Who Benefits from the Knowledge of Oenologists?
Market Failure in the Market for Winemaking Experts
When Wine Exports are Booming

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Abstract  

The substantial skills and talents of Chilean oenologists seem to make a positive contribution to their wines winning awards in international competitions. However, these skills and talents are not reflected in the short-term export performance of many wine companies. Moreover, informal knowledge networks of individual winemaking experts seem to benefit the individuals themselves but not their companies. Although there are differences between firms, in general large gaps appear between oenologists’ long-term aims of human capital accumulation and professional development, and employers’ short-term profit-maximising objectives. Few companies are able to deal with this problem in positive and creative ways, which leads to frustration and disloyalty fears. This market failure could be candidly summarised by the phrase ‘I’ll pay you peanuts but you’ll show me no loyalty’.

Keywords  

Knowledge workers, Labour market failure, Wine, International awards, Networks, Principal-agent problems, Chile
1. Introduction

The Chilean wine industry made spectacular progress in the 1990s and the beginning of the 21st century (Duijker, 1999, Vergara, 2001; Visser and De Langen, 2005; Richards, 2006a; www.vendimia.cl). Exports grew from US$ 140 million in 1994 to US$ 670 million in 2003. This expansion was all the more remarkable since it took place against a background of stagnation in the world wine market and contraction in the market share of traditional Old World producers, mostly French. However, eventually some evidence emerged that the worldwide wine glut was finally affecting even Chilean producers. During the last weeks and months of 2006, British supermarkets and specialist wine shops started offering Chilean wines at dramatically discounted prices, including 25%, 33% and 50% discounts. To some extent this was normal, the inevitable result of the operation of healthy, highly competitive markets. Companies from every producer country were forced to reduce their prices, as consumers benefited everywhere.

However, these perfectly normal and healthy developments may have distracted attention from a new and unusual phenomenon in the Chilean wine industry. The market for Chilean winemaking experts has been failing (in the rest of this paper, the expressions ‘oenologist’ and ‘winemaking expert’ will be used as equivalent). As we shall see, this particular labour market is a complex one. As Chilean wine exports have been booming, so has the demand for oenologists. However, despite a rigid supply, wages have not risen to their clearing, equilibrium levels. In the absence of equilibrium, the market reaches some sort of ‘dynamic balance’, or ‘rough justice’, by which the typical wine company pays its winemaking expert a sub-clearing wage rate, but in exchange the expert shows the company what is, in the company’s eyes, ‘no loyalty’. This paper examines the reasons for this particular labour market failure and tests several hypotheses related to it.

Making good quality wine is both a science and an art (Bisson et al, 2002; Goode, 2005; Robinson, 2006). The board members of Chile’s oenologists’ professional association (Asociacion Nacional de Ingenieros Agronomos Enlogos de Chile) are well aware of its members’ technological needs. Their website (www.enologo.cl) is a goldmine of advice, technical papers, and information about meetings and links. As knowledge workers, Chilean oenologists are a fascinating subject of study. Sometimes, their long and rich process of accumulation of human capital stock pushes them towards splendid isolation as undergraduate and graduate students and harvest interns in other wine-producing countries (Hotel Online, 1998). They are also isolated in their everyday professional work. On other occasions, they work shoulder to shoulder with employees of competing firms in courses, seminars and other meetings of their professional association (www.enologo.cl), or in complex informal knowledge networks (Hojman, 2005, 2006a). Sometimes they are in conflict with their own companies, for a number of reasons. The oenologist aims for quality but the firm aims for profit (Echecopar et al, 2004; Waldin, 2004). The firm may not be large enough to accommodate the oenologist’s professional development ambitions (Beverland and Lockshin, 2001). Owners and managers may object to what they see as excessive closeness between oenologists working for different firms (Hojman, 2005, 2006a). Traditionally industrial relations and human resource management in Chile have been paternalistic or authoritarian (Del Pozo, 1998; Hojman and Perez, 2005). Both sides of the employer-employee relationship may be affected or dominated by Chilean machismo (Lehmann, 2003; Balder, 2005). Often the best oenologists have the opportunity, or are forced, to become independent entrepreneurs or ‘flying consultants’.
The next section introduces the main characteristics of the market for oenologists in Chile. Section 3 explains how the public acknowledgement of a winemaking expert’s skills has become an important part of that expert’s remuneration package. Fears, justified or not, among company owners and top management about possible disloyalty of their winemaking experts are examined in Section 4. The different types of economic agent that this particular instance of labour market failure is likely to generate are described in Section 5. Section 6 deals with the informal knowledge network of Colchagua oenologists, which is popular among individual winemaking experts but not with their employers. Sections 7 and 8 present econometric evidence regarding the determinants of awards to Chilean wines in the prestigious annual London competition, the International Wine Challenge, and the determinants of Chilean wine export growth, respectively. Section 9 concludes.

2. The labour market for winemaking experts in Chile

Not all Chilean wine companies have been equally successful in terms of taking advantage of the Chilean wine export boom. Some traditional firms feel threatened by highly dynamic newcomers. New entrants with no tradition of winemaking, but with plenty of investment funds, good management and talented oenologists (Casas del Bosque, Matetic, Tabali, Ventisquero, among others) have been increasing output at fast rates, winning prestigious awards in international competitions, and enlarging their market shares. There is an ongoing process of concentration and consolidation. Smaller companies (such as Canata, Casa Rivas, Francisco de Aguirre, Indomita, and Villard) have all been recently taken over by larger ones. Even larger companies (Undurraga, for example) have become takeover targets.

Wine production has been getting increasingly knowledge-intensive everywhere (Bisson et al, 2002; Goode, 2005; Robinson, 2006). But winemaking experts are in short supply in Chile. Supply is fairly rigid, which is not helped by the fact that the typical wages of oenologists (which are similar to those of other university-trained professionals) have not increased to reflect the respective scarcities. The number of Chilean oenologists has been increasing but only very slowly. Currently the respective professional association has about 600 members (Hojman, 2005; www.enologo.cl). Full training typically involves a five-year university degree, plus a postgraduate specialisation, plus an exam to become a member of the respective professional association, plus formal or informal work experience in both Old World and New World wineries. The number of new entrants to the profession every year is more than what is required to compensate for those who retire or go abroad, permanently or temporarily, but only just. Fifty one new oenologists graduated in 2006 (www.enologo.cl). The exact size of the current deficit is difficult to estimate, let alone future prospects. By 2004, with about 112,000 hectares of vineyards in the whole country, there was one oenologist for every 187 hectares. The area planted is forecast to increase to about 180,000 hectares by 2014 (Richards, 2006a, p. 19), which means that a net increase of about 30 to 40 expert winemakers per year is needed, just to prevent the situation from getting worse. Moreover, quality winemaking may require much more specialist knowledge than that provided by one expert for 187 hectares (Richards, 2006a, pp. 89, 104, 315-316).

There are further complications. Oenologists expect to continue developing and improving their skills for the whole of their active lifetimes. But not all wine firms are sufficiently large and diverse, or have the critical mass, to allow this ongoing learning to take place. There is also the question of how the costs of on-the-job learning are going to be distributed between employer and employee. The firm may object to its winemaking expert leaving to go to
another employer. They may claim that the firm is being unfairly or disloyally treated by someone who used it in order to develop professionally without giving enough back. The process of increasing a winemaking expert’s human capital may ask for close interaction with oenologists who work for rival companies. Last but not least, professional development may involve a search for wine quality which may not be fully compatible with the company’s profit maximising aims.

3. Celebrating the skills and talents of oenologists

For a company which feels that it cannot pay wages as high as its oenologists think they deserve, an alternative is to publicly acknowledge their expertise. Increasingly, the best Chilean winemaking experts are being seen and hailed as celebrities. Everyone, wine company owners in particular, are becoming aware of how important specialist knowledge, including knowledge about local micro conditions, is (although not all company owners or top managers will admit it openly). Such knowledge is not easy to come by, and the best of it may always be in short supply. The best skills and experience are scarce. When in the 1990s the carmenere grape, which for a long time had been considered a Chilean variety of merlot, was finally embraced by the Chilean wine industry as a key component of the country’s wine personality and international marketing, all of the pioneering work had been previously done by oenologists. This included not only the actual identification of the grape (following views expressed by French consultants), but also convincing the sceptics, especially in the top management of the respective companies, changing plantation and wine production techniques, lobbying government officials, modifying the plantations’ official designations, developing new marketing strategies, and even sending a Chilean oenologist to supervise the introduction of the newly ‘discovered’ grape in California (Langman, 2000; Pszczolkowski, 2004; Boyd, 2005; Tapia, 2005).

For a long time, and at least until early 2006, a leading mail-order wine club in the UK advertised some of its Chilean wines as being made by Mr. X, described in the club adverts as a ‘winemaking genius’ (no real names will be given in this paper). This was an explicit recognition of the respective oenologist’s formidable skills and talent. But it was more than that. It was also a marketing exercise by the mail-order wine club. By saying explicitly, ‘this wine was made by Mr. X’, the club was implicitly suggesting that ‘this wine is so good, so special, that we must tell you who made it’. As far as we are aware, Mr. X never objected to being called a ‘winemaking genius’. Possibly such practices are supported by the oenologists themselves. Such an explicit acknowledgment of a person’s skills is, in terms of prestige, an important aspect of his or her remuneration package.

This personality cult is becoming widespread. All the Chilean wines sold by Marks and Spencer in the UK now carry the individual winemaking expert’s name on the label (with only one exception to which we will come back in the next section).

The magazine Wine Spectator in April 2005 had an article on Chilean wine (Molesworth, 2005a), in which oenologists of companies Concha y Toro, Los Vascos and Antiyal were explicitly mentioned. The article also had a colour photograph of Casa Lapostolle’s winemaking expert. That issue of the Wine Spectator also carried a full-page advert by Vina Santa Ema, with a large photograph (and the name) of their own oenologist. The name and a colour photograph of Vina Ventisquero’s expert may also be found in their full-page advert in Decanter, June 2005. Every year, the Guia de Vinos de Chile presents its ‘Best Winemaking
Expert of the Year’ award. The *Guia* also chose the ‘Best Winemaking Expert of the Decade’, for its tenth anniversary in 2003. The names of many other ‘celebrity’ oenologists, with the respective firms they work for, may be found in other specialist publications. The winner of the Trophy for the best wine in the second year of the Wines of Chile Awards was described as made by not one, but three talented winemaking experts (*Wine International*, 2005a, p 20).

4. **But are our oenologists loyal to our company?**

The short answer is that some companies think that oenologists are not loyal to their company, and the feeling may be mutual. The nature of economic activity in Chile has always been such, that owners and managers never had to deal with knowledge workers. So, at the time of emergence of oenologists as a key group of knowledge workers in the 1980s and 1990s, owners and managers were just not prepared for it. Moreover, traditionally industrial relations and human resource management in Chile had always been paternalistic or authoritarian (Del Pozo, 1998; Hojman and Perez, 2005). Even today, in some companies relations between owners and managers on the one hand, and oenologists on the other, suffer from reciprocal feelings of misunderstanding or distrust. This can be illustrated by many examples. When in the 1990s some Chilean oenologists finally decided that Chile could no longer prevent it becoming public knowledge that the country’s splendid ‘Chilean merlot’ was in fact carmenere, their proposal to make this a key aspect of Chilean wine marketing was bitterly contested by some company executives (Pszczolkowski, 2004; Boyd, 2005).

The Chilean company whose wines were advertised in the UK in 2005 by a mail-order wine club as being made by a ‘winemaking genius’ had in fact lost its winemaking experts twice during 2003. This was described by a wine writer and journalist as going through ‘troubling times’ (Richards, 2005). More recently it has emerged that that particular ‘winemaking genius’ himself left this particular employer in 2006 (Richards, 2006a; [www.vendimia.cl](http://www.vendimia.cl)). It is not clear whether the British mail-order wine club will keep stocking this Chilean company’s wines, even if they will not be made by the ‘genius’ himself anymore, or whether the club will follow the ‘genius’ wherever he goes and sell the new wines he presumably will be making elsewhere, or both. In any case, the relevant mail-order wine club publicity will have to be changed.

Many Chilean oenologists tend to move around frequently from one employer to the next (Hojman, 2005, Appendix 1; Wine Business Insider and Wine Business Monthly, online). They do not seem to last long in their jobs. In his book on the wines of Chile, Peter Richards (2006a, pp. xiv, 44) writes that Chilean winemaking experts ‘have an annoying habit of changing jobs just after books are written’, and that they tend to move jobs ‘with alarming regularity’. He goes on to mention some of the wine companies from which this has happened. His list includes many large and small firms, old and new, conservative and highly innovative. Roughly following the country’s geography, from north to south, Richards’ list, which is not exhaustive, includes companies Tamaya, Francisco de Aguirre, Errazuriz, Concha y Toro (in 1982), Casablanca, Casas del Bosque, Calina, Valdivieso, Montes, Garces Silva, Carmen, Cousino Macul, Domus Aurea, Tarapaca, Porta, Los Vascos, Undurraga, San Pedro, and Canata. One wine company is mentioned four times in six consecutive pages in the Richards book, having lost four of its winemaking experts. High rates of firm-to-firm migration apply also to foreign winemaking experts working in Chile. For example, in 2006 a high-profile American oenologist joined his fourth employer in Chile.
in slightly over twelve years (www.vendimia.cl). On the other hand, it may be important to emphasise that not all the wine companies in Chile seem to have been equally affected. Richards (2006a) does not report any winemaking expert losses by Odfjell, which is owned by Norwegian investors, or Torres, the local subsidiary of Spain’s Miguel Torres. And the winemaking expert who left Concha y Toro did it a long time ago, in 1982.

Marks and Spencer’s insistence on publishing the individual winemaking expert’s name on each bottle may possibly be a form of pressure against excessive personnel changes in its Chilean suppliers, and with them, wild quality or style swings. Incidentally, there is one exception to this Marks and Spencer’s rule, a Chilean firm which, instead of giving persons’ names, prefers to say that its wine was made by a ‘team of Chilean and Australian makers’. Maybe this particular company wishes to appeal to consumers who like Australian wine. But another possibility is that the company feels that such explicit acknowledgment of individual merit will represent excessive increases in its experts’ remuneration packages, or it will make them desirable targets for headhunting by other wineries. We know that this company has its own experts, and that, just like many others, it also buys in expert advice from consultants and freelance specialists.

Excessive migration by oenologists from company to company is at least partly a result of booming demand for their services. High migration is partly caused by a temporary imbalance between supply and demand, which will be corrected eventually. However, this may take a very long time. And there are also other factors. For example, some companies’ reluctance to admit publicly how good their experts are, and how much the company’s success owes to them. Excessive migration may also be caused by some firms’ unwillingness to accept active participation by their oenologists in informal knowledge networks of employees from different companies, which the respective managements may consider disloyal (Hojman, 2005, 2006a). As mentioned before, there are often conflicts between the long-term ambitions of human capital enhancement and professional development in oenologists, which may clash with the short-term profit maximising aims of the companies (Echecopar, Fetters and McDermott, 2004; Rand, 2005). Economists have used different names for this: quality versus profits, principal-agent problems, inability to internalise externalities, and so on. Similar problems have been observed not only in Chile but also in other wine-producing countries (Beverland and Lockshin, 2001; Morton and Podolny, 2002).

Amazing though it may seem, the conflict between quality and profits in Chilean winemaking has led some firms to portray their own oenologists as ‘the enemy’, and to design management structures accordingly. In a keynote speech at an emblematic industry meeting in the spring of 2006, a company executive described his recipe for future success as ‘giving the consumer what the consumer wants to drink, rather than what the oenologist knows how to make’ (www.vendimia.cl). Or, in a Chilean newspaper article on team work between viticulturist and oenologist, one of the former said: ‘... the viticulturist is much more concerned [than the oenologist] with the company’s results. That’s the whole point of having a viticulturist in the company. We are here to provide good management. If the oenologist says that he wants to harvest 1,000 kilos per hectare, I must say no; even if I have to shout, I have to tell him that it is too expensive and not efficient’ (Drysdale, 2006). It is therefore not surprising that the representative of a dynamic, highly successful new wine company told Peter Richards (2006a, p. 128) ‘we are not contaminated by Chilean winemaking history’.

But it would be misleading to suggest that all Chilean traditional wine firms are in this sense the same. In the 2005 World Wine Awards by the magazine Decanter, two Chilean wines
from different companies received the top distinction, the International Trophy. This gave readers an unusual chance to observe and compare two different Chilean companies’ ways of celebrating a *Decanter* award (*Decanter* World Wine Awards, 2005). Each winner had been allocated half a page and a photograph. One of the Chilean companies used this to give plenty of technical information about this particular wine and to show the smiling, friendly face of the respective oenologist. The other company also offered some technical information, but much space was taken by the story of the company’s founder in the 19th century, and his descendants. In this latter example, although the name of the respective oenologist was given, the photograph showed instead a rather unattractive building and a tarmac road.

5. **Failure in the market for winemaking experts**

Market failure in this particular labour market is characterized by the fact that wages do not rise to their clearing levels, and as a result oenologists move often from one employer to the next. The oenologist sees this migration as his or her best option, given that the current employer refuses to improve the remuneration package to what the expert considers achievable or fair. It is possible to identify five different types of economic agent (both firms and oenologists) in the Chilean market for winemaking experts. These differences between types of agent in this labour market correspond to, or are mirrored by, different company insertion patterns in the industry.

Type 1: the top, leading, or most successful company (or companies). This firm can credibly tell to those winemaking experts it wants to keep, ‘we’ll pay you as much as possible, and certainly more than what you would get from other employers in the industry’. On top of higher wage rates, the leading company can also afford to give its good oenologists maximum publicity or visibility as ‘star’ winemaking experts. This is because these expert workers have nowhere else to go, except abroad or to become self-employed. The leading company is also large enough to have critical mass, which means being able to offer its winemaking experts optimal conditions for their individual processes of human capital accumulation. There are substantive theoretical and empirical difficulties in determining what the equilibrium wage in this particular labour market would be. However, these relatively higher wages (as compared with the rest of the industry), plus increased publicity and visibility, plus the best learning conditions, may stop these good winemaking experts from going abroad or starting their own businesses. To that extent, this total remuneration package can be said to be the ‘market-clearing’, ‘equilibrium’ wage rate.

Type 2: the typical oenologist. This winemaking expert works for the typical company (see next paragraph), not for the top or leading firm. He or she is busy working, learning, and looking for a better job. He or she is busy building up his or her human capital, developing formal or informal knowledge networks with colleagues working for other firms, and searching on-the-job for a better employer. He or she is typically over-qualified for his or her current job, underpaid in relation to what he or she thinks he or she deserves, and disappointed at not being allowed to make wine of the best possible quality regardless of production costs. He or she is also acutely aware that other companies in the industry (at least one) could offer him or her a better deal. There is no equilibrium here, but rather a situation of permanent disequilibrium.
Type 3: the typical company (which employs the typical oenologist). This firm is not as successful as the leading firm, maybe because it is too small, or because of financial constraints which prevent it from investing more, or because of poor management. The relationship between this typical company and its typical winemaking expert is one of disequilibrium, ‘dynamic balance’, or ‘rough justice’, by which the firm pays a wage lower than the static, short- or long-term market-clearing rate (‘peanuts’), and the oenologist pays back with ‘insufficient loyalty’. The market-clearing wage rate in this case would be that total package (including wage, visibility, and human capital formation opportunities) which would make the winemaking expert indifferent between staying at the current job or moving on to the next one. The company’s unhappiness about ‘insufficient loyalty’ is no only in relation to the fact that a good winemaking expert is trying to leave in order to go to a better employer, but also in relation to the fact that, when he or she eventually leaves, he or she will inevitably take with him or her valuable company secrets.

Type 4: the winemaking expert who ‘has reached’ equilibrium. This oenologist cannot move to a better firm, because he or she is not good enough. He or she is being paid whatever his or her ‘equilibrium wage’ is. He or she has also ‘reached equilibrium’, in that he or she has finally stopped moving from firm to firm. This may be a strange sort of equilibrium, since it does not necessarily mean that his or her employers are satisfied with him or her.

Type 5: the firm which employs that winemaking expert who ‘has reached’ equilibrium (see previous paragraph). Such employment may exist, may keep being offered by this firm, only reluctantly, since the firm is facing a trade-off between loyalty and quality. As compared with the typical winemaking expert, the winemaking expert who ‘has reached’ equilibrium offers his or her company more loyalty but less quality.

6. A network of individual oenologists but not of their employers

Some interesting evidence of the fact that winemaking experts and the companies which employ them have very different priorities is given by the informal knowledge network of oenologists in the Colchagua Valley. The Colchagua Valley is possibly the most dynamic winemaking cluster in Chile, and the only one to have won the Wine Enthusiast magazine’s Wine Region of the Year Award (in 2005) (Tapia, 2001; Schachner, 2005; Richards, 2006b; www.vendimia.cl). At the same time, although not necessarily either a cause or a consequence of it, the Colchagua oenologists are heavily involved in an extremely active local, informal knowledge network. In mid January 2007, eight out of the sixteen information items posted in the home page of the oenologists’ professional association’s national website (www.enologo.cl) were about professional network-type activities in Colchagua. This despite the fact that the area covered by Colchagua vineyards represents only twenty percent of the country’s total.

So, does the Colchagua network of oenologists contribute to improve wine quality, or to better results for Colchagua wines in international competitions? The answers are both negative. Econometric evidence (Hojman, 2005, 2006a) shows that those Colchagua companies with higher values in several indicators of local network activity do not produce better quality. However, their domestic presence is larger because they have larger product ranges, i.e. a larger number of different wines (domestic presence is defined as the product of multiplying range times average quality). Domestic presence does play a positive role in helping a company’s performance in London’s prestigious International Wine Challenge
(LIWC). However, the indicators of network activity do not. Thus, network activity increases domestic presence in a multiple regression linking these two variables, and domestic presence improves LIWC results in a second multiple regression linking them. However, these two impacts are not sufficiently strong, individually or combined, to make the impact of network activity on LIWC awards statistically significant in the respective regression (regardless of whether domestic presence is a regressor or not).

So, if the Colchagua network does not contribute to improving quality or bringing more awards from international competitions, what is it there for? The most likely explanation is that it is there, possibly because it helps the local oenologists with their long-term objectives of human capital and social capital formation. Although the network may help a winemaking expert to perform better with his or her current employer, this effect is negligible. A much more important role of the network may be to make the oenologist more productive, better at producing higher quality, and better connected (all of them mostly in the future), and therefore more likely to find a better job. It may not be an accident that many wine company owners and top management strongly object to the Colchagua network (Hojman, 2005, 2006a).

7. Chilean awards at London’s International Wine Challenge

The previous sections suggested that it should not be surprising to come across some owners and managers, in at least some Chilean wine companies, asking themselves, ‘what do these oenologists, stars or not, give us, apart from headaches?’ This section and the following one aim at answering this question, using multiple regression exercises.

The first regression model seeks to explain award-winning performances in the 2005 London’s International Wine Challenge (LIWC), by all the Chilean wine companies with productive activities in the Colchagua Valley, and which aimed to sell at least some of their output at home in 2004 (30 companies; red wine only). Success in international wine competitions may be essential to introduce a particular wine to new markets, and LIWC is one of the world’s most prestigious competitions (Beverland and Lockshin, 2001; Orth and Krska, 2002).

The dependent variable, award performance (IW C), is a linear combination of the Gold, Silver, Bronze, and Seal of Approval awards won by a company in 2005, with weights equal to 4, 3, 2 and 1, respectively. The model tests for the possible impact of three types of influences, all measured in 2004: a) local aspects: Colchagua-based average quality, range or number of different wines, and presence (defined as the product of multiplying quality times range); b) national aspects: range, number of geographical appellations covered, exports; and c) human capital intensity, or number (in relation to the company’s exports) and motivation of the company’s oenologists. Motivation was assumed to be directly related to how many of the company’s oenologists are allowed, or encouraged, to keep a high public profile, and an index was compiled with that purpose (Hojman, 2005). These local and national influences are taken to represent a wide variety of scale and scope economies. Since several of these relationships may be non-linear or non-monotonic (Moen, 1999; Beverland and Lockshin, 2001), quadratic expressions were used. The data come from Wine International (2005b), Chilevid (2005), Guía de Vinos de Chile (2005) and Hojman (2005).
The best fit is presented in Table 1 (for other regression results and tests of alternative specifications, see Hojman, 2006b). The Table 1 model and results explain just over three quarters of the variance in the dependent variable. Several of the effects at work are non-linear, including those of domestic presence (GUX), geographical cover (GEC), and exports (XPO). The relationship between GUX and IWC is non-monotonic, negative for about half the sample (the half with low GUX values) and positive for the other half. The greater the value of GUX, the stronger its marginal impact on IWC. Everything else being the same, the dependent variable increases linearly with the square of exports. The respective points-of-means elasticity is about 0.4. These results for both GUX and XPO suggest that there are scale and scope economies, possibly both at home and abroad (that is, at the production and distribution stages), contributing to a Chilean wine company’s performance at London’s International Wine Challenge.

Table 1: Determinants of awards to Chilean red wines in London’s International Wine Challenge, 2005 (dependent variable: IWC)

<table>
<thead>
<tr>
<th>Regressor</th>
<th>Estimated coefficient (t statistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant term</td>
<td>4.643 (2.66)</td>
</tr>
<tr>
<td>GUX</td>
<td>-0.819 (-2.95)</td>
</tr>
<tr>
<td>GUX²</td>
<td>0.043 (5.88)</td>
</tr>
<tr>
<td>HK</td>
<td>4.874 (3.13)</td>
</tr>
<tr>
<td>GEC²</td>
<td>-0.459 (-2.46)</td>
</tr>
<tr>
<td>XPO²</td>
<td>0.0148 (2.54)</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>0.768</td>
</tr>
<tr>
<td>N</td>
<td>30</td>
</tr>
</tbody>
</table>

Notes:
Standard errors and variance estimates are heteroskedastic-consistent.
The t statistics are in parentheses.

The effect of geographical cover (GEC) is negative, or ‘perverse’, and again non-linear, with a points-of-means elasticity for the square of GEC, of about minus 0.8. An increase of 10 percent in the square of the number of geographical appellations covered, or used, by a company reduces IWC by about 8 percent. This means that geographically many Chilean wine companies may have been spreading themselves too thinly. Maybe this was done as a long-term investment, or because it was wrongly believed that substantial scale and scope economies would be generated as a result, or simply out of desperation. Whatever the reason, or reasons, the price paid for this excessive geographical expansion, in terms of LIWC performance, is possibly far too high.

The only linear impact in Table 1 is that of HK, human capital intensity, or the number and motivation of oenologists. The role of oenologists’ human capital and motivation is important, but not more important that those of the other exogenous variables already mentioned. The points-of-means elasticity of HK is about 0.4. Thus, the role played by HK
is as meaningful as that of the square of exports, but only half as substantial as the (negative or perverse) role of the square of geographical cover. So, the number and motivation of oenologists makes a difference for the better, in terms of award performance at LIWC. Admittedly, it is not the only factor, or even the key one. But the positive role that HK plays cannot be denied. However, does award performance at LIWC contribute to export growth, and therefore to profits? If it does, and since HK affects IWC, presumably HK is also likely to affect export growth in a multiple regression linking them directly? These questions are addressed in the next section.

8. Chilean wine export growth

As compared with other New World wine producers, exports are much more important for Chile, because the domestic market is relatively very small. In this section, multiple regression exercises are used to explain Chilean wine export growth, in the year ending in February 2006, in relation to the previous year. The sample was formed by all the Chilean companies for which data were available, not only Colchagua ones (a dummy variable was also included to test for Colchagua-specific effects). The first group of possible explanatory factors to be considered were scale and scope economies in production, marketing and distribution, represented by variables such as average domestic quality, national range of wines, geographical appellations covered, export value, number of external markets, average size of external markets, and degree of concentration on the respective company’s largest foreign market.

A second group of possible explanatory factors was expert opinion in the United States (which for many Chilean companies is their largest foreign market), as presented in the magazine *Wine Spectator*.

The third group was formed by variables related to award performance in LIWC in 2004 and 2005: the already defined IWC index, and separate Trophy, Gold, Silver, Bronze and Seal of Approval awards in both years.

Finally, a possible role for HK was also explored.

In addition to the data sources mentioned above, *Wine International* (2004), Geve Olmedo (2005), *Wine Spectator* (Molesworth, 2005b) and ProChile (2006) were also used.

The best fit is presented in the central column of Table 2. For comparison purposes, results based on a larger sample are in the right column. For further regression results and tests of alternative specifications, see Hojman (2007).

Table 2 shows that the fit quality falls dramatically when all companies, in particular those with no domestic presence, are included as part of the sample. As the sample size increases from 38 to 67, the adjusted $R^2$ falls from 0.655 to 0.184. Those companies with a substantial domestic presence are much more homogeneous that the rest. This is compatible with the distinction being made by several authors (although not in the Chilean context), between firms that approach exports only gradually, or ‘rings-in-the-water’ companies, and firms which are ‘born-global’ (Madsen and Servais, 1997; Wickramasekera and Bamberry, 2001). Each of the latter is, almost by definition, special, and its inclusion in a sample with multiple regression purposes makes the sample much more heterogeneous than without that firm.
Table 2: Determinants of Chilean wine export growth (dependent variable: export growth in year ending February 2006, in relation to year before, million US dollars)

<table>
<thead>
<tr>
<th>Regressor</th>
<th>Companies with a substantial domestic presence</th>
<th>All companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant term</td>
<td>-2.605 (-2.65)</td>
<td>-2.736 (-2.45)</td>
</tr>
<tr>
<td>XPO</td>
<td>-0.327 (-5.30)</td>
<td>-0.224 (-2.94)</td>
</tr>
<tr>
<td>XPO²</td>
<td>0.00112 (2.95)</td>
<td>0.00138 (3.47)</td>
</tr>
<tr>
<td>TROPHY4</td>
<td>-4.093 (-4.69)</td>
<td>-3.712 (-3.15)</td>
</tr>
<tr>
<td>TROPHY5</td>
<td>6.824 (9.02)</td>
<td>3.602 (4.18)</td>
</tr>
<tr>
<td>COLCH</td>
<td>2.148 (3.95)</td>
<td></td>
</tr>
<tr>
<td>GOLD4</td>
<td>4.016 (5.91)</td>
<td>2.628 (2.12)</td>
</tr>
<tr>
<td>SILV4</td>
<td>-1.389 (-2.56)</td>
<td></td>
</tr>
<tr>
<td>DPR</td>
<td>0.097 (2.44)</td>
<td></td>
</tr>
<tr>
<td>CONC</td>
<td>2.541 (1.61)</td>
<td>4.244 (2.34)</td>
</tr>
<tr>
<td>AVES</td>
<td>-0.0115 (-2.66)</td>
<td></td>
</tr>
<tr>
<td>AVES²</td>
<td>0.000013 (2.34)</td>
<td></td>
</tr>
<tr>
<td>MKTS</td>
<td>0.172 (3.78)</td>
<td>0.120 (2.83)</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>0.655</td>
<td>0.184</td>
</tr>
<tr>
<td>N</td>
<td>38</td>
<td>67</td>
</tr>
</tbody>
</table>

The estimated coefficients obtained with the ‘small’ sample (n=38, firms with a substantial domestic presence only) are less exposed to omitted variable bias and therefore more reliable than those obtained with the ‘large’ sample (n=67). We will be commenting on the former estimates only, in the rest of this paper, although the latter are also of some interest. The central regression in Table 2 (n=38) explains almost two thirds of the variance in the dependent variable. Human capital intensity (HK) was never statistically significant nor did it contribute to improve fit quality (these regressions are not shown here). On the other hand, there are two indirect ways in which the number and motivation of oenologists could be making a difference: via LIWC awards, or via the ‘Colchagua effect’ (COLCH). However, the role of LIWC awards on export growth is ambiguous. The indicator IWC itself was never statistically significant or contributed to improve fit quality (again, these regressions are not presented here). Only two LIWC awards are statistically significant with positive sign in Table 2: Gold in 2004 (GOLD4) and the Trophy in 2005 (TROPHY5). But both Trophies won by Chileans (one in 2004 and one in 2005) were given to one company each, so these effects could be entirely company-specific (similar to that of a company dummy variable). Moreover, the signs of the Trophy and of Silver in 2004 (TROPHY4, SILV4) were both negative, maybe because of a ‘lost reputation’ effect (if a wine got an award in 2004 but not in 2005, it possibly means that this wine is not as good as it used to be).
With regard to the ‘Colchagua effect’, its positive impact in Table 2 (worth slightly over 2 million US dollars) may be due to very favourable natural conditions in the Colchagua Valley, or to the local development of wine tourism. In either case this would have nothing to do with any contribution from the human capital intensity and motivation of oenologists. Summarising, if there is any contribution at all of oenologists’ number and motivation to Chilean wine export growth, this contribution would only be indirect and possibly small.

Several of the variables which contribute to the explanation of wine export growth, in addition to those mentioned before, do it through scale and scope economies in production, marketing and distribution. The impacts of initial exports (XPO) and of average export market size (AVES) are both non-monotonic. Initial exports start affecting export growth with a positive sign, only for values of XPO greater than about 146 million dollars, which means that only one company in the whole sample benefits (Concha y Toro). The positive-sign impact of AVES applies much more widely: for foreign market sizes greater than about 434,000 dollars. The AVES sample mean is 368,000 dollars and the maximum value in the sample is 1.7 million dollars. The impacts of domestic product range, DPR, and of the number of foreign markets, MKTS, are both linear and positive. The respective points-of-means elasticities are approximately 2 and 13. The latter may seem unrealistically high, but it was confirmed in several specifications (Hojman, 2007). Possibly this is only a temporary effect, suggesting that, during this short period, companies with booming exports achieved them by starting operations in new national markets.

Among the variables which did not contribute to the explanation of wine export growth, the most important ones for purposes of the present discussion were HK, IWC, and other indicators of award performance in London. But other regressors were also insignificant, including geographical cover. Too many geographical appellations may have damaged LIWC performance (see Table 1), but not export growth. The points given by the Wine Spectator magazine to Chilean wines in the US market (Molesworth, 2005b) may also have played a role, but possibly the respective samples were far too small to confirm it (again, these regressions are not shown here). The proportion of a company’s exports concentrated on its principal export market, CONC, was also insignificant, at least among those companies with a substantial domestic presence (n = 38).

9. Conclusions

There is plenty of evidence that Chilean oenologists and Chilean wine companies (the oenologists’ employers) are interested in different things. Although there are some important exceptions, many companies are unable or unwilling to accommodate their oenologists’ long-term human capital accumulation and professional development goals. As part of their professional development, winemaking experts must work with different soils, different local microclimates and different grape varieties (and different colleagues). In an ideal world they should be able to do this without having to change jobs. But this may not always be possible in Chile.

In what is possibly Chile’s most dynamic winemaking region, Colchagua, local oenologists maintain a very healthy informal knowledge network. However, knowledge activity does not contribute to improving either wine quality or company performance at London’s International Wine Challenge. The only reason why the network seems to be there is because
it helps with the oenologists’ personal objectives of human and social capital accumulation, which are not shared (or fully shared) by their employers.

The number of a company’s oenologists (in relation to its export value) and their motivation, approximated by the free publicity that the company offers them, plays a positive role in the company’s London IWC performance. However, the size of this role, measured as the respective points-of-means elasticity, is not larger than that of the company’s export value, and only half the size of the (negative or perverse) effect of geographical dispersion.

The short-term growth of Chilean wine exports, at least during the year ending in February 2006, in relation to the year before, depended overwhelmingly on scale and scope economies of production, marketing and distribution, and not on the number, motivation, skills and talent of oenologists. The picture may be different in the long term, but there will be no long term for those companies which will go out of business because they cannot reach their short-term export targets.

Some of the large companies (this may not be possible for a small winery on its own) may opt for modernisation of their industrial relations and human resource management. They may opt for providing an internal environment where scope economies associated to diversity (of everything, from natural conditions to technological packages to experts’ personalities) can be fully exploited. Alternatively, a large company may opt to publicly de-emphasise the role played by its experts, which is compatible with attempting to preserve traditional, paternalistic or authoritarian management practices. Smaller wineries may try different forms of association. The best experts may try to become independent, their own bosses, by starting their own businesses. They may also go for non-conventional forms of partnership with the most dynamic among the large firms. Or they may go abroad.

Two possible avenues for further research may be worth mentioning. The first one involves improving the indicators used to measure the number, quality and commitment of oenologists. This may be done, for example, by further developing HK, the index introduced in the present paper, or by using a large survey of oenologists (the Asociacion de Enlogenos has about 600 members), or a smaller number of in-depth interviews, or even a combination of these approaches.

The second avenue is to try to explain the most notorious residuals from the best regressions in Tables 1 and 2. Large residuals result either from a different individual response to an exogenous variable already in the model, or from the impact of exogenous variables not included. Five Chilean wine companies (Casa Silva, Cono Sur, Santa Helena, Ventisquero and Viu Manent) had large positive-sign residuals (better actual performance than the model predictions) in both best regressions, with different dependent variables, different models and different samples. Three of these companies are fully Colchagua-based and the other two have substantial activities there. Are Colchagua oenologists better? Do their companies treat them better? Is there something in the water? Or in the wine? Interestingly, none of these companies is mentioned by Richards (2006a) as having lost some of its winemaking experts. However, it has recently emerged that Ventisquero has been affected (www.vendimia.cl), as Richards himself would have put it, annoyingly after his book was written.
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