common reputation can be created only if the members are not too different from each other and if marginal costs are declining. The nature of the production function is very important since, in the model, high cost groups benefit most from forming a common regime.

Given the importance of collective reputation for the wine sector, there are a few papers that investigate this issue within national wine markets. Landon and Smith (1998) study the impact of quality and reputation on price, using data from the market for Bordeaux wine. The authors distinguish individual reputation, which depends on the past quality of the firms products, from collective reputation which, in a concept similar to Tirole (1996), is given by the average quality of the group the firm is identified with. The empirical findings show that rises in reputation matter even more than rises in actual quality since the impact on price of expected quality (reputation) is twenty times higher than the current quality one. Furthermore, both individual and collective reputation matter, even if collective reputation affects wine prices only if it is a good predictor of future quality.

Gergaud and Livat (2004) study the behavior of an individual with intermediate reputation who can choose between a position of follower in a first-rank organization and a position of leader in a second-rank organization. In both Tirole (1996) and Gergaud and Livat (2004), individual and collective reputations influence each other, but while the first studies the joint dynamics, the latter is static, given the nature of the data used for the empirical application. Using a dataset of individual and collective reputations of Bordeaux wines, the authors show that a group reputation is a simple computation of its most famous members' reputation, and that the leaders get on average higher umbrella impacts than the followers, even if the best position among the group of leaders seems to be the follower's one.

Institutional responses: entry regulation. Rouviere and Souberyan (2008) follow Tirole (1996) and Gergaud and Livat (2004) in modeling the creation of collective reputation, but allow for entry in, or

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On the other hand, other studies show that minimum quality standards imply positive social welfare effects. Ronnen (1991), in a perfect information setting model, shows that imposing minimum quality standards raises the average product quality but at the same time reduces the range of possible qualities producers can choose, which increases price competition. Appropriately chosen standards improve social welfare since consumers are left with higher quality and lower prices (adjusted for the increased quality). Crampes and Hollander (1995) and Ecchia and Lambertini (1997), show that MQS reduce the market differentiation, increase the market share of low quality producers and increase average social welfare. Positive social welfare effects are found also in Garella and Petrakis (2008) who consider horizontal and vertical product differentiation, imperfect consumer information and more than two firms.
Finally, Saitone and Sexton (2008), show that MQS imposed by regulators may increase net welfare because it forces firms to increase deficient high-quality products and average product quality, but MQS adopted voluntarily by a profit maximizing producer organization reduces consumers' welfare and likely also the overall (consumer plus producer) welfare. However, if the consumer demand is inelastic the overall welfare effect is negative.

exit from, the group of good or bad producers whose size is given and fixed. The authors show that free entry is not socially optimal due to the producers' incentive to free-ride on the collective reputation and, again, find that the introduction of minimum quality standards to correct this market failure is necessary to avoid good companies staying out of the market. This creates room for entry regulation. Indeed, under certain assumptions, Fleckinger (2007)[6] shows that in an asymmetric information context entry regulation and minimum quality standards can be socially efficient.

Even though the two concepts may be deeply intertwined, one may distinguish between collective reputation and institutional entry regulation. While collective reputation refers to the aggregate reputation of a coalition of individual agents, entry regulation fixes minimum quality standards for an agent to entry a (quality) segment of the market. To be more specific, in the wine market we may distinguish the reputation of a specific denomination (i.e. collective reputation) from the classification system set up by central institutions (e.g. central governments, regional institutions). Therefore, for a winery there are two additional (different but related) sources for building an individual reputation (that are clearly specified in the labels of its wines): producing certified quality wines (e.g. VQPRD in Europe, DOCG in Italy) and producing wines within a specific denomination (e.g. Barolo or Barbaresco).

3. Empirical methodology

We have already discussed the elements (i.e. presence of asymmetric information, experience good, market failures and three-level responses) that make the wine market a natural candidate to investigate reputation and its determinants. Furthermore, several characteristics make the Italian wine market an ideal testbed for this analysis. First of all, in this sector reputation built over time is a fundamental element affecting prices and sales. In this respect, Italy is the first producer and the second consumer of wine in the world; we chose the most important area, the North-West, which is characterized by high quality (Barolo, Barbaresco, Franciacorta) and big variety (white wines, red wines, champagne). Top wines have quality comparable to the best wines of Burgundy, Bourgogne and Champagne. Second, most of studies related to the wine market may be affected by sample selection bias problems.

On the contrary, the sample used for this study is the *universe* of firms who already have an established national reputation, therefore avoiding any risk of selection bias. Our target is to identify the determinants of the "reputation jump", from national to international reputation. In other words, we investigate what variables affect a firm's probability to have, in addition to national reputation, also international reputation. The path of the reputation building process is (i) no reputation, then (ii) only national reputation and finally (iii) both national and international reputation. Indeed, all Italian firms with international reputation have also national reputation, while Table 2 shows that only 12% of firms with national reputation have also international reputation. Figure 1 provides a description of this reputational path and illustrates the empirical methodology. The peak is composed by those firms (1.7% of our sample) which collected three stars in the Hugh Johnson's Wine Book.

[6] The papers of Fleckinger (2007) and McQuade, Salant and Winfree (2008) are very similar and both build on Winfree and McClucskey (2005), although the two papers are based on different assumptions. The authors distinguish two types of "experience goods": in the first consumers know the identity of the producer while in the second it is either impossible or too costly to identify it[6]. In this second case, the reputation of the single producer is nothing else but the collective reputation given by the average quality of the group. Clearly, in such a context where consumers cannot distinguish the goods of a firm from those of its competitors, a producer does not have many incentives to process high quality products (McQuade, Salant and Winfree, 2008). The two studies analyze, in a Cournot setting, how markets work when consumers know the average quality, but ignoring that of one given product. This situation is half a way between the perfect information setting and the asymmetric information setting.

The target of the paper is to provide original empirical evidence on the determinants of individual winery reputation. So natural candidate for our data source are well-known and highly respected wine guides. Data on the assessment of national reputation of Italian wineries are from L'Espresso Wine Guide, those on international and collective reputation are from Hugh Johnson's Wine Book, while information on remaining control variables are from different sources like national wine guides (L'Espresso Wine Guide, Vini d'Italia of SlowFood Association, Duemilavini of the Italian Sommelier Association and Vini di Veronelli), Cerved (i.e. the database of the Italian Chambers of Commerce), wineries brochures and websites, wine portals (e.g. www.langhe.net, www.langhevini.it) and wineries associations[7].

So, for each winery the final database provides information on: national (L'Espresso Wine Guide's overall evaluation of the winery) and international (Hugh Johnson's overall evaluation of the winery) reputation (a score from 0 to 3); presence of international reputation (dummy variable equal to 1 if present); firm structure, age, size, ownership and management; membership to national wine top denominations; region; and collective reputation (reputation of the denomination, if any, with a score from 0 to 4; this evaluation is provided by the Hugh Johnson's Wine Book). In order to control for endogeneity problems, data on the dependent variable (i.e. reputation) refers to the year 2006, while explanatory variables refer to 2005.[8]

Table 1 lists the variables used in the statistical analysis, while Table 2 provides summary statistics. The sample is composed by 581 firms of the Italian North-West region: 418 (72%) from Piedmont, 114 (20%) from Lombardy, 29 (5%) from Liguria and 20 (3%) from Aosta Valley. By construction, all the 581 wineries considered have national reputation (i.e. they are present in at least one of the four aforementioned national wine guides) with a score that ranges from 0 to 3 (for a number of different reasons we pick the evaluation of L'Espresso Wine Guide) where 0 means existence of national reputation with lowest value. International reputation is equal to 0 when absent (i.e. the winery is not present in Hugh Johnson's Wine Book) and takes value 1 to 3 when present.

As already mentioned, out of the 581 firms with national reputation, only 12% have also international reputation: 58 in Piedmont, 9 in Lombardy and 0 in Liguria and Aosta Valley. Piedmont is not only the region with the highest number of wineries, but also the one with most prestigious firms. As to the other firm characteristics, 6% of wine producers belong to a group and 5% are cooperatives with high average number of associated members, which might be source of free-riding problems and reduce the overall cooperative reputation. The number of wines produced by each firm ranges from 1 to 50 with an average of 8. Diversification is an important strategy to satisfy the needs of consumers with different tastes (especially for those firms which export a significant share of their products) and to reduce the risk. Furthermore, the production of top *niche* wines can generate positive externalities for lower level wines in case the firm reputation is determined by top products rather than by their average level.

Yields per hectare, a fundamental determinant of wine quality, range from 1,200 to 15,000 bottles. Moreover, 7% of the grapes used are bought from vineyards of other producers which, in absence of effective controls and firm traceability, is expected to reduce the quality of the final product. Almost half of the owners are also oenologists, a confirmation of the importance of intrinsic motivations in viticulture. In fact, while this might be partially due to economic incentives to increase the productivity, reduce the costs and maximize the profits, it is in part surely due to the personal involvement and the intrinsic desire to increase the quality[9]. Furthermore, 36% of firms rely on consultancies by expert wine

[7] We gratefully acknowledge the important contribution of "Consorzio Barolo, Barbaresco, Alba, Langhe e Roero".

[8] We also run estimates with the dependent variable at 2007 and 2008. Results are analogous to those presented in this paper and are available from the authors upon request.

[9] In Piedmont, the pride to produce wine has always been so big that, in the eighteenth century, the King Charles Albert, in order to be classified as a wine producer, built his own winery in Verduno. His Prime Minister, Camillo Benso di Cavour,

makers with national and even international reputation, which is sometimes (and arguably) supposed to be an asset for a firm willing to climb the reputation pyramid.

Slightly more than half the sample produces at least one wine belonging to a DOCG (i.e. *denominazione di origine controllata e gatantita*), the highest level of denomination within the Italian classification system[10]. The number of firms producing at least one DOCG wine over the total number of wineries is 254/418=0.61 for Piedmont, 47/114=0.41 for Lombardy, 0/29=0 for Liguria and 0/20=0 for Aosta Valley. Once more, these figures show the (at least presumed) superior quality of wines from Piedmont, not only in absolute but also in relative terms. In the last part of the empirical paragraph (see infra), we proceed also to distinguish the most famous appellations from the other DOCGs. In the North-West area the DOCG denominations are Barolo, Barbaresco, Asti/Moscato d'Asti, Brachetto d'Acqui, Ghemme, Gavi/Cortese di Gavi, Gattinara, Franciacorta and Valtellina Superiore. This enables us to detect eventual quality differences between denominations belonging to the same hierarchical level of classification (i.e. DOCG).

Table 3 shows the correlation matrix for selected variables. National and international reputation levels are both positively correlated with being part of a group, with age, size, number of wines and collective reputation. They have a weak negative correlation with the number of members in the cooperative and with external consultancies. Productivity and outsourcing have positive correlation with international reputation and negative correlation with national reputation, possibly because productivity and outsourcing are positively correlated with group, age, size and diversification.

In order to isolate the contribution of every single variable to the process of reputation building at the national and international level we need to move to regression analysis. In the next paragraph we will first analyze the determinants of the reputation jump through a Logit model applied to a dummy variable equal to 1 if international reputation is present, then we will study what variables affect the international and national reputations by use of Poisson regression models. In fact, Figure 2 clearly shows the non-normal distribution of the two variables and the decreasing number of observations for higher values of reputation, which makes the Poisson regression the best candidate to consistently estimate the model[11]. All regressions make use of robust standard errors.

4. Determinants of (national and international) reputation

4.1 Determinants of reputation jump

In order to analyze what variables influence the jump from national to international reputation we build a dummy variable that equals 1 when international reputation is present, 0 when is absent. The obvious candidate model is a Logit with heteroskedasticity-robust standard errors (results are reported in Table 4). Belonging to a group, being a cooperative, wine diversification, productivity and hiring a famous external consultant do not display any significant effect. As to the latter effect it is worth noticing that Delmastro (2005) finds a positive effect of external consultancy on the quality of single wines:

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was also a fine wine producer. It seems that the international reputation of Barolo, also defined as "wine for kings and king of wines", is largely due to him: in fact, the Barolo wine was used for diplomatic purposes and offered to kings and politicians during official visits and international meetings.
(See http://www.taccuinistorici.it/ita/news/medioevale/vini---vitigni/Piemonte-e-lorgoglio-del-vino-da-re.html)

[10] Italian wines are classified into four categories (from the lowest to the highest level of quality): *vini da tavola* (table wines), *indicazione geografica tipica* (IGT – table wines, typical geographic indication), *denominazione di origine controllata* (DOC – controlled denomination of origin) and *denominazione di origine controllata e garantita* (DOCG – controlled and guaranteed denomination of origin).

[11] We also tried different functional forms (e.g. ordered logit models), with very similar results.

prestigious consultants provide expertise as well as reputation. So, it seems that external consultancies have a positive effect on the reputation of single wines but not on the one of the whole winery.

On the contrary, the reputation jump is positively correlated with age, size, owner oenologist, DOCG and Piedmont and negatively correlated with the percentage of grapes bought from other companies (i.e. outsourcing). As previously claimed, reputation is path-dependent, an asset which requires time (Shapiro, 1982 and Melnik and Alm, 2002) and financial resources (Fombrun and Shanley, 1990) to be built.

This is particularly true for the Italian wine market, where the asymmetric information is amplified by the presence of a myriad of small and medium enterprises. In such a context, consumer learning occurs slowly through word-of-mouth advertising from satisfied consumers and through costly advertising campaigns. In line with the literature (Scott Morton and Podolny, 2002), owners which are also oenologist are associated to higher firm reputation. The reputation connected to the classification system, *i.e.* the DOCG denomination, is found to increase the probability of an individual reputation "upgrade". As already seen from the descriptive statistics, Piedmont has an evident "reputation premium" due to its higher quality products, even net of other confounding elements.

4.2 Determinants of international reputation

Table 5 runs Poisson regressions over the international reputation variable. Results of the first regression are robust and similar to those reported in Table 4, but the other columns provide some deeper insights by use of alternative controls.

First, in Model (ii) we have analyzed the role of the ownership structure in more depth, by replacing the raw dummy variables *Group* and *Coop*, with the size of the group (in terms of number of bottles produced by the group to which the winery eventually belongs, i.e. *Ln Group Bottles*) and the number of associated members of a cooperative (i.e. *Ln Coop Members*), respectively. Both variables are measured by the natural logarithm. As to the size of the group, it turns out to be positive but insignificant in most regressions. The role played by size is fully captured by the dimension of a single winery (i.e. *Ln Bottles* is positive and highly significant in all regressions), so that there is no additional benefit of being part of a greater group. In other words, in the wine market the minimum efficient scale can be reached at a winery level, so that the effect of economies of scale seems to vanish quite early. On the contrary, using a more informative variable of the organizational structure of a cooperative allows us to better understand the relation between ownership and reputation. In fact, *Ln Coop Members* turns out to be negative and significant in all regressions: the number of associated members captures the negative effects connected to moral hazard and the free-riding problems. Cooperatives with an excessive number of associated members very often end up specializing in low quality wines[12].

Second, in Model (iii) we investigate the role of intra-denomination differences, replacing the dummy *DOCG* with the dummy variables of all higher denominations. The well-known DOCGs Barolo (red wines) and Franciacorta (champagne) display a strong and positive effect on individual international reputation, while Gavi a negative one. This result introduces the role played by collective reputation (i.e. the reputation of every single denomination) as compared to the one exerted by the classification system (i.e. producing or not DOCG wines).

So in Models (iv) and (v) we have introduced a measure of collective reputation (i.e. *Collective*) which reflects the score given by international guides on every denomination (not only DOCGs but also

[12] As a qualitative evidence of this relation it is worth noticing that in Italy three of the first five largest wineries are cooperatives that are specialized in low quality wines.

DOCs). Every winery is assigned to the denomination of its wines with the highest score. Since there are both intra- and inter-denomination differences (in particular some DOCs reach reputation scores higher than those of some DOCGs), collective reputation and classification system turn out to be correlated (see Table 3) but different concepts. As shown by the results of the two models, both variables present a positive and significant coefficient, meaning that individual reputation is highly related to the entry regulation system (i.e. classification) and to the collective reputation (i.e. denomination) to which the winery belongs.

4.3 Determinants of national reputation

Finally, in Table 6 we analyze the determinants of national reputation. Since international and national reputations display a positive correlation, we expect the sign of the coefficients to go in the same direction of the previous models. This is actually the case for almost all variables, so that we have a confirmation of the robustness of results on the determinants of the reputation building process.

Furthermore, the existence of two differences between the models of Tables 5 and 6 completes the picture pointing out the role played by the judgment process. First, the coefficient of productivity (i.e. *Yields*) is not significant in regressions with international reputation while it is strongly negative in those with national reputation. This is due to the fact that the degree of investigation that an observer geographically close to the producers and to his vineyards can provide is higher than the one of an evaluator from other countries (if not continent). The observer's proximity to the wineries (and the number of interactions between the two parties) allows small *niche* producers with very low productivity to emerge and be known. In a similar vein, while the national classification system (i.e. the DOCG system) exerts a significant effect on international reputation of wineries, this is not the case for national reputation, where the collective reputation effect (i.e. the reputation of single denominations) seems to prevail to institutional information signals as a determinant of individual reputation.

To sum it up, it turns out that there are a number of determinants (size, age, ownership structure, owner's characteristics and collective reputation) that robustly affect the individual reputation of wineries, irrespectively from the mechanisms of the evaluation process. In addition to these, more technical information influences the reputation building process only when there is proximity between who assesses the quality of the firm and the firm itself. On the contrary, when this is not the case, reputation tends to rely more heavily upon institutional information signals.

5. Concluding remarks

Since Akerlof's (1970) seminal paper on the consequences of asymmetric information on economic transactions, the literature on the importance of reputation has enormously risen and has crossed every field of economic activity. Theoretical research has produced a growing body of models which identify the main determinants of individual reputation, but these conclusions need to be investigated more in deep from an empirical point of view, especially with respect to the interactions with collective reputation (Tirole, 1996).

Several elements make the wine market an ideal context to study the mechanisms of reputation building. In fact, the wine market is characterized by asymmetric information where buyers ignore relevant characteristics of the product and of the winery. Wine is an experience good, because consumers can test the quality of the good only after purchase. Asymmetric information problems have led to the development of multiple responses to prevent market failures caused for instance by wine frauds (see Unwin, 1991). Indeed, at least three different sources of reputation can be defined:

institutional (provided by international, national, regional and local institutions), collective (provided by coalitions of wineries), and individual (provided by single wineries).

The reputation built over time is a fundamental variable affecting prices and sales of wines. The adequateness of the Italian wine market as object of investigation is clear when we consider that Italy is the first producer and the second consumer of wine in the world. We chose the most important area, the North-West, which is characterized by high quality and large variety of products. Top wines have quality comparable to the best French wines. For this research we collected data from different sources like national wine guides, database of the Italian Chambers of Commerce, wineries brochures and websites, wine portals and wineries associations. The result is a unique database which allows doing an original research: this is one of the first attempts to test empirically the predictions of theoretical models on firm reputation by using a dataset containing a large set of controls. In addition, our paper, contrary to most previous works, does not suffer from sample selection bias problems since we run regressions on the universe of wineries which already have an established national reputation and are trying to make a reputation jump, towards an international dimension, therefore avoiding any risk of selection bias.

Some of our results confirm the main predictions of the theoretical literature. In line with previous research, firm age (see Banerjee and Duflo, 2000 and Melnik and Alm, 2002), size (Fombrun and Shanley, 1990 and Rao, 1994), investments (Fombrun and Shanley, 1990 and Goldberg and Hartwick, 1990) display a positive effect on the probability to move from national to international reputation. Similarly, intrinsic motivations (Scott Morton and Podolny, 1997 and Mirvis, 1992) have a significant positive effect on this reputational path. On the contrary, cooperatives seem to decrease their reputation when the number of members associated rises, due to free-riding and traceability problems (see also Winfree and McCluskey, 2005 and McQuade, Salant and Winfree, 2008). In contrast with previous research (Roberts et al., 2008), relying on well-known external consultants does not acquire any outside reputation to the winery as a whole, but this effect seems to be limited to the wine level (Delmastro, 2005).

Two additional results seem to us particularly interesting for the present theoretical debate on reputation. First, we distinguish the effect of entry regulation (i.e. the classification) and that of collective reputation (i.e. the reputation of any denomination). We find that both variables significantly affect individual reputation of wineries. However, the effect of the classification system heavily depends on the mechanisms of the evaluation process of wineries. So, as a second remark, our paper points to the role displayed by the reputation process on the judgment itself. More technical information influences the reputation building process only when there is proximity between who assesses the quality of the firm and the firm itself, while, on the contrary, when this is not the case, reputation tends to rely more heavily upon institutional information signals.

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Figure 1: The reputation ladder

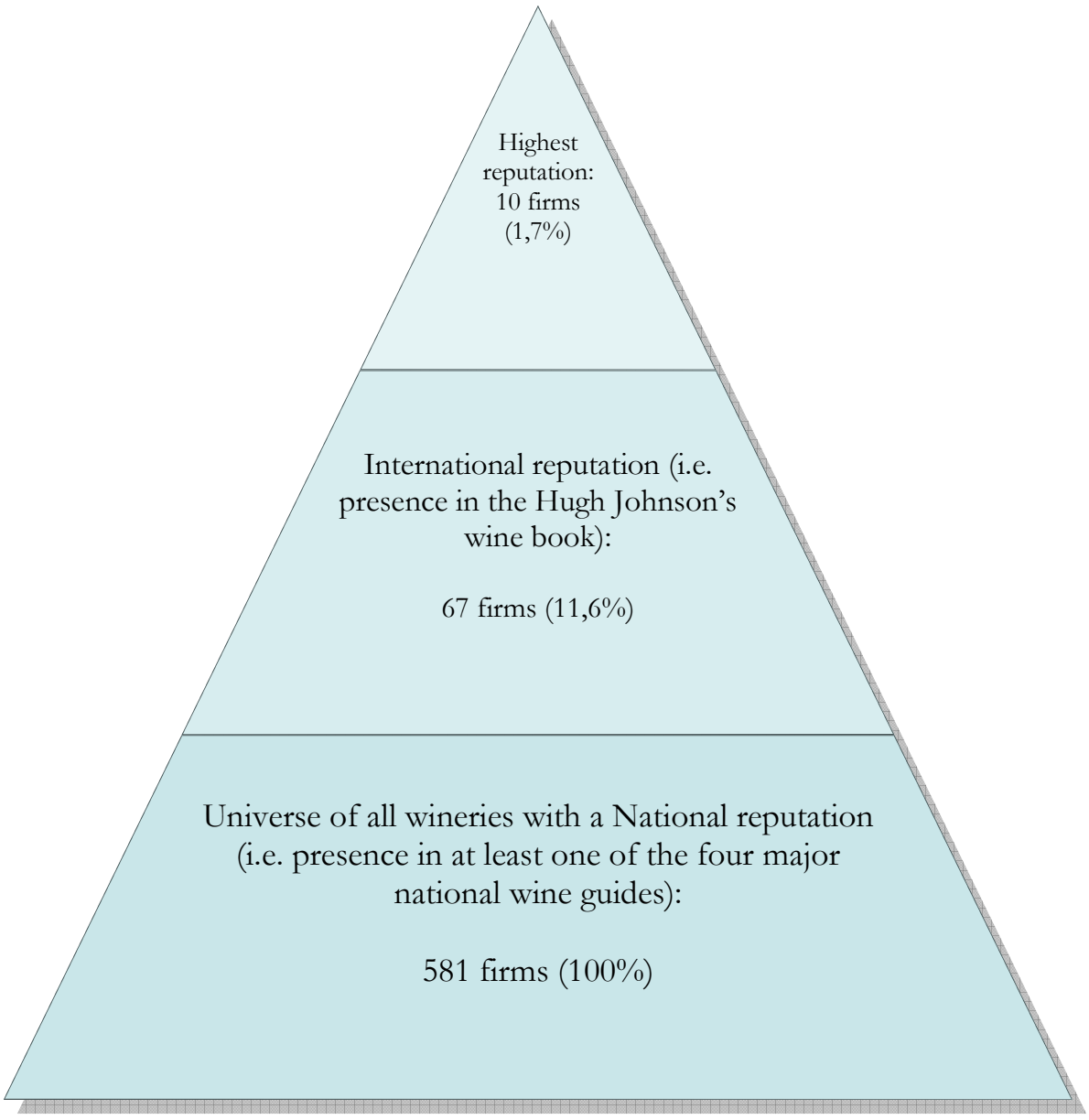


Table 1: Description of the variables used

Variable name	Source	Description
Dependent Variables		
International Reputation	Hugh Johnson's Wine Book	Ranking variable which ranges from 0 (no presence in the international wine guide) to 3 (maximum score assigned to the winery)
National Reputation	L'Espresso Wine Guide	Ranking variable which ranges from 0 (minimum score, but presence in at least one national wine guide) to 3 (maximum score)
Reputation Jump	Hugh Johnson's Wine Book	DV which takes value 1 if a winery has some degree of international reputation (i.e. at least presence in an international guide)
Explanatory Variables		
Group	Various*	DV which takes value 1 if a winery belongs to a private group
Coop	Various*	DV which takes value 1 if a winery is a cooperative
Ln age	Various*	Natural logarithm of the winery's age (i.e. number of years since foundation)
Ln Bottles	Various*	Natural logarithm of the number of bottles** produced by the winery
Ln Group Bottles	Various*	Natural logarithm of the number of bottles** produced by the group; 0 if the winery does not belong to a group
Ln Coop Members	Various*	Natural logarithm of the number of members of the cooperative; 0 if the winery is not a cooperative
Wines	Various*	Number of wines (i.e. labels) produced by the winery
Yields	Various*	Average wine production by hectare (in bottles**)
Outsourcing	Various*	Grape coming from external producers (%)
Owner oenologist	Various*	DV which takes value 1 if the owner of the winery is an oenologist
Consultant	Various*	DV which takes value 1 if the winery has a well-known wine maker as a consultant
Docg	Various*	DV which takes value 1 if a winery produces DOCG wines
Collective reputation	Hugh Johnson's Wine Book	Ranking variable which ranges from 0 to 4, depending on the assessment of the maximum classification (i.e. DOCG, DOC, or IGT) to which the winery belongs
Piedmont	Various*	DV which takes value 1 if a winery is located in Piedmont
Lombardy	Various*	DV which takes value 1 if a winery is located in Lombardy
Liguria	Various*	DV which takes value 1 if a winery is located in Liguria
Aosta Valley	Various*	DV which takes value 1 if a winery is located in Aosta Valley

* National wine guides, Cerved (i.e. the database of the Italian Chambers of Commerce), wineries brochures and websites, wine portals (e.g. Langhe.net)

** Bottles are measured in a 0,75 L standard

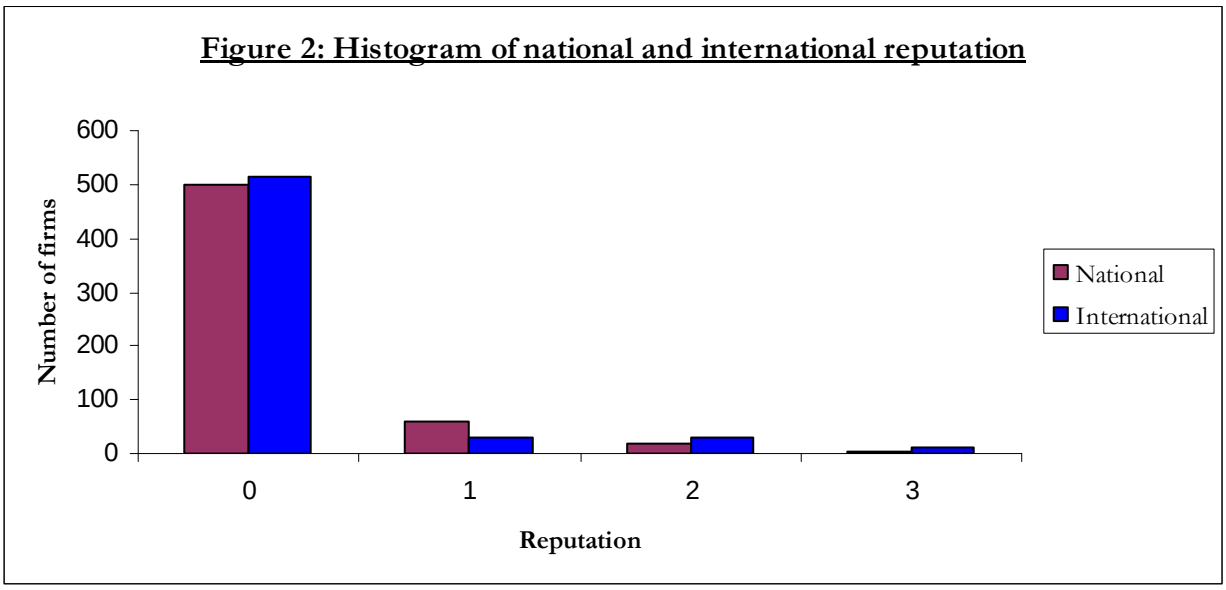
Table 2: Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
International Reputation	581	0.20	0.60	0	3
National Reputation	581	0.19	0.53	0	3
Reputation Jump	581	0.12	0.32	0	1
Group	581	0.06	0.24	0	1
Coop	581	0.05	0.21	0	1
Ln age	581	3.54	1.00	0.69	6.11
Ln Bottles	581	11.22	1.20	7.17	17.43
Ln Group Bottles	581	0.93	3.60	0	18.32
Ln Coop Members	581	0.18	0.93	0	7.82
Wines	581	8.31	5.07	1	50
Yields	581	5,359	2,125	1,200	15,000
Outsourcing	581	0.07	0.19	0	1
Owner oenologist	581	0.44	0.50	0	1
Consultant	581	0.36	0.48	0	1
Docg	581	0.52	0.50	0	1
Collective reputation	581	2.49	0.86	0	3.5
Piedmont	581	0.72	0.45	0	1
Lombardy	581	0.20	0.40	0	1
Liguria	581	0.05	0.22	0	1
Aosta Valley	581	0.03	0.18	0	1

Note: Reputation Jump is a dummy equal to 1 when the firm has both national and international reputation, zero otherwise. Data for the international reputation are from Hugh Johnson's Wine Book where 0 means absence of reputation, while those for national reputation are from L'Espresso Wine Guide where 0 means minimum (but present) reputation.

Table 3: Correlation matrix of selected variables

Variable	Int. Rep.	Nat. Rep.	Group	Ln Age	Ln Bott.	Ln Coop	Wines	Prod.	Outs.	Oenol.	Cons.	Docg
International reputation	1											
National reputation	0.62	1										
Group	0.17	0.06	1									
Ln age	0.12	0.13	0.07	1								
Ln Bottles	0.23	0.13	0.41	0.29	1							
Ln Coop members	-0.03	-0.06	0.06	-0.02	0.20	1						
Wines	0.18	0.09	0.28	0.27	0.75	0.18	1					
Yields	0.06	-0.07	0.20	0.11	0.40	0.02	0.26	1				
Outsourcing	0.05	-0.02	0.29	0.17	0.47	-0.07	0.44	0.31	1			
Owner oenologist	0.12	0.15	-0.01	0.04	-0.14	-0.12	-0.07	-0.04	0.00	1		
Consultant	-0.05	-0.02	-0.08	0.02	-0.01	-0.09	-0.02	0.00	-0.05	-0.34	1	
Docg	0.25	0.25	0.13	0.09	0.19	-0.09	0.12	0.01	0.06	0.15	-0.01	1
Collective reputation	0.22	0.27	0.02	0.07	0.12	-0.13	0.09	-0.11	0.02	0.12	0.05	0.66



Note: National reputation goes from 0 (min) to 3 (max). International reputation ranges from 1 (min) to 3 (max), while 0 means absence of international reputation. Data for the international reputation are from Hugh Johnson's Wine Book, while those for national reputation are from L'Espresso Wine Guide.

Table 4: Determinants of the "jump" from national to international reputation

Variable	Coef.	Std. Err.	z	P>z	95% Conf. Interval	
Group	0.3652092	0.4877004	0.75	0.45	-0.5906661	1.321084
Coop	-0.243129	0.6803607	-0.36	0.72	-1.576611	1.090353
Ln age	0.363658	0.1638375	2.22	0.03	0.0425423	0.6847736
Ln Bottles	1.122062	0.2525663	4.44	0.00	0.6270409	1.617083
Wines	-0.0246065	0.0377701	-0.65	0.52	-0.0986346	0.0494215
Yields	0.0000246	0.0000772	0.32	0.75	-0.0001268	0.000176
Outsourcing	-2.527649	0.8769056	-2.88	0.00	-4.246352	-0.8089455
Owner oenologist	1.145554	0.3644169	3.14	0.00	0.4313103	1.859798
Consultant	0.3758332	0.3444528	1.09	0.28	-0.299282	1.050948
Docg	1.874148	0.484128	3.87	0.00	0.925275	2.823022
Piedmont	0.766046	0.3918216	1.96	0.05	-0.0019102	1.534002
Constant	-18.87196	3.048978	-6.19	0.00	-24.84785	-12.89608
N	581					
Pseudo R2	0.2780					

Note: Results are from Logit regressions with robust standard errors. The dependent variable is a dummy equal to 1 when the firm has both national and international reputation, zero otherwise. Data for the international reputation are from Hugh Johnson's Wine Book, while those for national reputation are from L'Espresso Wine Guide.

Table 5: Determinants of international reputation

Variable	(i)	(ii)	(iii)	(iv)	(v)
Group	0.20928752				
	(0.54)				
Coop	0.08614283				
	(0.14)				
Ln age	0.24433221	0.23381514	0.23541645	0.21065136	0.21077936
	(1.79)	(1.74)	(1.72)	(1.60)	(1.58)
Ln Bottles	0.64717905	0.63099294	0.72988317	0.67976271	0.65299594
	(4.51)	(4.29)	(4.49)	(4.40)	(4.43)
Wines	-0.01593141	-0.00188347	-0.01451101	-0.00618965	-0.00272565
	(-0.84)	(-0.10)	(-0.65)	(-0.25)	(-0.13)
Yields	-0.0000321	-0.0000526	-0.00004711	-0.00006486	-0.00005897
	(-0.48)	(-0.77)	(-0.69)	(-0.90)	(-0.85)
Outsourcing	-1.618066	-2.0769991	-2.0804191	-1.7568786	-1.8278487
	(-2.14)	(-2.66)	(-2.35)	(-2.48)	(-2.45)
Owner oenologist	0.83541738	0.75688184	0.82205329	0.7435628	0.72837783
	(2.89)	(2.79)	(2.82)	(2.85)	(2.71)
Consultant	-0.00121812	-0.06196344	-0.15017887	-0.04387348	-0.03560309
	(0.00)	(-0.24)	(-0.52)	(-0.18)	(-0.14)
Docg	1.6600651	1.5657346			1.0408899
	(3.60)	(3.36)			(2.03)
Piedmont	0.34535938	0.46301043	1.8947607	0.38918218	0.33142905
	(0.97)	(1.29)	(2.45)	(1.03)	(0.90)
Ln Group Bottles		0.03660564	0.03159878	0.04333898	0.03609094
		(1.45)	(1.22)	(1.65)	(1.41)
Ln Coop Members		-0.22551353	-0.2458972	-0.2532264	-0.23566012
		(-2.30)	(-2.43)	(-2.76)	(-2.55)
Docg Barolo			0.6330029		
			(2.32)		
Docg Barbaresco			0.17871285		
			(0.60)		
Docg Asti			0.22415612		
			(0.74)		
Docg Brachetto			0.31983103		
			(0.33)		
Docg Ghemme			0.41756914		
			(0.58)		
Docg Gavi			-1.1728009		
			(-2.21)		
DocgGattinara			0.37529402		
			(0.43)		
Docg Franciacorta			2.3197934		
			(2.69)		
Docg Valtellina			1.1678867		
			(1.02)		
Collective reputation				0.9306344	0.55312026
				(4.29)	(2.47)
Constant	-11.581534	-11.312816	-12.872328	-13.116419	-12.523585
	(-6.80)	(-6.58)	(-6.64)	(-7.26)	(-7.18)
N	581	581	581	581	581
Pseudo R2	0.2095	0.2200	0.2193	0.2191	0.2318

Note: Results are from Poisson regressions with robust standard errors.

Table 6: Determinants of national reputation

Variable	(i)	(ii)	(iii)	(iv)	(v)
Group	-0.0750332				
	(-0.18)				
Coop	-0.52549138				
	(-0.85)				
Ln age	0.29127092	0.29103547	0.2430907	0.2573389	0.25765065
	(2.37)	(2.40)	(2.10)	(2.29)	(2.28)
Ln Bottles	0.64709932	0.59714541	0.75014745	0.7041991	0.69531306
	(4.65)	(4.22)	(4.76)	(4.93)	(4.87)
Wines	-0.01942405	-0.00444378	-0.02053468	-0.02387573	-0.02227966
	(-0.78)	(-0.17)	(-0.69)	(-0.87)	(-0.82)
Yields	-0.00022521	-0.00023354	-0.00023432	-0.000264	-0.00026204
	(-3.65)	(-3.74)	(-3.47)	(-3.94)	(-3.95)
Outsourcing	-1.7342141	-2.0131991	-2.2924055	-1.7891467	-1.7975871
	(-2.14)	(-2.32)	(-2.73)	(-2.28)	(-2.29)
Owner oenologist	0.76458699	0.7042361	0.59835229	0.64002412	0.63653337
	(3.57)	(3.44)	(2.71)	(3.18)	(3.17)
Consultant	0.08371907	0.04767497	0.02319198	0.09258704	0.09206641
	(0.39)	(0.23)	(0.11)	(0.47)	(0.47)
Docg	1.3693177	1.3008871			0.22452989
	(4.63)	(4.52)			(0.68)
Piedmont	0.32805839	0.49153476	1.5996206	0.17175501	0.18362708
	(0.98)	(1.47)	(2.32)	(0.48)	(0.53)
Ln Group Bottles		0.02165749	0.02258125	0.02817364	0.0263823
		(0.90)	(0.88)	(1.11)	(1.07)
Ln Coop Members		-0.40688078	-0.43366883	-0.38703726	-0.38384447
		(-2.17)	(-2.34)	(-2.16)	(-2.14)
Docg Barolo			1.1362305		
			(4.46)		
Docg Barbaresco			0.24251045		
			(0.92)		
Docg Asti			-0.41458313		
			(-1.27)		
Docg Brachetto			0.42660164		
			(0.40)		
Docg Ghemme			0.36894017		
			(0.53)		
Docg Gavi			-0.86637862		
			(-1.10)		
Docg Gattinara			0.86240251		
			(1.57)		
Docg Franciacorta			1.8662224		
			(2.45)		
Docg Valtellina			2.4388716		
			(2.54)		
Collective reputation				1.2630156	1.1508417
				(5.38)	(3.95)
Constant	-10.353235	-9.9195328	-11.870897	-13.136128	-12.904254
	(-7.02)	(-6.62)	(-6.39)	(-8.07)	(-7.80)
N	581	581	581	581	581
Pseudo R2	0.1738	0.1845	0.2229	0.2212	0.2217

Note: Results are from Poisson regressions with robust standard errors.