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Fakultät für Wirtschaftswissenschaften
Facoltà di Economia
Faculty of Economics and Management

BEMPS –
Bozen Economics & Management
Paper Series

NO 49/ 2018

Does Excellence Pay Off? Evidence from the Wine Market

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March 2018

Abstract

Product excellence is often considered a fundamental variable to increase prices, revenues and firm performance. However, while the effect of excellence on consumers' willingness to pay and on revenues is not surprising, that on profits and especially on profitability is uncertain. In fact, excellence is expensive since production costs and capital requirements often increase at an exponential rate and could end up overwhelming the positive effects due to the additional revenues. The degree of vertical integration could reduce quality and profitability in sectors where final goods are complex and require specialized suppliers, or rather increase them if the good is more simple and the control of the full chain solves the problems of asymmetric information. Using Italian data from the 2004-2009 Veronelli wine guides we show that excellence – as measured by wine quality – and vertical integration – as measured by private instead of cooperative ownership – do lead to higher prices of the bottles sold. However, in a second exercise we study the determinants of Italian wineries' Return of Invested Capital (ROIC) using AIDA 2006-2015 data merged with additional information from telephone surveys and wine guides. Using a number of econometric techniques we obtain mixed results. We show that excellence – as measured by firm and collective reputation – is irrelevant. Vertical integration – as measured by in house production of grapes and wine – ensures higher profitability, but the most profitable firms are bottlers which deliver the worst products. The most important driver of profitability is firm size, which allows realizing economies of scale and implementing effective export strategies.

Keywords: Profitability, excellence, vertical integration, reputation, quality, price, wine.

JEL codes: L11, L14, L15, L23, L25.

1. Introduction

Excellence is often considered as an important asset affecting prices and firm performance. The positive effect of quality on prices has been found in the wine sector with Californian (Bombrum and Sumner, 2003), Argentinian (San Martìn et al., 2008) and French (Crozet et al., 2011) data. The belief that quality is the main determinant of price is so strong that the latter is often considered as a proxy for the former. Ginsburgh et al. (2013), for example, use wine prices as a proxy for quality claiming that it is not possible to charge a price which is systematically higher than the quality offered.

However, the consequences of the habit of judging quality by price was questioned already by Scitovszky (1944-1945), who claimed that this was reasonable in the early days of industrial capitalism, but not in the 20th Century. With rapidly increasing standards of living the supply of goods has become so large that consumers often are not aware of the intrinsic quality of the goods they are buying, especially in case of experience goods whose quality is revealed only after purchase[1]. In such a context of asymmetric information, buyers often rely on the reputation of the firm or that of the coalition of producers.

Over the last decades the literature has analyzed the concept and the consequences of asymmetric information and the role played by reputation in providing a price premium. The definitions of reputation can change according to the author, but the concept is very similar. Reputation is the *expectation* of quality, which depends on the average quality delivered in the past and is the result of long-term cumulative investments in quality (Fombrun and Shanley, 1990). According to Cabral (2005) reputation is the situation "when agents believe a particular agent to be something", while Bar Isaac and Tadelis (2008) define it as the beliefs about seller's skills and behaviour. The price premium attached to a good reputation compensates firms for the realized investments in quality (Barney, 1991).

Theoretical works predicting a positive price premium attached to reputation include Klein and Leffer (1981), Rogerson (1983), Shapiro (1983) and Allen (1984). A number of empirical studies have confirmed the positive effect of reputation on buyers' willingness to pay. Guiso et al. (2004) provide the example of the Jewish diamond merchants in New York who reduce the legal expenses to sign binding written agreements by conducting their transactions informally. In this community, reputation is fundamental to continue in the profitable business of

[1] Wine is a typical example of experience good since the quality is tested only after the bottle is opened.

diamonds trade. Melnik and Alm (2002) and Houser and Wooders (2006) provide empirical while Resnick et al. (2006) experimental evidence that seller reputation increases buyers' willingness to pay in eBay internet sales, while Rindova et al. (2005) show that the reputation of U.S. business schools provides them a tuition premium. An extensive literature has shown the positive effect of carrying a good individual (firm) and collective (wine appellation) reputation on the price wineries are able to charge (see Oczkowski, 1994; Landon and Smith, 1997, 1998; Combris et al., 1997; Ali and Nauges, 2007; Costanigro et al., 2007; San Martìn et al., 2008; Cross et al., 2011; Frick and Simmons, 2013; Sellers-Rubio et al., 2017). Cabral and Hortaçsu (2010) show that negative feedback reduce eBay sales. Ye et al. (2013) use data on eBay sales in the United States and TaoBao sales in China, and find that seller reputation has a positive effect on price in the first market and on sales in the second.

The aforementioned literature suggests that reputation is a valuable asset for firms. However, as pointed out by Cabral (2016, p. 1), "a firm has more to lose from falling short of what is expected from it than it has to gain from exceeding expectations". The author develops a theoretical model of corporate reputation as a source of persistence in firm performance and provides a number of real examples. If this were true, an outstanding reputation can become an expensive trap to firms, forcing them to invest huge resources not to disappoint their customers, with a potentially negative impact on balance sheets.

Next, the costs and the benefits of the investments in quality and reputation are not simultaneous. In fact, it takes time to improve quality (learning by doing), build the sales network, implement the marketing strategy and get know among consumers though repeated purchases and word-of-mouth. This can generate a considerable delay between the time when firms invest in quality and reputation and that when they finally achieve excellence. "Reputations are assets in which individuals and firms invest, requiring them to trade short-term pay-offs for long-term benefits" (Wilson, 1985). Castriota and Delmastro (2012; 2015) show that in the wine market age is an important determinant of both firm and collective reputation. Firms may charge low prices and realize big losses for a number of years before breaking even. Thus, focusing only on the price premium that firms with an established reputation are able to get could be misleading.

More importantly, when considering firms' overall financial performance, prices and revenues are one part of the story, the other part being the costs. The traditional economic and marketing science usually claims that, in order to reduce the pressure of competitors and get supranormal rates of return, entrepreneurs can pursue two different strategies. The first one is to try to differentiate horizontally or vertically (Hall, 1980; Porter, 1980). Differentiation

reduces competition by increasing buyers' willingness to pay, increasing loyalty and repeated purchases (Anderson and Sullivan, 1993), promoting the firm brand through word-of-mouth, and – in case of quality – selecting those clients with lower elasticity to price. The second one is to try to reduce the production costs in order to increase the margins (Phillips et al., 1983).

The two strategies are usually considered incompatible since achieving excellence is expensive and requires skilled workers, high-priced components and equipment, more peculiar production processes, massive marketing campaigns, etc. All these elements make the costs grow and generate uncertain effects on the profits – which could increase or decrease with quality – and even more on profitability which is given by the ratio between profits and invested capital.

Rust et al. (1995) claim that in the 1980s and 1990s too many firms tried to imitate successful quality-driven firms without changing the cultural underpinning and ended up realizing huge losses: "Improving quality helps up to a point, but past that point further expenditures on quality are unprofitable. Of course, many quality improvements result in a reduction in costs that more than makes up for the quality expenditures. However, such improvements are more prevalent in manufacturing and the more standardized services (e.g., fast food restaurants) than they are in the highly customized, big-ticket services that constitute the growth industries of the information age (e.g., electronic information services)" (Rust et al., 1995, p. 58). In their theoretical contribution the authors do not give for granted a high return of quality; they consider excellence as an input which should be financially accountable to avoid overinvestments.

A number of authors, however, claim that high quality and low production costs are not necessarily incompatible (Bazzel and Gale, 1987; Johnson and Kleiner, 1993), for example in those productions where there is a quality-based learning curve which allow for higher declines in average costs among high-quality goods and services (Phillips et al., 1983; Fine, 1986). Furthermore, good quality could imply similar or even smaller overall costs if there were lower recall and warranty costs.

Whether excellence increases profitability is, therefore, an empirical question. With data on 623 American firms Phillips et al. (1983) fail to support the common view that high quality is in contrast with low costs. In a large study involving more than 15,000 patients from 51 hospitals, Nelson et al. (1992) find that patients' perceptions of quality are associated with good hospital financial performance. Using data from *Fortune 1000* on the most admired companies, Fonbrun and Shanley (2002) build a database of more than four thousands American firms and find that good corporate reputations ensure sustained superior financial

performance. Rust et al. (2002), using data on 100 large US firms in the manufacturing and service sectors, show that the management emphasis on quality finalized to boost revenues has a positive impact on firm performance and that it is difficult to reduce the costs and increase the quality simultaneously. Using stock market data Morgan and Rego (2006) and Tuli and Bharadwaj (2009) show that customers' satisfaction positively affects, respectively, the performance and the volatility of stocks. Ekinci et al. (2011) find that the quality of services offered has a positive impact on customer loyalty and growth in the UK budget hotels.

On the opposite, Parast and Fini (2010) show with data on airline companies that quality – measured with the on-time performance – has no effect on profitability, the most important determinants being labor productivity. Kapferer and Tabatoni (2010) report that a large share of firms involved in the production of luxury items display a low profitability. In a large literature review of studies by consulting firms and academics Zeithaml (2000) concludes that results on the effects of Total Quality Management (TQM) on firms' profitability are mixed, with both positive and negative relationships being confirmed.

The outcome is even more uncertain when production faces some constraints. In sectors with high sunk costs and weak production constraints – like for example the mobile phones – firms invest huge amounts in R&D and marketing campaigns, while the physical production is inexpensive and it is often externalized to other companies. In this case, achieving excellence can provide a technological and reputational leadership whose average costs decline when are spread over a potentially unlimited number of products sold. In other sectors, on the contrary, like restaurants and wine, space/land availability and public laws prevent firms from expanding once they finally achieve excellence[2]. In presence of production constraints, it gets difficult to spread the fixed costs over a growing number of units sold and firm profitability can decrease.

Next, as pointed out by Porter (1980, p. 38), it can sometimes be difficult to gain large market shares with goods and services which are expensive and perceived as exclusive, therefore the average costs can hardly decline. This is, again, the case for the wine sector where quality

[2] The EU Common Agricultural Policy (CAP) has established in several sectors (wine, cheese, ham, etc.) the Protected Designations of Origin (PDO) and the Protected Geographical Indications (PGI). The goods belonging to a PDO or a PGI can be produced only in the areas included in some given geographical boundaries, according to some strict rules and techniques meant to provide some minimum quality standards. Furthermore, for some goods – like milk and wine – in order to avoid overproduction it is necessary to have production rights.

wines are expensive to produce and age and, given the high final price, are classified as luxury or at least exclusive products which only a minority of buyers can afford.

When studying the impact of quality and reputation on firm performance it is important to consider also the role played by vertical integration. In fact, excellence might be affected by the degree of vertical integration, but whether the effect is positive or rather negative depends on the complexity of the good produced. Vertical integration increases the required effort, the operational complexity and, in turn, the costs. Therefore, in some sectors where the final good is composed of hundreds or thousands of components like in electronics or carmaking, it is necessary to rely on a number of specialized suppliers.

In other (simpler) sectors like wine, on the contrary, the optimal strategy can be to control the whole production chain, that is, both the agronomical phase to grow the grapes and the enological one to make the wine. In fact, if the firm is not fully integrated – because it buys some intermediary goods from other firms or it is a cooperative with many producing members – the decentralized decision process generates coordination problems. These, in turn, lead to free-riding on quality (Cook, 1995; Fulton, 1995; Weiss and Pennerstorfer, 2012; Saitone and Sexton 2009) and quantity (Phillips, 1953; Helmberger and Hoos, 1962; Albæk and Schultz, 1998).

The literature has highlighted the moral hazard problem between the upstream supplier of the inputs and the downstream producer of the final goods, while Li et al. (2016) list a number of scandals in the food sector caused by the suppliers. Apart from contract enforcement, one possible solution which is often explored by downstream producers is to take over the supplier. With data on the Peruvian fishmeal industry Hansman et al. (2017) show that after integrating with the plant being supplied and losing access to alternative pay-per-kilo buyers, suppliers take more quality-increasing and less quantity-increasing actions.

Even assuming a positive effect of vertical integration on quality, prices and profits, its impact on profitability can be negative. In fact, vertical integration requires large capital investments which could reduce profitability even in presence of higher profits. In the agri-food sector, for example, it is necessary to buy land, buildings and equipment to grow and process the agricultural goods. In the most famous wine regions, a hectare of land – if available – is easily sold at prices that can reach hundreds of thousands or even million dollars while modern vinification machines request huge investments. Wine bottlers are the least integrated firms; they buy mediocre products and sell it with their own label. It is true that the price of these products is very low, but the invested capital is almost inexistent, therefore whether they are more or less profitable (with respect to the capital invested) than other more integrated firms

is an empirical question. In their large literature review of existing studies, de la Fuente Sabate and de Quevedo Puenteon (2013) find mixed results on the effect of corporate reputation on financial performance.

To measure the impact of excellence and vertical integration on prices and on firm profitability we collected different data sources in order to perform two different analyses. In the first one, we run hedonic price regressions with data from the 2004-2009 Veronelli guide on more than 55,000 bottles of Italian wines. With this rich dataset, we confirm that quality and vertical integration are important drivers of the price charged. This is in line with previous theoretical and empirical research and, actually, it is not surprising since firms calculate production costs and usually – if possible – apply a mark-up. Better wines are more expensive to produce and, in turn, have a higher price. Furthermore, consumers' willingness to pay increases with quality.

However, the real issue is whether excellence and vertical integration increase firm profitability. To answer this question we create an unbalanced panel dataset containing the 2006-2015 balance sheets and additional information of around 1,700 Italian firms involved in the production of grapes and wine. In this study, we follow Porter (2008, p. 83) and use the ROIC as a proxy for profitability: "Return on invested capital (ROIC) is the appropriate measure of profitability for strategy formulation, not to mention for equity investors. Return on sales or the growth rate of profits fail to account for the capital required to compete in the industry. Here we utilize earnings before interest and taxes divided by average invested capital less excess cash as the measure of ROIC. This measure controls for idiosyncratic differences in capital structure and tax rates across companies and industries".

A frequent concern about the use of the ROIC is that in dynamic markets, successful firms invest their profits to increase their production scale and grow. This is what frequently happens in the high-tech sector, where distributing dividends can even be considered as a final admission that the fast growth phase has ended. Famous examples include Microsoft and Apple that in their early times did not distribute profits, but at some points changed their policy. If this were true, we would observe small positive or even negative – instead of large positive – ROICs in the balance sheets of the most successful firms. Empirical evidence in support of the so-called "life-cycle theory of dividends" has been provided, among others, by Benartzi, Michaely and Thaler (1997), Grullon, Michaely and Swaminathan (2002), Bulan, Subramanian and Tanlu (2007).

In the Italian wine sector, however, this is not the case for two reasons. First, over the last four decades in Italy the consumption of wine has been declining from around 120 liters per

capita to around 36 (Castriota, 2015). With a stagnant population, this has generated a parallel decline in total wine consumption, with firms desperately trying to export their products to those countries where consumption is increasing. Many producers, instead, decided to get the incentives provided by the EU to uproot their vineyards and leave the market. Second, as already mentioned, successful firms willing to invest their profits to buy new land have to obtain from the EU or buy from other wineries additional planting rights. Differently from the so-called "New World Countries"[3], in Italy firms cannot freely buy land and expand their production. Therefore, the idea that Italian successful wineries display poor results in their balance sheets because they are buying land to expand their activity is more theoretical than real.

Applying different econometric methodologies to this extensive dataset we find that individual (firm) and collective (wine appellation) reputations have no significant impact on profitability. Vertical integration is important since controlling the whole production chain is associated with higher ROIC, even though bottlers – that is, the least integrated – are the most profitable. The main driver of the return of invested capital is firm size, presumably because of the higher efficiency connected to the larger economies of scale and to the enhanced export capabilities.

2. Excellence, vertical integration and prices

The Veronelli 2004-2009 wine guides provide information on the price, quality and characteristics of over 55,000 bottles of wine from all the 20 Italian regions. Prices have been transformed by the authors of the guides into a 1-9 variable where each score represents a price range[4]. Excellence is captured by quality, which is measured with the points (from 80 to 99) awarded by the judges of the guide. Vertical integration is identified with the cooperative nature of the firm since in this type of companies the agronomical part is left to the members, therefore there is not full control over the whole production chain. Evidence that cooperative firms produce lower quality wines has been provided using data on Germany (Frick, 2004;

[3] "New World countries" are all the countries which started producing wine over the last 300-400 years, with a strong acceleration since the 1970s, the most important being the USA, Argentina, Chile, South Africa, Australia and New Zealand, with China becoming more important over time.

[4] Since the highest one is unbounded upwards, it is not possible to transform the categories into price values by using the median value of each range and run OLS regressions.

Dilger, 2009), Austria (Pennerstorfer and Weiss, 2013) and Italy (Delmastro, 2007; Castriota et al., 2013).

Additional controls include horizontal differentiation (white, red, rosé and sweet), a dummy variable equal to one if the wine is a new entry, age of the wine, ageing techniques (use of wooden barrels and *barriques*), number of bottles produced of the label evaluated, firm size (measured by the number of hectares), institutional awards/classification (table wines, IGT, DOC and DOCG)[5], and regional and year dummy variables. Table 1a reports the description of the variables used and Table 1b the summary statistics.

Quality is a continuous variable while price is discrete, therefore the analysis has been carried out with Ordinary Least Squares in the former case and with Ordered Logit in the latter, both with standard errors adjusted for clusters at the firm level (see Table 2). The coefficients of the regional and year dummy variables and the cutoffs of the ordered logit are not shown for reasons of space but are available upon request. The basis to avoid the dummy variable trap are white wine, private firm, table wine, year 2004 and the region Sardinia.

The first two columns of Table 2 confirm the importance of vertical integration and firm size for wine quality. As already found in previous studies, wines produced by private and large firms obtain higher grades. More importantly, the last two columns show the strong link between excellence (quality) and price charged: net of other confounding elements, consumers' willingness to pay increases with quality. Vertical integration matters: not only cooperative firms produce worse wines (as shown in the first two columns) which affects prices, but – net of the quality level achieved – they have a negative price premium, presumably due to the bad reputation accumulated. Firm size, measured with the number of hectares, is important for the price they are able to charge thanks to the higher bargaining power and to structured sales and marketing policies they can implement.

However, as mentioned above, better wines are also more expensive to produce, for example because of the lower yields per hectare, the lower ratio wine obtained/kg of grapes and the remunerations of famous flying consultants. Thus, the fact that quality affects the buyers' willingness to pay is not surprising at all. Furthermore, it is not even relevant for entrepreneurs since what matters in the end is neither the price charged nor the profits realized, but rather the return on invested capital, which should be compared with other

[5] In line with the other EU countries, in Italy there are four hierarchical levels of quality (from the lowest to the highest): table wine (Vino Da Tavola – VDT), typical geographic indication (Indicazione Geografica Tipica– IGT), controlled denomination of origin (Denominazione di Origine Controllata – DOC), and controlled and guaranteed denomination of origin (Denominazione di Origine Controllata e Garantita – DOCG).

alternative investments. This is true for all those entrepreneurs which are profit maximizers, even though to a certain extent it should hold also for those who are utility maximizers if they want to avoid bankruptcy[6].

3. Excellence, vertical integration and profitability

In order to explore the relationship between excellence, vertical integration and profitability we create a unique dataset from three different sources: balance sheets, telephone interviews and wine guides. The first one is AIDA (Analisi Informatizzata delle Aziende Italiane) which contains the Statement of Financial Positions and Income of over one million Italian companies. We have balance sheet data of Italian firms producing grapes and/or wine[7] in the period 2006-2015. We excluded the cooperatives since the land and the costs of the agronomical activities belong to the members and not the firm, therefore their ROIC is not comparable with that of private firms.

In order to get a complete picture, we enriched this dataset with telephone surveys to be sure about the nature of the business. In fact, misclassifications of firms into the wrong business and poor information content about the exact nature of the business are common, therefore we interviewed the firms' management to know whether the company was producing (i) table grapes, (ii) wine grapes, (iii) wine or (iv) it was merely bottling other firms' wine. We dropped firms not involved in any of these four activities, the final sample being composed of around 1,700 wineries. Lastly, we collected information from the Italian Slow Food wine guide about firm reputation and responsible practices, and from the international Hugh Johnson's wine guide about firm and collective reputations.

Tables 3a and 3b report, respectively, the description and the summary statistics of the variables used in this second exercise. With a stagnant consumption pattern and a structural excess supply, the wine sector is very competitive (see Castriota, 2015, ch. 1). As a consequence, the average ROIC is 1.73%, 38% of firms reporting negative financial results. The distribution is very symmetric and most of firms report either weakly positive or weakly negative returns (Fig. 1), but the tails of the distribution are quite thick with a non-negligible number of firms reporting huge gains or huge losses.

[6] Scott Morton and Podolny (2002) use data about the California wine sector to show that in many industries producers maximize utility (which comes from the pride of achieving excellence) rather than profits.

[7] The selected codes are 01.21.00 (cultivation of grapes), 11.02.00 (production of wine), 11.02.10 (production of table and quality v.q.p.r.d. wines), and 11.02.20 (production of sparling and other special wines).

Firm age and size can reach a maximum of, respectively, 104 years and 250 million € of revenues. Many companies are involved in more than one activity, apart from bottlers which are exclusively dealing with wine trade. Most of firms have more than one owner. When focusing on product excellence, we consider different measures of reputation. The Slow Food wine guide provides information on responsible practices, value for money and Firm Reputation while that of Hugh Johnson on Firm Reputation and Collective Reputation. The Slow Food Firm Reputation is a dummy variable and is awarded to 1% of sample firms, while the Hugh Johnson's Firm and Collective Reputations range between 0 and 4 with 0.5 intervals and are awarded to 4% of sample firms (firm reputation) and half the provinces (collective reputation).

All the variables from the wine guides are lagged one year since the book of a certain year (e.g. 2015) is written in the previous one (e.g. 2014). This is useful for our econometric analysis because it reduces the reverse causality problem between reputation on one side and firm size and profitability on the other. As a further robustness test we delay by one additional year our proxies of reputation, the maximum lag between the ROIC and the reputation being two years.

Tables 4a-4b-4c report the ROIC obtained by splitting the sample by firm revenues, age and reputation; statistics have been calculated for the whole sample and for the subsample of firms producing only grapes. Firms producing only table grapes display a lower profitability, given that they produce a simple fruit which is not transformed into wine. The ROIC increases with firm size and age. As shown empirically by Kalyanaram and Urban (1992), the order of entry affects firm performance in the sense that late entrants suffer a long-term market share disadvantage, therefore firm age is expected to increase the firm performance. Both firm and collective reputation seem uncorrelated with profitability once we exclude from the analysis those firms producing only table grapes. Finally, Table 5 reports pairwise correlations which are never bigger than 0.80, therefore there is no problem of multicollinearity.

We start the empirical analysis with limited-information quasi-maximum likelihood (QML) estimations of dynamic random-effects models (Bhargava and Sargan, 1983) which are particularly good for panel data models with many individuals but short time horizon. The inclusion among the regressors of the lagged value of the dependent variable (*L.ROIC*) is justified by the large literature showing the persistence in profits (e.g. Mueller, 1977; Barney, 1991; McGahan, 1999; Bowman and Helfat, 2001; Schumacher and Boland, 2005; Goddard et al., 2011).

We use two different specifications for firm size (Tables 6 and 7): the first one uses total revenues while the second the two production inputs given by the number of employees and the total assets invested in the firm. In the regressions, the auto-regressive component is always strongly relevant, the main results holding even without it (available upon request). The most important and most stable variable is firm size that has a non-linear effect and shows a decreasing growth rate of profitability when revenues increase.

Turning to vertical integration, growing table grapes is the least profitable activity because it is a simple fruit for which the willingness to pay is limited. Producing wine grapes is more profitable since it allows controlling the agronomical phase and increase quality. Similarly, producing wine increases profitability because it allows controlling the enological phase. What is more interesting, however, is that bottling other firms' (bad) wine is the most profitable activity. In fact, the coefficient of "Bottler" is always bigger than the sum of the coefficients "Wine grapes" and "Wine". Investing huge capitals and effort to control the whole production chain does lead to better wines and higher prices as shown by previous works and by the analysis of the former chapter with wine coops, but does not necessarily imply higher profitability.

Bottlers do not own any land and eventually neither equipment since they often delegate the bottling activity to the wine producers. They are simple intermediaries and, with very low costs and few employees, are able to reach importers all over the world. The wines sold are of medium-bad quality, therefore prices and mark-ups are low. However, low mark-ups applied to huge volumes produce large profits which, given the low invested capitals, boost the ROIC.

Selling bad wines is probably not cool but turns out being profitable. Three more advantages have to be taken into account. First, bottlers can diversify horizontally their portfolio across regions to satisfy the clients' needs. Second, the costs to entry and exit the market are almost null; bottlers can change suppliers if tastes change without need to uproot the vineyards. Third, bottlers are not subject to any production constraint and can grow limitless.

As already mentioned, on the one hand reputations could increase the willingness to pay and boost profitability, but on the other they could increase production costs and land value and therefore reduce profitability, the final result being uncertain. Econometric results do not display any significant and robust results of reputations on firms' profitability. Again, having well-established individual or collective reputations does not imply any competitive advantage.

In order to test the robustness of our results we restrict the sample to firms producing wine (Tables A1 and A2) and obtain similar outcomes. Next, we control for the interaction between firm age and reputation since reputation building takes time and requires cumulative investments in order to obtain long-term benefits (Wilson, 1985; Fombrun and Shanley, 1990; Castriota and Delmastro, 2012, 2015). It could be the case that young firms need to invest large resources to improve quality and get known by consumers through repeated purchases, word-of-mouth and marketing campaigns. This is even more so in the wine market where a vineyard needs 5-7 years to become productive and obtain the first bottles. Thus, if the return of reputation were negative during the first years and positive afterwards, by estimating a unique coefficient for firm reputation the two effects would cancel out.

To check for this we create a slope dummy variable to capture the potentially positive effect of the reputation of older firms on profitability. The slope DV is the product between the Hugh Johnson firm reputation and a DV equal to one if the firm is older than the median of the sample. Results of Table 8, which use revenues as a proxy for firm size, show that there is no robust difference in the two sub-periods. Table A3 relies on employees and total assets as a proxy for firm size, while Tables A4 and A5 repeat the exercise by restricting the sample to firms that produce wine. Results are very similar, reputation never exerting any robust impact on firm performance.

To better isolate the effect of excellence and vertical integration on ROIC from that of confounding elements and reduce the risk of reverse causality we run Propensity Score Matching (PSM) regressions. We carried out a separate analysis for each year; this is a severe test because it reduces the sample available in each estimation, but results are very stable. In the first stage we calculate the propensity score, that is, the probability to have a positive (bigger than zero) Firm Reputation in the Hugh Johnson wine guide, which is our treatment variable. Following a standard practice in the literature, we use only those regressors which affect simultaneously the treatment and the outcome variables (firm reputation and ROIC). In these regressions the dummy variable "Bottler" has been dropped because in the first stage of the PSM it perfectly predicts failure: bottlers sell bad wines, therefore none of them has any reputation.

Then, in the second stage we calculate the Average Treatment of the Treated which is a test for difference in mean between the ROIC of the treatment and that of the control sample, that is, of firms with and without individual reputation with the closest propensity scores. The idea is that firms which, given their characteristics (e.g. vertical integration, firm size, age, etc.),

have the same propensity score, have the same chance of receiving the treatment (i.e. Firm Reputation). However, one received the treatment and one did not, like in a lottery.

The second stage is performed with the Nearest Neighbor method, where the treated firm is coupled with the one with closest propensity score (NN1), with the two with closest propensity scores (NN2), with the three with closest propensity scores (NN3), and again with the one with closest propensity score but with bootstrapped standard errors (NN1 boothstrapped). Given the small sample size, coupling has been carried out with replacement of previously selected firms. Results confirm that Firm Reputation is not a key factor for the profitability of wineries.

We then repeat the dynamic random-effects models, but restrict the analysis to the firms with closest propensity scores. Firms are matched based on 2015 and 2010 data, using NN3 and NN5 matching method, and using either revenues or employees and total assets as a proxy for firm size (see Tables 10-11, and A6-A11). Results are robust and show again the strong effect of the autoregressive component, of the firm size and of the vertical integration, while reputations do not exhibit any significant effect on profitability.

As a final robustness check (Table 12) we transform the panel dataset into a cross-section. In order to do that we demean the ROIC by subtracting the annual mean, then collapse the dataset by calculating the firm-average over the full set of available years of the demeaned ROIC and of the regressors. Cross-sectional regressions confirm the importance of firm age and size and of vertical integration, where bottlers are still the most profitable firms, while results on firm and collective reputation are not robust to different specifications. In general, the outcome confirms that reputations are not key assets for firm performance.

Conclusions

Excellence is often considered as a valuable asset to increase sales, prices and profitability. Similarly, in some sectors vertical integration is important since it allows controlling the entire chain and in turn the quality of the products. On the other hand, excellence and vertical integration are expensive to achieve and require huge capital investments, therefore their effect on profitability is less obvious than that on prices and revenues. Reputation building is likely to be more profitable when there are no constraints which prevent firms from boosting sales once the standing is finally achieved, otherwise the costs end up cancelling out the benefits.

With data from the 2004-2009 Vernelli wine guides on more than 55,000 bottles of Italian wine we first study the effect of excellence and vertical integration – which is often necessary to achieve quality and in turn reputation – on prices and quality. In line with previous literature, we show that quality and vertical integration do affect sales price.

Next, we create a second database merging balance sheet data from AIDA, information obtained through telephone interviews on the type of activity carried out by the firm and data from the Italian Slow Food and the international Hugh Johnson wine guides on organic production and firm and collective reputations. We exclude cooperative firms since their ROIC is not comparable to that of private firms and are left with more than 1,700 firms. Applying a number of different econometric methodologies (Dynamic Random Effects models, Propensity Score Matching and regressions on average demeaned firm data) we show that profitability is persistent.

Vertical integration matters since controlling the full chain (grapes production and vinification) ensures higher quality and increases profitability. However, the best financial performance is obtained by bottlers which, on the one hand, sell the worst products but, on the other, have the lowest production costs and invested capital. Furthermore, they can differentiate horizontally the goods offered, are free to replace the suppliers when consumers' preferences change, and can expand the sales indefinitely. Selling bad wines is not "fancy" but turn out being more profitable.

Firm and collective reputation appear to be irrelevant since do not display any significant positive or negative effect on profitability. Achieving excellence ensures higher prices but it is expensive. Furthermore, in the wine sector the production is constrained by the availability of land and by public laws, which prevents firm growth once reputation is achieved. Finally, the main driver of the Return of Invested Capital (ROIC) is firm size, which generates economies of scale and allows for marketing campaigns and sales policies.

This paper provides valuable evidence on the effects of excellence, vertical integration and firm size on prices and profitability. Furthermore, since most wineries in the Old World in general and in Italy in particular are small, results suggest the need to implement M&A policies to increase firm size, which is an important driver of efficiency and ability to export, and in turn of profitability and survivorship.

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Table 1a: Description of the variables in the Veronelli guide

Variable	Description
Price	9 categories with 1=min and 9=Max
Quality	Grades obtained by the jury from 80 to 99
White	DV=1 if the wine is white
Red	DV=1 if the wine is red
Rosé	DV=1 if the wine is Rosé
Sweet	DV=1 if the wine is sweet
New Entry	DV=1 if the wine is a new entry in the guide
Wine Age	Age of the wine since production
Barrell	DV=1 if the wine is aged using barrel
Barrique	DV=1 if the wine is aged using *barrique*
Bottles	Nr. of bottles of the wine produced
Hectares	Firm size measured by the hectares planted
Coop	DV=1 if the firm is a cooperative
IGT	DV=1 if the wine has the IGT public award
DOC	DV=1 if the wine has the DOC public award
DOCG	DV=1 if the wine has the DOCG public award

Table 1b: Summary Statistics of the variables in the Veronelli guide

Variable	Obs	Mean	Std. Dev.	Min	Max
Price	54,784	3.56	1.73	1	9
Quality	55,109	87.05	2.50	80	99
White	55,109	0.31	0.46	0	1
Red	55,109	0.61	0.49	0	1
Rosé	55,109	0.02	0.14	0	1
Sweet	55,109	0.06	0.24	0	1
New Entry	55,106	0.21	0.41	0	1
Wine Age	55,109	3.18	1.47	1	55
Barrell	23,874	0.22	0.42	0	1
Barrique	23,874	0.43	0.49	0	1
Bottles	51,534	33,977	142,363	42	6,300,000
Hectares	55,109	109	430	0.3	6,000
Coop	55,109	0.06	0.23	0	1
IGT	55,109	0.24	0.43	0	1
DOC	55,109	0.57	0.50	0	1
DOCG	55,108	0.17	0.37	0	1

Table 2: Determinants of Wine Quality and Price

VARIABLES	Quality		Price	
	(1)	(2)	(3)	(4)
Red	0.267***	0.534***	-0.448***	-0.0831**
	(0.0568)	(0.0662)	(0.0464)	(0.0397)
Rosé	-0.369***	-0.539***	-0.348***	-0.470***
	(0.0764)	(0.0750)	(0.113)	(0.101)
Sweet	0.107	0.0744	0.360***	0.395***
	(0.0993)	(0.0953)	(0.0922)	(0.0904)
New Entry	-0.931***	-0.963***	-0.286***	-0.374***
	(0.0424)	(0.0336)	(0.0434)	(0.0283)
Quality			0.460***	0.466***
			(0.0111)	(0.00905)
Wine Age	0.500***	0.606***	0.589***	0.647***
	(0.0454)	(0.0446)	(0.0263)	(0.0247)
Barrell	0.221***		0.374***	
	(0.0640)		(0.0523)	
Barrique	1.215***		0.954***	
	(0.0586)		(0.0472)	
Ln (bottles)	-0.0409*	-0.166***	-0.250***	-0.320***
	(0.0234)	(0.0239)	(0.0247)	(0.0216)
Ln (hectares)	0.105***	0.135***	0.115***	0.160***
	(0.0274)	(0.0282)	(0.0258)	(0.0217)
Coop	-0.577***	-0.540***	-0.670***	-0.747***
	(0.151)	(0.156)	(0.150)	(0.127)
IGT	0.583***	0.624***	-0.745***	-0.388***
	(0.141)	(0.134)	(0.161)	(0.132)
DOC	0.0672	-0.131	-0.922***	-0.707***
	(0.135)	(0.128)	(0.158)	(0.129)
DOCG	0.547***	0.531***	-0.0430	0.126
	(0.154)	(0.152)	(0.174)	(0.143)
Methodology	OLS	OLS	Ordered Logit	Ordered Logit
Observations	22,519	51,535	22,515	51,344

Robust standard errors in parentheses (adjusted for clusters at the firm level)
*** p<0.01, ** p<0.05, * p<0.1

Table 3a: Description of the variables used in the profitability analysis

Variable	Description
ROIC	Return of Invested Capital (%)
Firm age	Firm age in years
Revenues (million €)	Revenues of the firm in million €
Employees	Number of employees
Total assets (million €)	Total assets in million €
Table grapes	DV=1 if the firm produces table grapes
Wine grapes	DV=1 if the firm produces wine grapes
Wine	DV=1 if the firm produces wine
Bottler	DV=1 if the firm is a bottler
Debt/equity ratio	Debt/Equity Ratio (%)
Nr. of recorded shareholders	Nr. of recorded shareholders
1 shareholder	DV=1 if there is only one shareholder
2 shareholders	DV=1 if there are two shareholders
3+ shareholders	DV=1 if there are three or more shareholders
Slow Food: @	DV=1 if the firm is recognized by Slow Food as responsible and typical
Slow Food: €	DV=1 if the firm is recognized by Slow Food as good value for money
Slow Food: Firm reputation	DV=1 if the firm is recognized by Slow Food as a good wine producer
Hugh Johnson: Firm reputation	DV=1 if the firm is recognized by Hugh Johnson as a good wine producer
Hugh Johnson: Collective reputation	DV=1 if the province is recognized by Hugh Johnson as a good wine producer

Table 3b: Summary statistics of the variables used in the profitability analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
ROIC	10,590	1.73	8.39	-29.95	29.99
Firm age	10,590	17.34	15.89	0	104
Revenues (million €)	10,572	4.08	13.30	0	252
Employees	9,634	11.37	29.91	0	484
Total assets (million €)	10,590	8.28	21.38	0.001	414
Table grapes	10,542	0.36	0.48	0	1
Wine grapes	10,542	0.79	0.41	0	1
Wine	10,542	0.61	0.49	0	1
Bottler	10,542	0.02	0.16	0	1
Debt/equity ratio	10,584	3.39	29.94	-979	704
Nr. of recorded shareholders	10,590	3.30	4.99	1	109
1 shareholder	10,590	0.19	0.39	0	1
2 shareholders	10,590	0.32	0.47	0	1
3+ shareholders	10,590	0.49	0.50	0	1
Slow Food: @	10,590	0.01	0.10	0	1
Slow Food: €	10,590	0.01	0.10	0	1
Slow Food: Firm reputation	10,590	0.01	0.12	0	1
Hugh Johnson: Firm reputation	10,590	0.10	0.53	0	4
Hugh Johnson: Collective reputation	10,595	2.18	1.18	0	4

Table 4a: ROIC by firm size, Year 2015

Revenues (in €)	Whole sample			Without table grape producers		
	ROIC	[95% Conf. Interval]		ROIC	[95% Conf. Interval]	
0 - 100,000	-1.46	-2.38	-0.55	0.05	-1.72	1.82
100,001 - 500,000	0.36	-0.5	1.22	0.76	0.39	1.92
500,000-1,000,000	2.33	0.89	3.78	3.15	1.62	4.68
1000000-5,000,000	4.17	3.15	5.19	4.09	3.01	5.17
5,000,000-10,000,000	5.24	3.06	7.41	4.79	2.53	7.05
10,000,000-25,000,000	6.41	4.57	8.25	6.49	4.54	8.43
25,000,000 - More	9.19	7.08	11.29	9.19	7.08	11.29

Table 4b: ROIC by firm age, Year 2015

Firm age	Whole sample			Without table grape producers		
	ROIC	[95% Conf. Interval]		ROIC	[95% Conf. Interval]	
Age<10	0.83	-0.01	1.67	3.36	2.24	4.49
10<=Age<20	2.00	1.02	2.99	2.76	1.53	3.98
20<=Age<30	2.62	1.45	3.78	3.36	2.02	4.71
Age>30	2.64	1.65	3.62	3.67	2.53	4.81

Table 4c: ROIC by reputation, Year 2015

Revenues (in €)	Whole sample			Without table grape producers		
	ROIC	[95% Conf. Interval]		ROIC	[95% Conf. Interval]	
Hugh Johnson: Firm reputation=0	1.68	1.18	2.19	3.24	2.62	3.87
Hugh Johnson: Firm reputation>0	4.91	3	6.82	5.18	3.21	7.14
Hugh Johnson: Collective reputation=0	1.09	-0.19	2.37	2.48	0.93	4.04
Hugh Johnson: Collective reputation>0	1.91	1.38	2.44	3.49	2.84	4.13

Table 5: of the variables used in the profitability analysis

Variable	ROIC	Firm age	Reven.	Empl.	Tot. Ass.	Table gr.	Wine gr.	Wine	Bottler	D/E	1 sh.	2 sh.	SF: @	SF: €	SF: Firm rep.	H J: Firm rep.	HJ: Coll. rep.
ROIC	1																
Firm age	0.08	1															
Revenues (million €)	0.19	0.23	1														
Employees	0.11	0.22	0.71	1													
Total assets (million €)	0.09	0.21	0.80	0.79	1												
Table grapes	-0.19	-0.20	-0.20	-0.22	-0.20	1											
Wine grapes	0.05	0.02	0.05	0.05	0.07	-0.26	1										
Wine	0.13	0.19	0.19	0.21	0.20	-0.41	-0.08	1									
Bottler	0.02	-0.03	0.03	0.00	-0.01	-0.12	-0.31	-0.20	1								
Debt/equity ratio	0.00	-0.02	-0.02	-0.02	-0.01	0.01	0.01	-0.03	0.00	1							
1 shareholder	-0.08	-0.01	0.08	0.04	0.07	0.14	-0.06	-0.01	-0.02	0.00	1						
2 shareholders	-0.02	-0.11	-0.09	-0.07	-0.06	-0.02	0.03	0.00	-0.03	0.01	-0.33	1					
Slow Food: @	0.02	-0.01	0.00	0.06	0.04	-0.01	0.03	0.04	-0.02	0.00	-0.02	-0.01	1				
Slow Food: €	0.04	0.02	0.02	0.04	0.03	-0.06	0.05	0.05	-0.02	-0.01	0.02	0.02	-0.01	1			
Slow Food: Firm reputation	0.04	0.02	0.01	0.01	0.03	-0.05	0.04	0.05	0.02	0.00	0.03	0.02	-0.01	-0.01	1		
Hugh Johnson: Firm reputation	0.06	0.17	0.16	0.31	0.30	-0.11	0.01	0.10	-0.03	-0.02	-0.04	-0.07	0.05	0.11	0.01	1	
Hugh Johnson: Collective reputation	-0.02	0.08	0.06	0.08	0.12	-0.03	0.01	0.01	0.00	0.01	0.01	-0.03	0.03	0.04	0.01	0.10	1

Table 6: Linear dynamic panel models with random effects, firm size proxied by revenues

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.258***	0.258***	0.257***	0.257***	0.259***	0.264***
	(0.0149)	(0.0149)	(0.0150)	(0.0150)	(0.0169)	(0.0169)
Firm age	0.0295***	0.0285***	0.0269	0.0206**	0.0115	
	(0.00937)	(0.00943)	(0.0209)	(0.00935)	(0.00916)	
Firm age_2			-0.000140			
			(0.000317)			
Revenues (million €)	0.0724***	0.0712***	0.159***	0.160***	0.165***	
	(0.00999)	(0.0100)	(0.0177)	(0.0177)	(0.0177)	
Revenues (million €)_2			-6.52e-10***	-6.56e-10***	-7.20e-10***	
			(1.07e-10)	(1.07e-10)	(1.09e-10)	
Wine grapes	1.148***	1.179***	1.053***	1.034***	0.911**	1.410***
	(0.383)	(0.382)	(0.377)	(0.376)	(0.366)	(0.374)
Wine	0.645**	0.639**	0.413	0.404	0.392	1.128***
	(0.311)	(0.311)	(0.309)	(0.308)	(0.299)	(0.298)
Bottler	2.906***	2.991***	2.662***	2.702***	2.058**	3.137***
	(0.962)	(0.960)	(0.946)	(0.946)	(0.921)	(0.947)
Debt/equity ratio	0.00786***	0.00787***	0.00788***	0.00788***	0.00630**	
	(0.00297)	(0.00297)	(0.00297)	(0.00297)	(0.00293)	
One owner	-1.851***	-1.800***	-1.751***	-1.582***	-1.259***	-0.976***
	(0.386)	(0.386)	(0.381)	(0.358)	(0.353)	(0.361)
Two owners	-0.513	-0.474	-0.399			
	(0.324)	(0.324)	(0.320)			
Slow Food: @	-1.806	-1.924	-2.090			
	(1.676)	(1.678)	(1.650)			
Slow Food: €	2.537*	2.437*	2.310*	2.376*	2.139	
	(1.340)	(1.341)	(1.319)	(1.319)	(1.352)	
Slow Food: Firm reputation	1.080					
	(1.252)					
Hugh Johnson: Firm reputation		0.265	0.124	0.127		
		(0.220)	(0.219)	(0.219)		
Hugh Johnson: Collective reputation	-0.116	-0.121	-0.0880	-0.0922		
	(0.158)	(0.158)	(0.156)	(0.155)		
Hugh Johnson: Firm reputation (t-1)					0.215	0.663***
					(0.224)	(0.224)
Hugh Johnson: Collective reputation (t-1)					-0.0845	-0.0958
					(0.152)	(0.157)
Constant	-0.665	-0.672	-0.583	-0.578	-1.319	-1.921
	(2.629)	(2.628)	(2.589)	(2.588)	(2.580)	(2.614)
Observations	7,252	7,252	7,252	7,252	6,817	6,850

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Linear dynamic panel models with random effects, firm size proxied by employees and total assets

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.264***	0.264***	0.261***	0.262***	0.266***	0.264***
	(0.0173)	(0.0173)	(0.0173)	(0.0173)	(0.0185)	(0.0169)
Firm age	0.0438***	0.0436***	0.0501**	0.0366***	0.0219**	
	(0.0103)	(0.0104)	(0.0233)	(0.0104)	(0.0100)	
Firm age_2			-0.000253			
			(0.000346)			
Employees	-0.00238	-0.00353	0.0296***	0.0379***	0.0427***	
	(0.00619)	(0.00623)	(0.0111)	(0.00878)	(0.00886)	
Employees_2			-0.000101***	-0.000106***	-0.000126***	
			(2.82e-05)	(2.39e-05)	(2.49e-05)	
Total assets (million €)	0.0174**	0.0168**	0.0134			
	(0.00837)	(0.00841)	(0.0151)			
Total assets (million €)_2			1.97E-13			
			(0)			
Wine grapes	1.342***	1.390***	1.290***	1.345***	1.176***	1.410***
	(0.424)	(0.423)	(0.422)	(0.420)	(0.401)	(0.374)
Wine	0.908**	0.917***	0.723**	0.781**	0.745**	1.128***
	(0.353)	(0.353)	(0.356)	(0.353)	(0.335)	(0.298)
Bottler	4.020***	4.154***	3.910***	4.028***	3.095***	3.137***
	(1.057)	(1.056)	(1.052)	(1.048)	(1.034)	(0.947)
Debt/equity ratio	0.00597**	0.00597**	0.00594**	0.00588*	0.00506*	
	(0.00303)	(0.00303)	(0.00303)	(0.00303)	(0.00293)	
One owner	-1.565***	-1.485***	-1.423***	-1.237***	-0.941**	-0.976***
	(0.424)	(0.425)	(0.424)	(0.395)	(0.388)	(0.361)
Two owners	-0.463	-0.397	-0.332			
	(0.364)	(0.364)	(0.363)			
Slow Food: @	0.421	0.345	-0.121			
	(1.587)	(1.589)	(1.586)			
Slow Food: €	1.831	1.716	1.484			
	(1.409)	(1.411)	(1.406)			
Slow Food: Firm reputation	1.609					
	(1.318)					
Hugh Johnson: Firm reputation		0.301	0.126	0.186		
		(0.252)	(0.257)	(0.253)		
Hugh Johnson: Collective reputation	-0.305*	-0.310*	-0.304*	-0.278		
	(0.177)	(0.177)	(0.177)	(0.175)		
Hugh Johnson: Firm reputation (t-1)					0.319	0.663***
					(0.253)	(0.224)
Hugh Johnson: Collective reputation (t-1)					-0.172	-0.0958
					(0.170)	(0.157)
Constant	-0.590	-0.645	-0.594	-0.760	-1.540	-1.921
	(3.401)	(3.404)	(3.390)	(3.381)	(2.736)	(2.614)
Observations	6,024	6,024	6,024	6,024	5,908	6,850

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Linear dynamic panel models with random effects, firm size proxied by revenues, with slope DV for older firms with reputation

VARIABLES	(1) ROI	(2) ROI	(3) ROI	(4) ROI	(5) ROI	(6) ROI
L.ROIC	0.258***	0.257***	0.257***	0.257***	0.259***	0.264***
	(0.0149)	(0.0149)	(0.0150)	(0.0150)	(0.0169)	(0.0169)
Firm age	0.0295***	0.0280***	0.0266	0.0199**	0.0118	
	(0.00937)	(0.00952)	(0.0210)	(0.00944)	(0.00924)	
Firm age_2			-0.000150			
			(0.000317)			
Revenues (million €)	0.0724***	0.0713***	0.160***	0.161***	0.165***	
	(0.00999)	(0.0100)	(0.0177)	(0.0177)	(0.0177)	
Revenues (million €)_2			-6.55e-10***	-6.58e-10***	-7.19e-10***	
			(1.07e-10)	(1.07e-10)	(1.09e-10)	
Wine grapes	1.148***	1.181***	1.054***	1.035***	0.912**	1.411***
	(0.383)	(0.382)	(0.377)	(0.376)	(0.366)	(0.374)
Wine	0.645**	0.637**	0.408	0.401	0.393	1.130***
	(0.311)	(0.311)	(0.309)	(0.309)	(0.299)	(0.299)
Bottler	2.906***	2.987***	2.656***	2.697***	2.061**	3.139***
	(0.962)	(0.961)	(0.947)	(0.947)	(0.921)	(0.946)
Debt/equity ratio	0.00786***	0.00786***	0.00787***	0.00786***	0.00630**	
	(0.00297)	(0.00297)	(0.00297)	(0.00297)	(0.00293)	
One owner	-1.851***	-1.804***	-1.756***	-1.584***	-1.258***	-0.976***
	(0.386)	(0.386)	(0.381)	(0.358)	(0.353)	(0.361)
Two owners	-0.513	-0.479	-0.405			
	(0.324)	(0.324)	(0.320)			
SF: @	-1.806	-1.949	-2.129			
	(1.676)	(1.679)	(1.652)			
SF: €	2.537*	2.417*	2.280*	2.352*	2.151	
	(1.340)	(1.343)	(1.321)	(1.321)	(1.352)	
SF: Firm reputation	1.080					
	(1.252)					
HJ: Firm reputation		0.199	0.0267	0.0462		
		(0.258)	(0.257)	(0.257)		
HJ: Firm reputation_slope		0.147	0.217	0.178		
		(0.314)	(0.313)	(0.313)		
HJ: Collective reputation	-0.116	-0.120	-0.0865	-0.0909		
	(0.158)	(0.158)	(0.156)	(0.156)		
L.HJ: Firm reputation					0.246	0.689***
					(0.265)	(0.266)
L.HJ: Firm reputation_slope					-0.0734	-0.0555
					(0.325)	(0.326)
L.Collective reputation					-0.0850	-0.0965
					(0.152)	(0.157)
Constant	-0.665	-0.663	-0.572	-0.568	-1.321	-1.920
	(2.629)	(2.630)	(2.590)	(2.589)	(2.579)	(2.613)
Observations	7,252	7,252	7,252	7,252	6,817	6,850

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Propensity score matching, by year

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Step 1: Propensity score (dep. var. is Hugh Johnson: Firm Reputation)										
Firm age	0.0154***	0.0151***	0.0147***	0.0161***	0.0192***	0.0186***	0.0180***	0.0164***	0.0163***	0.0144***
	(0.00518)	(0.00496)	(0.00488)	(0.00484)	(0.00504)	(0.00463)	(0.00443)	(0.00422)	(0.00430)	(0.00407)
Revenues (million €)	0.0599***	0.0769***	0.0813***	0.0775***	0.0616***	0.0549***	0.0505***	0.0424***	0.0429***	0.0369***
	(0.0150)	(0.0172)	(0.0161)	(0.0166)	(0.0147)	(0.0121)	(0.0112)	(0.00993)	(0.00973)	(0.00879)
Revenues (million €)_2	-5.64e-10**	-8.06e-10**	-8.81e-10***	-8.11e-10***	-5.47e-10**	-4.52e-10***	-3.93e-10***	-3.05e-10***	-2.92e-10***	-2.12e-10**
	(2.46e-10)	(3.14e-10)	(2.66e-10)	(2.88e-10)	(2.20e-10)	(1.60e-10)	(1.33e-10)	(1.06e-10)	(1.01e-10)	(8.55e-11)
Wine grapes	-0.311	-0.249	-0.257	-0.285	-0.459**	-0.356*	-0.383*	-0.273	-0.297	-0.261
	(0.223)	(0.224)	(0.223)	(0.221)	(0.221)	(0.209)	(0.209)	(0.200)	(0.205)	(0.200)
Wine	0.0730	-0.131	-0.176	-0.103	-0.0147	0.0755	0.0913	0.103	0.292	0.337
	(0.231)	(0.223)	(0.219)	(0.221)	(0.238)	(0.226)	(0.224)	(0.207)	(0.231)	(0.227)
One owner	-0.564**	-0.668**	-0.630**	-0.562**	-0.680**	-0.645**	-0.631**	-0.408*	-0.825**	-0.791**
	(0.255)	(0.263)	(0.258)	(0.259)	(0.294)	(0.281)	(0.279)	(0.245)	(0.321)	(0.316)
Two owners	-0.534**	-0.643***	-0.625***	-0.640**	-0.429*	-0.357	-0.370*	-0.407*	-0.360*	-0.283
	(0.237)	(0.245)	(0.242)	(0.254)	(0.241)	(0.218)	(0.216)	(0.209)	(0.201)	(0.184)
Slow Food: @	0.557	0.420	1.081**	0.515	0.778	0.560	0.589	0.631	0.545	0.978**
	(0.656)	(0.609)	(0.500)	(0.607)	(0.631)	(0.580)	(0.584)	(0.585)	(0.603)	(0.489)
Slow Food: €	1.812***	1.552***	1.518***	1.404***	1.055**	0.967**	0.989**	0.845*	0.759	0.725
	(0.571)	(0.476)	(0.455)	(0.544)	(0.512)	(0.492)	(0.490)	(0.469)	(0.470)	(0.458)
HJ: Collective reputation	0.234***	0.230***	0.222***	0.203***	0.177**	0.198**	0.193**	0.196***	0.165**	0.101
	(0.0798)	(0.0809)	(0.0792)	(0.0786)	(0.0820)	(0.0793)	(0.0778)	(0.0736)	(0.0744)	(0.0697)
Constant	-2.323***	-2.431***	-2.418***	-2.440***	-2.475***	-2.699***	-2.676***	-2.684***	-2.707***	-2.539***
	(0.356)	(0.344)	(0.339)	(0.337)	(0.347)	(0.334)	(0.326)	(0.313)	(0.323)	(0.313)
N	587	847	887	926	997	1199	1232	1264	1170	1154
Pseudo R2	0.2411	0.2904	0.2919	0.2885	0.2828	0.272	0.2609	0.2272	0.2412	0.2168
Balancing properties	Satisfied	Satisfied	Satisfied	Satisfied	Not Satisfied	Satisfied	Not Satisfied	Satisfied	Satisfied	Satisfied

Step 2: ATT (dep. var. is ROIC)

NN (1)	0.684	1.953	0.900	-2.052	-	-2.062	-	-1.719	-2.616	0.196
	(1.903)	(1.658)	(1.468)	(1.542)	-	(1.648)	-	(2.062)	(1.589)	(1.633)
NN (2)	-1.006	-0.472	0.180	-1.569	-	-1.127	-	1.832	-2.015	-1.078
	(1.782)	(1.509)	(1.381)	(1.415)	-	(1.436)	-	(1.731)	(1.301)	(1.390)
NN(3)	-1.121	-0.565	0.317	-0.823	-	-1.022	-	1.832	-2.543	-0.233
	(1.667)	(1.514)	(1.226)	(1.314)	-	(1.404)	-	(1.731)	(1.206)	(1.250)
NN (1) boothstrapped	0.684	1.953	0.900	-2.052	-	-2.062	-	-1.719	-2.616	0.196
	(2.380)	(2.435)	(2.115)	(1.878)	-	(1.999)	-	(2.229)	(1.830)	(2.121)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Linear dynamic panel models with random effects, firm size proxied by revenues, only subsample matched with PPS based on NN (3), year 2015

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.450***	0.454***	0.464***	0.460***	0.385***	0.382***
	(0.0410)	(0.0408)	(0.0411)	(0.0408)	(0.0416)	(0.0417)
Firm age	0.0214	0.0196	-0.00969	0.0197	0.0192	
	(0.0143)	(0.0138)	(0.0376)	(0.0133)	(0.0162)	
Firm age_2			0.000379			
			(0.000409)			
Revenues (million €)	0.0411***	0.0392***	0.0840***	0.0878***	0.0938***	
	(0.0130)	(0.0125)	(0.0228)	(0.0230)	(0.0269)	
Revenues (million €)_2			-4.28e-10**	-4.31e-10**	-4.61e-10**	
			(1.74e-10)	(1.75e-10)	(2.02e-10)	
Wine grapes	-0.129	0.00533	-0.151	-0.199	-0.160	0.172
	(0.649)	(0.628)	(0.601)	(0.602)	(0.749)	(0.777)
Wine	2.146**	2.148***	1.748**	1.736**	2.482**	3.597***
	(0.845)	(0.818)	(0.794)	(0.814)	(1.003)	(1.009)
Debt/equity ratio	-0.0243	-0.0294	-0.0261	-0.0246	-0.0491	
	(0.0362)	(0.0362)	(0.0361)	(0.0359)	(0.0392)	
One owner	-1.515	-1.332	-1.295	-1.274	-1.108	0.856
	(1.070)	(1.010)	(0.966)	(0.990)	(1.228)	(1.131)
Two owners	-1.045	-1.210*	-1.212*			
	(0.671)	(0.655)	(0.634)			
SF: @	0.178	0.0379	0.234			
	(1.392)	(1.346)	(1.280)			
SF: €	-0.387	-0.409	-0.0397	0.324	-0.136	
	(1.641)	(1.591)	(1.532)	(1.557)	(2.115)	
SF: Firm reputation	2.018					
	(2.779)					
HJ: Firm reputation		-0.358**	-0.389**	-0.356**		
		(0.176)	(0.170)	(0.172)		
HJ: Collective reputation	-0.0437	0.0237	-0.0182	-0.0143		
	(0.305)	(0.297)	(0.284)	(0.289)		
HJ: Firm reputation (t-1)					-0.351*	-0.283
					(0.209)	(0.215)
HJ: Collective reputation (t-1)					0.128	-0.104
					(0.355)	(0.354)
Constant	1.818	1.759	2.127	1.458	0.784	2.388
	(1.482)	(1.435)	(1.503)	(1.397)	(1.695)	(1.618)
Observations	975	975	975	975	904	914

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, only subsample matched with PPS based on NN (3), year 2015

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.425***	0.427***	0.437***	0.430***	0.381***	0.382***
	(0.0436)	(0.0435)	(0.0444)	(0.0435)	(0.0443)	(0.0417)
Firm age	0.0181	0.0171	-0.0381	0.0109	0.0109	
	(0.0156)	(0.0152)	(0.0423)	(0.0150)	(0.0164)	
Firm age_2			0.000590			
			(0.000448)			
Employees	-0.00128	-0.000115	0.0127	0.00621	0.00595	
	(0.00666)	(0.00659)	(0.0122)	(0.00962)	(0.0107)	
Employees_2			-4.15e-05	-3.55e-05	-2.79e-05	
			(3.45e-05)	(3.24e-05)	(3.56e-05)	
Total assets (million €)	-0.0114	-0.00818	-0.00917			
	(0.00915)	(0.00906)	(0.0193)			
Total assets (million €)_2			-0			
			(8.19e-11)			
Wine grapes	-0.174	-0.121	-0.194	-0.477	-0.200	0.172
	(0.760)	(0.744)	(0.723)	(0.728)	(0.826)	(0.777)
Wine	3.252***	3.215***	3.058***	3.041***	3.560***	3.597***
	(0.985)	(0.965)	(0.965)	(0.985)	(1.060)	(1.009)
Debt/equity ratio	-0.212***	-0.219***	-0.206***	-0.192***	-0.0614	
	(0.0696)	(0.0694)	(0.0696)	(0.0687)	(0.0390)	
One owner	1.874	1.589	1.782	1.835	2.209	0.856
	(1.256)	(1.225)	(1.210)	(1.220)	(1.401)	(1.131)
Two owners	-1.738**	-1.849***	-1.755**			
	(0.721)	(0.711)	(0.703)			
SF: @	0.480	0.353	0.192			
	(1.483)	(1.451)	(1.403)			
SF: €	-1.857	-1.670	-1.816			
	(1.734)	(1.703)	(1.665)			
SF: Firm reputation	1.075					
	(2.983)					
HJ: Firm reputation		-0.333	-0.357*	-0.328		
		(0.206)	(0.205)	(0.203)		
HJ: Collective reputation	-0.0705	-0.0488	-0.117	-0.153		
	(0.343)	(0.336)	(0.328)	(0.334)		
HJ: Firm reputation (t-1)					-0.293	-0.283
					(0.233)	(0.215)
HJ: Collective reputation (t-1)					0.0883	-0.104
					(0.367)	(0.354)
Constant	2.512	2.576	3.418**	2.695*	1.409	2.388
	(1.662)	(1.627)	(1.741)	(1.615)	(1.756)	(1.618)
Observations	888	888	888	888	843	914

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Regressions of average annually-demeaned values, by firm

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
Firm age	0.0352***	0.0221*		0.0461***	0.0335***	
	(0.0122)	(0.0117)		(0.0120)	(0.0124)	
Revenues (million €)	0.0999***	0.266***				
	(0.0266)	(0.0353)				
Revenues (million €)_2		-1.48e-09***				
		(3.39e-10)				
Employees				0.0300**	0.105***	
				(0.0151)	(0.0232)	
Total assets (million €)				-0.0144	-0.0358	
				(0.0183)	(0.0278)	
Employees_2					-0.000249***	
					(6.17e-05)	
Total assets (million €)_2					5.17e-11	
					(9.10e-11)	
Wine grapes	1.446***	1.285***	1.809***	1.654***	1.507***	1.831***
	(0.466)	(0.463)	(0.470)	(0.458)	(0.455)	(0.469)
Wine	0.939**	0.651	1.527***	1.075***	0.838**	1.549***
	(0.400)	(0.398)	(0.392)	(0.394)	(0.399)	(0.392)
Bottler	4.757***	4.406***	5.572***	5.183***	4.746***	5.587***
	(1.395)	(1.376)	(1.399)	(1.398)	(1.389)	(1.398)
Debt/equity ratio	0.00171	0.00173		0.00153	0.00167	
	(0.00554)	(0.00547)		(0.00589)	(0.00579)	
One owner	-2.051***	-1.921***	-1.779***	-2.017***	-1.923***	-1.768***
	(0.483)	(0.480)	(0.472)	(0.484)	(0.481)	(0.472)
Two owners	-0.428	-0.365		-0.522	-0.440	
	(0.400)	(0.397)		(0.398)	(0.397)	
SF: @	1.622	1.575		1.357	0.925	
	(1.430)	(1.429)		(1.482)	(1.554)	
SF: €	2.352**	2.281**	2.182*	2.237*	1.922	
	(1.187)	(1.159)	(1.236)	(1.259)	(1.307)	
HJ: Firm reputation	0.589	0.198	1.233***	0.590	0.189	1.276***
	(0.400)	(0.399)	(0.379)	(0.413)	(0.403)	(0.373)
HJ: Collective reputation	-0.400**	-0.361*	-0.383*	-0.388**	-0.375*	-0.380*
	(0.199)	(0.196)	(0.200)	(0.197)	(0.195)	(0.200)
Constant	-5.663*	-5.438*	-6.253**	-5.968**	-5.831*	-6.288**
	(3.014)	(3.066)	(2.926)	(3.034)	(3.157)	(2.923)
Observations	1,758	1,758	1,758	1,738	1,738	1,758
R-squared	0.117	0.133	0.091	0.103	0.112	0.091

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A1: Linear dynamic panel models with random effects, firm size proxied by revenues, only wine producers

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.260***	0.260***	0.259***	0.259***	0.262***	0.267***
	(0.0153)	(0.0153)	(0.0153)	(0.0153)	(0.0173)	(0.0173)
Firm age	0.0274***	0.0266***	0.0205	0.0193**	0.0109	
	(0.00937)	(0.00944)	(0.0212)	(0.00936)	(0.00909)	
Firm age_2			-5.15e-05			
			(0.000317)			
Revenues (million €)	0.0687***	0.0676***	0.150***	0.151***	0.155***	
	(0.00989)	(0.00994)	(0.0176)	(0.0176)	(0.0174)	
Revenues (million €)_2			-6.12e-10***	-6.14e-10***	-6.71e-10***	
			(1.06e-10)	(1.06e-10)	(1.08e-10)	
Wine grapes	1.815***	1.845***	1.671***	1.657***	1.735***	2.418***
	(0.439)	(0.438)	(0.434)	(0.432)	(0.421)	(0.429)
Wine	1.065***	1.060***	0.819**	0.811**	0.920***	1.725***
	(0.333)	(0.333)	(0.333)	(0.331)	(0.320)	(0.317)
Bottler	3.818***	3.898***	3.511***	3.555***	3.161***	4.464***
	(0.995)	(0.994)	(0.981)	(0.980)	(0.951)	(0.974)
Debt/equity ratio	0.00831***	0.00832***	0.00833***	0.00835***	0.00653**	
	(0.00302)	(0.00302)	(0.00302)	(0.00302)	(0.00296)	
One owner	-1.961***	-1.910***	-1.872***	-1.719***	-1.382***	-1.073***
	(0.389)	(0.390)	(0.384)	(0.362)	(0.354)	(0.362)
Two owners	-0.451	-0.414	-0.351			
	(0.325)	(0.325)	(0.321)			
SF: @	-1.849	-1.955	-2.101			
	(1.649)	(1.651)	(1.624)			
SF: €	2.408*	2.318*	2.213*	2.266*	2.004	
	(1.319)	(1.320)	(1.299)	(1.299)	(1.321)	
SF: Firm reputation	1.070					
	(1.234)					
HJ: Firm reputation		0.233	0.0942	0.0937		
		(0.223)	(0.222)	(0.221)		
HJ: Collective reputation	-0.124	-0.126	-0.0960	-0.103		
	(0.160)	(0.160)	(0.157)	(0.157)		
HJ: Firm reputation (t-1)					0.183	0.626***
					(0.225)	(0.225)
HJ: Collective reputation (t-1)					-0.0521	-0.0613
					(0.153)	(0.157)
Constant	-1.107	-1.120	-0.977	-0.989	-1.887	-2.573
	(2.594)	(2.594)	(2.556)	(2.555)	(2.529)	(2.558)
Observations	6,960	6,960	6,960	6,960	6,536	6,569

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, only wine producers

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.266***	0.265***	0.263***	0.264***	0.268***	0.267***
	(0.0177)	(0.0177)	(0.0177)	(0.0177)	(0.0189)	(0.0173)
Firm age	0.0407***	0.0405***	0.0413*	0.0339***	0.0200**	
	(0.0103)	(0.0104)	(0.0234)	(0.0104)	(0.00995)	
Firm age_2			-0.000142			
			(0.000346)			
Employees	-0.00263	-0.00369	0.0291***	0.0360***	0.0407***	
	(0.00619)	(0.00623)	(0.0112)	(0.00880)	(0.00883)	
Employees_2			-0.000100***	-0.000102***	-0.000122***	
			(2.83e-05)	(2.39e-05)	(2.48e-05)	
Total assets (million €)	0.0163*	0.0157*	0.0101			
	(0.00834)	(0.00838)	(0.0151)			
Total assets (million €)_2			0			
			(0)			
Wine grapes	2.152***	2.209***	2.061***	2.124***	2.168***	2.418***
	(0.485)	(0.484)	(0.485)	(0.482)	(0.464)	(0.429)
Wine	1.424***	1.440***	1.227***	1.283***	1.378***	1.725***
	(0.380)	(0.380)	(0.385)	(0.381)	(0.360)	(0.317)
Bottler	5.087***	5.230***	4.918***	5.049***	4.427***	4.464***
	(1.097)	(1.096)	(1.095)	(1.089)	(1.070)	(0.974)
Debt/equity ratio	0.00614**	0.00614**	0.00610**	0.00607**	0.00533*	
	(0.00306)	(0.00306)	(0.00305)	(0.00306)	(0.00295)	
One owner	-1.679***	-1.598***	-1.555***	-1.370***	-1.042***	-1.073***
	(0.428)	(0.430)	(0.429)	(0.399)	(0.390)	(0.362)
Two owners	-0.435	-0.369	-0.318			
	(0.366)	(0.365)	(0.365)			
SF: @	0.412	0.346	-0.0968			
	(1.564)	(1.566)	(1.564)			
SF: €	1.699	1.594	1.390			
	(1.387)	(1.389)	(1.386)			
SF: Firm reputation	1.572					
	(1.300)					
HJ: Firm reputation		0.266	0.0988	0.148		
		(0.252)	(0.258)	(0.253)		
HJ: Collective reputation	-0.301*	-0.304*	-0.296*	-0.273		
	(0.178)	(0.178)	(0.178)	(0.176)		
HJ: Firm reputation (t-1)					0.280	0.626***
					(0.252)	(0.225)
HJ: Collective reputation (t-1)					-0.126	-0.0613
					(0.171)	(0.157)
Constant	-1.097	-1.162	-1.055	-1.243	-2.229	-2.573
	(3.356)	(3.360)	(3.348)	(3.339)	(2.683)	(2.558)
Observations	5,793	5,793	5,793	5,793	5,654	6,569

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, with slope DV for older firms with reputation

VARIABLES	(1) ROI	(2) ROI	(3) ROI	(4) ROI	(5) ROI	(6) ROI
L.ROIC	0.264***	0.264***	0.261***	0.263***	0.266***	0.264***
	(0.0173)	(0.0173)	(0.0173)	(0.0173)	(0.0185)	(0.0169)
Firm age	0.0438***	0.0434***	0.0501**	0.0366***	0.0229**	
	(0.0103)	(0.0104)	(0.0233)	(0.0105)	(0.0101)	
Firm age_2			-0.000253			
			(0.000346)			
Employees	-0.00238	-0.00356	0.0296***	0.0379***	0.0428***	
	(0.00619)	(0.00623)	(0.0111)	(0.00879)	(0.00885)	
Employees_2			-0.000101***	-0.000106***	-0.000127***	
			(2.82e-05)	(2.39e-05)	(2.49e-05)	
Total assets (million €)	0.0174**	0.0168**	0.0134			
	(0.00837)	(0.00841)	(0.0151)			
Total assets (million €)_2			0			
			(0)			
Wine grapes	1.342***	1.390***	1.289***	1.343***	1.175***	1.411***
	(0.424)	(0.423)	(0.422)	(0.420)	(0.401)	(0.374)
Wine	0.908**	0.917***	0.723**	0.780**	0.746**	1.130***
	(0.353)	(0.353)	(0.356)	(0.353)	(0.335)	(0.299)
Bottler	4.020***	4.154***	3.909***	4.025***	3.094***	3.139***
	(1.057)	(1.056)	(1.052)	(1.048)	(1.034)	(0.946)
Debt/equity ratio	0.00597**	0.00597**	0.00593**	0.00588*	0.00506*	
	(0.00303)	(0.00303)	(0.00303)	(0.00303)	(0.00293)	
One owner	-1.565***	-1.486***	-1.424***	-1.237***	-0.942**	-0.976***
	(0.424)	(0.425)	(0.424)	(0.395)	(0.388)	(0.361)
Two owners	-0.463	-0.398	-0.332			
	(0.364)	(0.364)	(0.363)			
SF: @	0.421	0.340	-0.120			
	(1.587)	(1.590)	(1.586)			
SF: €	1.831	1.710	1.485			
	(1.409)	(1.412)	(1.407)			
SF: Firm reputation	1.609					
	(1.318)					
HJ: Firm reputation		0.283	0.124	0.193		
		(0.288)	(0.293)	(0.288)		
HJ: Firm reputation_slope		0.0430	0.00152	-0.0199		
		(0.330)	(0.330)	(0.329)		
HJ: Collective reputation	-0.305*	-0.310*	-0.304*	-0.279		
	(0.177)	(0.177)	(0.177)	(0.175)		
L.HJ: Firm reputation					0.438	0.689***
					(0.290)	(0.266)
L.HJ: Firm reputation_slope					-0.280	-0.0555
					(0.337)	(0.326)
L.Collective reputation					-0.174	-0.0965
					(0.170)	(0.157)
Constant	-0.590	-0.642	-0.592	-0.760	-1.540	-1.920
	(3.401)	(3.405)	(3.390)	(3.381)	(2.734)	(2.613)
Observations	6,024	6,024	6,024	6,024	5,908	6,850

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4: Linear dynamic panel models with random effects, firm size proxied by revenues, with slope DV for older firms with reputation, only wine producers

VARIABLES	(1) ROI	(2) ROI	(3) ROI	(4) ROI	(5) ROI	(6) ROI
L.ROIC	0.260***	0.259***	0.259***	0.259***	0.262***	0.267***
	(0.0153)	(0.0153)	(0.0153)	(0.0153)	(0.0173)	(0.0173)
Firm age	0.0274***	0.0259***	0.0201	0.0184*	0.0111	
	(0.00937)	(0.00953)	(0.0212)	(0.00945)	(0.00917)	
Firm age_2			-6.11e-05			
			(0.000317)			
Revenues (million €)	0.0687***	0.0678***	0.151***	0.152***	0.155***	
	(0.00989)	(0.00995)	(0.0176)	(0.0176)	(0.0175)	
Revenues (million €)_2			-6.15e-10***	-6.17e-10***	-6.70e-10***	
			(1.06e-10)	(1.06e-10)	(1.08e-10)	
Wine grapes	1.815***	1.851***	1.677***	1.663***	1.735***	2.419***
	(0.439)	(0.439)	(0.434)	(0.433)	(0.421)	(0.429)
Wine	1.065***	1.061***	0.818**	0.810**	0.920***	1.726***
	(0.333)	(0.334)	(0.333)	(0.331)	(0.320)	(0.317)
Bottler	3.818***	3.901***	3.511***	3.556***	3.162***	4.465***
	(0.995)	(0.994)	(0.982)	(0.981)	(0.951)	(0.974)
Debt/equity ratio	0.00831***	0.00830***	0.00831***	0.00834***	0.00653**	
	(0.00302)	(0.00302)	(0.00302)	(0.00302)	(0.00296)	
One owner	-1.961***	-1.915***	-1.878***	-1.722***	-1.381***	-1.073***
	(0.389)	(0.390)	(0.385)	(0.362)	(0.354)	(0.362)
Two owners	-0.451	-0.420	-0.358			
	(0.325)	(0.325)	(0.321)			
SF: @	-1.849	-1.985	-2.144			
	(1.649)	(1.653)	(1.626)			
SF: €	2.408*	2.293*	2.178*	2.236*	2.011	
	(1.319)	(1.322)	(1.301)	(1.301)	(1.321)	
SF: Firm reputation	1.070					
	(1.234)					
HJ: Firm reputation		0.147	-0.0226	-0.00834		
		(0.263)	(0.263)	(0.263)		
HJ: Firm reputation_slope		0.183	0.251	0.218		
		(0.317)	(0.315)	(0.315)		
HJ: Collective reputation	-0.124	-0.125	-0.0948	-0.102		
	(0.160)	(0.160)	(0.157)	(0.157)		
L.HJ: Firm reputation					0.203	0.646**
					(0.270)	(0.271)
L.HJ: Firm reputation_slope					-0.0440	-0.0388
					(0.327)	(0.327)
L.Collective reputation					-0.0524	-0.0619
					(0.153)	(0.157)
Constant	-1.107	-1.112	-0.966	-0.978	-1.888	-2.572
	(2.594)	(2.596)	(2.557)	(2.556)	(2.529)	(2.558)
Observations	6,960	6,960	6,960	6,960	6,536	6,569

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, with slope DV for older firms with reputation, only wine producers

VARIABLES	(1) ROI	(2) ROI	(3) ROI	(4) ROI	(5) ROI	(6) ROI
L.ROIC	0.266***	0.265***	0.263***	0.264***	0.269***	0.267***
	(0.0177)	(0.0177)	(0.0177)	(0.0177)	(0.0189)	(0.0173)
Firm age	0.0407***	0.0402***	0.0412*	0.0337***	0.0209**	
	(0.0103)	(0.0104)	(0.0235)	(0.0105)	(0.0100)	
Firm age_2			-0.000144			
			(0.000346)			
Employees	-0.00263	-0.00371	0.0291***	0.0360***	0.0407***	
	(0.00619)	(0.00623)	(0.0112)	(0.00880)	(0.00883)	
Employees_2			-1.00e-04***	-0.000102***	-0.000122***	
			(2.83e-05)	(2.39e-05)	(2.48e-05)	
TotalassetsthEUR	0.0163*	0.0157*	0.0101			
	(0.00834)	(0.00838)	(0.0151)			
TotalassetsthEUR_2			0			
			(0)			
Wine grapes	2.152***	2.210***	2.060***	2.123***	2.163***	2.419***
	(0.485)	(0.485)	(0.486)	(0.482)	(0.463)	(0.429)
Wine	1.424***	1.441***	1.227***	1.282***	1.376***	1.726***
	(0.380)	(0.380)	(0.385)	(0.381)	(0.360)	(0.317)
Bottler	5.087***	5.231***	4.916***	5.047***	4.421***	4.465***
	(1.097)	(1.096)	(1.095)	(1.089)	(1.069)	(0.974)
Debt/equity ratio	0.00614**	0.00614**	0.00610**	0.00607**	0.00533*	
	(0.00306)	(0.00306)	(0.00305)	(0.00306)	(0.00295)	
One owner	-1.679***	-1.600***	-1.556***	-1.370***	-1.042***	-1.073***
	(0.428)	(0.430)	(0.429)	(0.399)	(0.390)	(0.362)
Two owners	-0.435	-0.372	-0.319			
	(0.366)	(0.365)	(0.365)			
SF: @	0.412	0.335	-0.101			
	(1.564)	(1.567)	(1.564)			
SF: €	1.699	1.582	1.384			
	(1.387)	(1.391)	(1.386)			
SF: Firm reputation	1.572					
	(1.300)					
HJ: Firm reputation		0.227	0.0765	0.134		
		(0.290)	(0.295)	(0.291)		
HJ: Firm reputation_slope		0.0875	0.0464	0.0287		
		(0.331)	(0.330)	(0.330)		
HJ: Collective reputation	-0.301*	-0.303*	-0.296*	-0.273		
	(0.178)	(0.178)	(0.178)	(0.176)		
L.HJ: Firm reputation					0.388	0.646**
					(0.291)	(0.271)
L.HJ: Firm reputation_slope					-0.244	-0.0388
					(0.337)	(0.327)
L.Collective_reputation					-0.128	-0.0619
					(0.171)	(0.157)
Constant	-1.097	-1.157	-1.051	-1.240	-2.227	-2.572
	(3.356)	(3.361)	(3.348)	(3.339)	(2.681)	(2.558)
Observations	5,793	5,793	5,793	5,793	5,654	6,569

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6: Linear dynamic panel models with random effects, firm size proxied by revenues, only subsample matched with PPS based on NN (5), year 2015

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.389***	0.392***	0.394***	0.393***	0.356***	0.365***
	(0.0353)	(0.0354)	(0.0354)	(0.0353)	(0.0375)	(0.0386)
Firm age	0.0326**	0.0330**	-0.00750	0.0340**	0.0243	
	(0.0154)	(0.0152)	(0.0406)	(0.0147)	(0.0157)	
Firm age_2			0.000530			
			(0.000469)			
Revenues (million €)	0.0504***	0.0494***	0.121***	0.119***	0.108***	
	(0.0136)	(0.0134)	(0.0263)	(0.0261)	(0.0271)	
Revenues (million €)_2			-6.33e-10***	-6.06e-10***	-5.55e-10***	
			(2.02e-10)	(2.01e-10)	(2.11e-10)	
Wine grapes	-0.275	-0.188	-0.435	-0.441	-0.555	-0.207
	(0.752)	(0.741)	(0.729)	(0.714)	(0.762)	(0.763)
Wine	1.653*	1.650*	1.094	1.175	1.911**	3.391***
	(0.936)	(0.924)	(0.913)	(0.916)	(0.965)	(0.946)
Debt/equity ratio	-0.0477***	-0.0487***	-0.0473***	-0.0486***	-0.0564***	
	(0.0183)	(0.0183)	(0.0182)	(0.0181)	(0.0182)	
One owner	-1.992*	-1.823	-1.955*	-1.854	-0.757	1.224
	(1.197)	(1.166)	(1.149)	(1.151)	(1.245)	(1.134)
Two owners	-0.600	-0.696	-0.714			
	(0.719)	(0.713)	(0.706)			
SF: @	0.0685	-0.0228	0.138			
	(1.538)	(1.516)	(1.481)			
SF: €	2.079	2.058	2.516*	2.504*	1.814	
	(1.422)	(1.403)	(1.379)	(1.382)	(1.516)	
SF: Firm reputation	3.225					
	(3.443)					
HJ: Firm reputation		-0.303	-0.356*	-0.349*		
		(0.208)	(0.205)	(0.205)		
HJ: Collective reputation	0.167	0.240	0.211	0.234		
	(0.326)	(0.325)	(0.318)	(0.315)		
HJ: Firm reputation (t-1)					-0.379*	-0.233
					(0.219)	(0.220)
HJ: Collective reputation (t-1)					0.378	0.118
					(0.336)	(0.328)
Constant	1.778	1.623	2.105	1.281	0.874	2.303
	(1.616)	(1.593)	(1.692)	(1.547)	(1.637)	(1.506)
Observations	1,248	1,248	1,248	1,248	1,140	1,150

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A7: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, only subsample matched with PPS based on NN (5), year 2015

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.407***	0.408***	0.405***	0.402***	0.396***	0.365***
	(0.0397)	(0.0396)	(0.0390)	(0.0389)	(0.0408)	(0.0386)
Firm age	0.0369**	0.0372**	0.0158	0.0308**	0.0116	
	(0.0157)	(0.0157)	(0.0425)	(0.0151)	(0.0146)	
Firm age_2			0.000176			
			(0.000476)			
Employees	-0.0117**	-0.0113*	0.0250*	0.0204**	0.0134	
	(0.00585)	(0.00588)	(0.0129)	(0.00951)	(0.00956)	
Employees_2			-0.000101***	-9.44e-05***	-8.14e-05***	
			(3.07e-05)	(2.62e-05)	(2.58e-05)	
Total assets (million €)	0.00546	0.00688	0.00225			
	(0.00872)	(0.00884)	(0.0204)			
Total assets (million €)_2			-5.38e-11			
			(8.76e-11)			
Wine grapes	-0.105	-0.0914	-0.234	-0.265	-0.520	-0.207
	(0.799)	(0.796)	(0.786)	(0.763)	(0.757)	(0.763)
Wine	2.417**	2.410**	1.958*	2.077**	2.859***	3.391***
	(1.015)	(1.011)	(1.001)	(1.000)	(0.931)	(0.946)
Debt/equity ratio	-0.0606***	-0.0608***	-0.0614***	-0.0622***	-0.0534***	
	(0.0200)	(0.0200)	(0.0199)	(0.0198)	(0.0181)	
One owner	1.124	1.066	1.381	1.261	2.921**	1.224
	(1.255)	(1.249)	(1.232)	(1.215)	(1.258)	(1.134)
Two owners	-0.776	-0.822	-0.574			
	(0.689)	(0.689)	(0.686)			
SF: @	0.0547	0.00748	-0.236			
	(1.496)	(1.490)	(1.463)			
SF: €	0.552	0.602	0.641			
	(1.520)	(1.515)	(1.487)			
SF: Firm reputation	1.412					
	(3.326)					
HJ: Firm reputation		-0.165	-0.274	-0.242		
		(0.227)	(0.229)	(0.223)		
HJ: Collective reputation	0.174	0.204	0.190	0.176		
	(0.333)	(0.333)	(0.328)	(0.325)		
HJ: Firm reputation (t-1)					-0.238	-0.233
					(0.225)	(0.220)
HJ: Collective reputation (t-1)					0.312	0.118
					(0.319)	(0.328)
Constant	1.265	1.211	1.349	1.133	1.274	2.303
	(1.720)	(1.710)	(1.800)	(1.662)	(1.576)	(1.506)
Observations	1,133	1,133	1,133	1,133	1,067	1,150

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A8: Linear dynamic panel models with random effects, firm size proxied by revenues, only subsample matched with PPS based on NN (3), year 2010

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.404***	0.407***	0.407***	0.407***	0.370***	0.431***
	(0.0373)	(0.0374)	(0.0378)	(0.0378)	(0.0439)	(0.0468)
Firm age	-0.0120	-0.0127	-0.0359	-0.00465	-0.00734	
	(0.0164)	(0.0162)	(0.0496)	(0.0148)	(0.0164)	
Firm age_2			0.000372			
			(0.000498)			
Revenues (million €)	0.0487***	0.0483***	0.126***	0.123***	0.128***	
	(0.0148)	(0.0147)	(0.0305)	(0.0295)	(0.0321)	
Revenues (million €)_2			-8.15e-10***	-7.90e-10***	-6.32e-10**	
			(2.66e-10)	(2.60e-10)	(2.83e-10)	
Wine grapes	-0.500	-0.538	-0.877	-0.883	-0.682	0.595
	(0.767)	(0.756)	(0.752)	(0.726)	(0.796)	(0.740)
Wine	1.469*	1.481*	0.805	0.773	0.818	2.110***
	(0.826)	(0.812)	(0.833)	(0.815)	(0.886)	(0.762)
Debt/equity ratio	-0.0359	-0.0379	-0.0330	-0.0323	-0.0781***	
	(0.0499)	(0.0500)	(0.0498)	(0.0497)	(0.0123)	
One owner	0.0950	0.0920	-0.296	-0.306	-1.151	0.203
	(0.991)	(0.976)	(0.975)	(0.971)	(1.039)	(0.944)
Two owners	-0.216	-0.171	-0.703			
	(1.144)	(1.135)	(1.122)			
SF: @	-0.635	-0.622	0.270			
	(1.811)	(1.793)	(1.787)			
SF: €	2.240	2.306	3.229	2.862	2.746	
	(2.008)	(1.989)	(1.970)	(1.895)	(2.123)	
SF: Firm reputation	-0.220					
	(2.020)					
HJ: Firm reputation		-0.157	-0.167	-0.171		
		(0.207)	(0.203)	(0.203)		
HJ: Collective reputation	0.0697	0.0680	-0.00741	0.0639		
	(0.415)	(0.411)	(0.419)	(0.403)		
HJ: Firm reputation (t-1)					-0.243	-0.184
					(0.221)	(0.216)
HJ: Collective reputation (t-1)					-0.122	-0.344
					(0.435)	(0.410)
Constant	2.675	2.811	3.271	2.642	2.690	2.896*
	(1.791)	(1.779)	(2.044)	(1.720)	(1.942)	(1.739)
Observations	949	949	949	949	877	894

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A9: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, only subsample matched with PPS based on NN (3), year 2010

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.529***	0.529***	0.538***	0.518***	0.429***	0.431***
	(0.0471)	(0.0466)	(0.0485)	(0.0449)	(0.0434)	(0.0468)
Firm age	-0.0275*	-0.0271*	-0.0859**	-0.0248**	-0.0285*	
	(0.0141)	(0.0140)	(0.0410)	(0.0123)	(0.0147)	
Firm age_2			0.000615			
			(0.000407)			
Employees	-0.000871	0.000168	0.0132	0.00283	0.00278	
	(0.00574)	(0.00576)	(0.0112)	(0.00889)	(0.00999)	
Employees_2			-4.55e-05	-2.61e-05	-1.75e-05	
			(3.14e-05)	(2.89e-05)	(3.29e-05)	
Total assets (million €)	-0.00961	-0.00885	-0.0166			
	(0.00800)	(0.00807)	(0.0181)			
Total assets (million €)_2			0.0000			
			(7.96e-11)			
Wine grapes	0.477	0.421	0.361	0.336	0.604	0.595
	(0.625)	(0.621)	(0.601)	(0.604)	(0.727)	(0.740)
Wine	1.831***	1.769**	1.718**	1.517**	2.498***	2.110***
	(0.708)	(0.702)	(0.710)	(0.710)	(0.810)	(0.762)
Debt/equity ratio	-0.0538	-0.0554	-0.0600	-0.0518	-0.0771***	
	(0.0373)	(0.0373)	(0.0372)	(0.0372)	(0.0114)	
One owner	2.415***	2.290***	2.616***	2.196**	1.529	0.203
	(0.881)	(0.877)	(0.875)	(0.857)	(0.963)	(0.944)
Two owners	-0.0121	-0.0475	-0.180			
	(0.967)	(0.968)	(0.936)			
SF: @	-0.101	-0.103	-0.146			
	(1.340)	(1.338)	(1.290)			
SF: €	0.464	0.665	0.655			
	(1.625)	(1.635)	(1.578)			
SF: Firm reputation	-0.554					
	(1.610)					
HJ: Firm reputation		-0.170	-0.167	-0.205		
		(0.186)	(0.182)	(0.185)		
HJ: Collective reputation	-0.0918	-0.0834	-0.188	-0.0662		
	(0.333)	(0.334)	(0.332)	(0.337)		
HJ: Firm reputation (t-1)					-0.217	-0.184
					(0.218)	(0.216)
HJ: Collective reputation (t-1)					-0.211	-0.344
					(0.405)	(0.410)
Constant	2.485*	2.627*	3.672**	2.623*	2.843	2.896*
	(1.505)	(1.505)	(1.700)	(1.487)	(1.798)	(1.739)
Observations	864	864	864	864	827	894

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A10: Linear dynamic panel models with random effects, firm size proxied by revenues, only subsample matched with PPS based on NN (5), year 2010

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.375***	0.375***	0.374***	0.374***	0.346***	0.394***
	(0.0347)	(0.0346)	(0.0349)	(0.0349)	(0.0393)	(0.0413)
Firm age	-0.0133	-0.0166	-0.0497	-0.0160	-0.0179	
	(0.0160)	(0.0160)	(0.0470)	(0.0150)	(0.0161)	
Firm age_2			0.000424			
			(0.000484)			
Revenues (million €)	0.0537***	0.0495***	0.126***	0.125***	0.129***	
	(0.0144)	(0.0143)	(0.0284)	(0.0283)	(0.0302)	
Revenues (million €)_2			-8.53e-10***	-8.31e-10***	-6.94e-10**	
			(2.62e-10)	(2.62e-10)	(2.81e-10)	
Wine grapes	-1.242*	-1.047	-1.325*	-1.370**	-1.063	0.0848
	(0.692)	(0.687)	(0.684)	(0.680)	(0.729)	(0.688)
Wine	0.948	1.167	0.669	0.608	0.769	1.779**
	(0.782)	(0.783)	(0.787)	(0.779)	(0.825)	(0.743)
Debt/equity ratio	-0.0623	-0.0630	-0.0578	-0.0578	-0.0804***	
	(0.0481)	(0.0482)	(0.0480)	(0.0480)	(0.0126)	
One owner	-0.0294	0.271	0.100	0.173	-0.431	0.402
	(0.922)	(0.913)	(0.897)	(0.903)	(0.945)	(0.902)
Two owners	-1.236	-1.237	-1.343			
	(0.990)	(0.997)	(0.978)			
SF: @	-0.220	-0.486	-0.244			
	(1.469)	(1.474)	(1.470)			
SF: €	3.471	3.397	4.002*	3.379	3.064	
	(2.140)	(2.157)	(2.121)	(2.086)	(2.271)	
SF: Firm reputation	3.501*					
	(1.882)					
HJ: Firm reputation		-0.104	-0.135	-0.145		
		(0.206)	(0.203)	(0.204)		
HJ: Collective reputation	-0.343	-0.435	-0.526	-0.514		
	(0.384)	(0.384)	(0.383)	(0.376)		
HJ: Firm reputation (t-1)					-0.156	-0.0687
					(0.219)	(0.217)
HJ: Collective reputation (t-1)					-0.717*	-0.731*
					(0.400)	(0.383)
Constant	5.911***	6.061***	6.662***	6.110***	5.719***	5.273***
	(1.671)	(1.684)	(1.904)	(1.650)	(1.820)	(1.635)
Observations	1,172	1,172	1,172	1,172	1,079	1,096
Number of Mark	123	123	123	123	129	131

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A11: Linear dynamic panel models with random effects, firm size proxied by employees and total assets, only subsample matched with PPS based on NN (5), year 2010

VARIABLES	(1) ROIC	(2) ROIC	(3) ROIC	(4) ROIC	(5) ROIC	(6) ROIC
L.ROIC	0.437***	0.438***	0.440***	0.444***	0.392***	0.394***
	(0.0383)	(0.0383)	(0.0384)	(0.0389)	(0.0401)	(0.0413)
Firm age	-0.0171	-0.0189	-0.0580	-0.0264*	-0.0302**	
	(0.0155)	(0.0155)	(0.0455)	(0.0142)	(0.0151)	
Firm age_2			0.000410			
			(0.000466)			
Employees	0.00106	0.000470	0.0117	0.00619	0.00538	
	(0.00638)	(0.00642)	(0.0118)	(0.00961)	(0.0100)	
Employees_2			-3.88e-05	-3.11e-05	-2.48e-05	
			(3.51e-05)	(3.29e-05)	(3.45e-05)	
Total assets (million €)	-0.00365	-0.00321	-0.00757			
	(0.00882)	(0.00898)	(0.0193)			
Total assets (million €)_2			0			
			(8.80e-11)			
Wine grapes	-0.418	-0.302	-0.288	-0.291	-0.0891	0.0848
	(0.665)	(0.659)	(0.657)	(0.641)	(0.687)	(0.688)
Wine	1.205	1.306*	1.203	1.149	2.003**	1.779**
	(0.774)	(0.772)	(0.784)	(0.767)	(0.785)	(0.743)
Debt/equity ratio	-0.0640*	-0.0636*	-0.0645*	-0.0597	-0.0802***	
	(0.0381)	(0.0381)	(0.0381)	(0.0381)	(0.0119)	
One owner	1.492	1.677*	1.826**	1.749*	1.309	0.402
	(0.915)	(0.909)	(0.914)	(0.897)	(0.906)	(0.902)
Two owners	-1.518	-1.523	-1.481			
	(0.961)	(0.964)	(0.966)			
SF: @	0.792	0.659	0.427			
	(1.292)	(1.291)	(1.294)			
SF: €	2.407	2.388	2.346			
	(2.032)	(2.046)	(2.029)			
SF: Firm reputation	2.105					
	(1.756)					
HJ: Firm reputation		-0.0519	-0.0599	-0.0729		
		(0.212)	(0.212)	(0.208)		
HJ: Collective reputation	-0.425	-0.482	-0.521	-0.504		
	(0.365)	(0.363)	(0.368)	(0.358)		
HJ: Firm reputation (t-1)					-0.0843	-0.0687
					(0.224)	(0.217)
HJ: Collective reputation (t-1)					-0.666*	-0.731*
					(0.382)	(0.383)
Constant	5.818***	5.878***	6.510***	5.945***	5.900***	5.273***
	(1.643)	(1.648)	(1.878)	(1.625)	(1.752)	(1.635)
Observations	1,068	1,068	1,068	1,068	1,014	1,096

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Kernel density function of the ROIC of private firms