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**SUSTAINABLE CERTIFICATION FOR
FUTURE GENERATIONS:
THE CASE OF THE WINE INDUSTRY**

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SUSTAINABLE CERTIFICATION FOR FUTURE GENERATIONS:

THE CASE OF THE WINE INDUSTRY

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“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The [Brundtland Commission](#) of the [United Nations](#) on March 20, 1987.

Abstract

While business sustainability has been defined as the protection of the ability of future generations to meet their own needs, we still have little understanding of how to facilitate investments in practices geared at long-term sustainability. In this paper we seek to understand the conditions that facilitate a long-term business perspective. We investigate how family ties to future generations can facilitate the adoption of sustainable practices. Using data from 248 wineries in the U.S. collected through a survey questionnaire, we show that ties to future generations, measured as the intention of the owner of the winery to pass down the winery to their children, positively impacts the adoption of sustainable certification. We also found that winery owners were motivated by both positive potential market outlook for sustainable wine and increase in quality of their product associated with certification, and that the market outlook motivation was stronger for higher levels of certification.

Keywords: succession planning, wine, eco-certification, eco-label, sustainable farming, stakeholder theory.

1. INTRODUCTION

While business sustainability has been defined as the ability of future generations to meet their own needs, we still have little understanding of how best to facilitate businesses' connection to future generations. Researchers have argued that the current economic paradigm places more value on short-term profit motivations than on the longer-term impacts on society and the environment (Gladwin et al., 1995), and have called for a modified paradigm that would reconcile short- and long-term orientations and align social, environmental and economic goals (Gladwin et al., 1995; Slawinski & Bansal, 2009). In this paper, we identify situations in which future generations have a direct stake in the longer-term viability of the business and propose a framework that includes future generations as an important stakeholder driving the adoption of sustainable practices.

A broad literature has emerged over the past decades demonstrating that firms' environmental strategies and practices are influenced by external stakeholders pressures, including consumers, regulators (Aragón-Correa, 1998; Christmann, 2000; Delmas, 2001; Hart, 1995; Khanna & Anton, 2002; Anton, Deltas & Khanna, 2004; Russo & Fouts, 1997; Sharma & Vredenburg, 1998) and non-governmental organizations (Henriques and Sadorsky, 1996). However, to our knowledge, the stakeholder approach has not yet included future generations as a stakeholder. We argue that in some contexts, such as those of family businesses, future generations have a clear stake in the long-term sustainability of business owned by their family. In this paper, we develop a perspective in which anticipation of the needs of future generations via the owner's succession planning influences the adoption of green business behavior.

Succession planning has been described as an important driver of firm performance. In a recent Australian survey, more than 60% of the family enterprises stated that continued family ownership was important and 24% had a succession plan in writing (Smyrnios & Walker, 2003). While there is

a broad literature on the “pay to be green” hypothesis, very few articles focus on family enterprises (Berrone et al., 2010; Sharma & Sharma, 2011). Yet, Gersick, Davis, McCollom Hampton, and Lansberg (1997) estimate that up to 80% of all worldwide business enterprises are family-controlled.¹

We study the role of future generations on the decision to adopt eco-certification in the context of the California wine industry. Our findings, based on survey data from 248 wineries, indicate that the relationship with future generations is an important driver of eco-certification adoption. Furthermore, we find that winery owners are motivated by quality and market considerations and consider eco-certification as a way to enhance the performance of their winery in the long term. We also find that market motivations are stronger for higher percentages of eco-certification than quality considerations. This underscores the need to consider certification levels rather than certification as a binary variable since motivations can vary according to the levels of certification.

This paper proceeds as follows. In the next section we review the literature on stakeholder pressures and environmental practices. In section three we develop hypotheses on the relationship between future generations and the adoption of eco-certification. In section four we present our methodology and data. Our results are presented in section five. A concluding discussion follows.

2. LITERATURE REVIEW

Stakeholder approach

The stakeholder approach proposes that firms should not only focus their strategic decision on generating shareholder value, but should also include the interests of a variety of stakeholders such as employees, customers, communities, the media, and regulatory agencies (Delmas & Toffel, 2004).

¹ <http://www.familybusinesscenter.com/resources/family-business-facts/>

The explanatory power of stakeholder analyses has been shown in a variety of research in the environmental management literature (Berry & Rondinelli, 1998; Buysse & Verbeke 2003; Delmas & Toffel, 2008; Harrington et al., 2008; Henriques & Sadorsky, 1996; Anton, et al., 2004; Khanna et al, 2007; Sharma & Henriques, 2005). However, this approach focuses on current stakeholders, and to our knowledge has not yet included future generations as a potential stakeholder. We argue that future generations should be included as a major stakeholder, especially in the context of family business enterprises.

Indeed, family business enterprises differ in many dimensions from other businesses. One of these dimensions consists of the handling of succession, which refers to all activities related to the transition of the business from one generation to the next (Barry, 1975), and that often remains in the family. Research has suggested family members as potential stakeholders in the succession process since they affect or can be affected by leadership transitions (Sharma et al., 2003).

Wine Eco-certification

While business sustainability can take many forms, in this paper we focus on eco-certification, which is categorized as validation that management practices are meeting minimum codified standards and certification of adherence (Terlaak, 2007). To be eco-certified, an organization needs to adopt codified environmental management practices and obtain third-party verification. The international environmental management standard ISO 14001 is an example of eco-certification (Delmas, 2001).

Research suggests that the adoption of such codified management practices can help firms reduce some inefficiency while improving social welfare (Darnall, Henriques & Sadorsky, 2008; Delmas, 2001; Harrington et al., 2008; Potoski & Prakash, 2005). Certified environmental management systems provide a compilation and codification of available best practices and reduce the costs

associated with searching for these practices and their associated benefits (Terlaak, 2007). For example, Rondinelli and Vastag (2000) show how the ISO 14001 certification of a manufacturing facility affects both its operations and management processes and facilitates the harmonization of environmental management practices in a coherent and more efficient framework. They also demonstrate that adoption of ISO 14001 can be associated with improved product quality.

In addition to helping efficiency gains and improvement in the quality of manufacturing, certified environmental standards can also function as an effective signaling mechanism through the third-party certification process (King, Lenox & Terlaak, 2005; Jiang & Bansal, 2003). Certified environmental standards can signal the adoption of practices to a broad set of stakeholders including regulators, trade associations, or NGOs without needing to post a label on their product. It has been shown that the adoption of ISO 14001 in some countries could lead to regulatory flexibility for companies adopting the standard (Darnall, 2003; Delmas, 2002, Potoski & Prakash, 2005).

In the wine industry, there are several competing eco-labels related to eco-certification, including organic certification and biodynamic certification. Organic certification follows the U.S. National Organic farming standard, which defines a farming method prohibiting the use of additives or alterations to the natural seed, plant, or animal including, but not limited to, pesticides, chemicals, or genetic modification. Biodynamic agriculture is a method made popular by Austrian scientist and philosopher Rudolf Steiner in the early 1920s. Often compared to organic agriculture, biodynamic farming is different in a few distinct ways. Biodynamic farming prohibits synthetic pesticides and fertilizers in the same manner as certified organic farming. However, while organic farming methods focus on eliminating pesticides, growth hormones, and other additives for the benefit of human health, biodynamic farming emphasizes creating a self-sufficient and healthy ecosystem. In 1928, the

Demeter Association was founded in Europe to support and promote biodynamic agriculture and certify biodynamic farming.

While research has shown potential gains in efficiency from the adoption of environmental practices (Aigner et al., 2003), surprisingly little research is devoted to the drivers of the adoption of eco-certification in the wine industry. Sharma and Sharma (2011) describe the wine industry as a unique context to test the drivers of proactive environmental strategy in family firms. Cordano et al. (2010) and Marshall et al. (2010) show that the adoption of environmental management programs is a response to pressures from employees and customers, as well as regulators and the community. Sampedro et al. (2010) show that environmental variables constitute a critical success factor in wine-producing companies, while Delmas and Grant (2010) show a price premium for eco-certified wines but a discount for eco-labeled wines.

3. HYPOTHESES

While many definitions of family businesses have been proposed, one important characteristic that distinguishes it from other businesses is “the intention to shape and pursue the vision of the business [...] in a manner that is potentially sustainable across generations of the family or families” (Chua et al., 1999). The concept of sustainability across generations indicates intergenerational ties and therefore the availability of a family successor (Chua et al., 1999). Here we argue that heirs, or the future generations that will inherit the business, constitute an important stakeholder that might influence the adoption by businesses of sustainable certification.

Freeman defines a stakeholder as “a group or individual who can affect or is affected by the achievement of the organization's objectives” (1984: 46). Future generations possess several elements that qualify them as a stakeholder. First, several scholars define stakeholders in terms of

their necessity for the firm's survival (Bowie, 1988; Freeman & Reed, 1983). Heirs are necessary for the survival of the business as a family business. Mitchel et al. (1997) differentiated further between groups that have a legal, moral, or presumed claim on the firm and groups that have an ability to influence the firm's behavior, direction, process, or outcomes. Heirs are part of both of these groups, since they have a presumed claim on the family business because of their lineage and have the ability to influence firm behavior once they inherit the family firm. Scholars have further differentiated between current and potential stakeholders. For example, Starik includes potential when he refers to stakeholders as those who "are or might be influenced by, or are or potentially are influencers of, some organization" (1994: 90). Because succession planning is a future event, heirs can therefore be a subset of potential stakeholders, although the fact that heirs will potentially inherit a business will have a potential direct effect on how the current owner will behave in anticipation of succession planning. Finally, scholars have argued that the concept of stakeholder encompasses a socio-emotional dimension, in which stakeholders are partners whose futures and stakes are intertwined (Freeman & Gilbert, 1988; Starik, 1995). This socio-emotional dimension is at the core of the relationship between business owners and their heirs and is further evidence of the future generations that will inherit the business as a stakeholder.

In this section we argue that intergenerational ties are driving the adoption of eco-certification in business enterprises and that quality and market motivations might be significant in the decision of family owned businesses to adopt eco-certification.

Intergenerational ties

Owners of family businesses are said to care more about the long-term future of other family members and their involvement in the business than business owners who do not have family involved in the business and who are said to embrace objectives of a shorter-term nature (Miller et

al., 2008). The main reason provided in the literature is that owners of family businesses are preoccupied with assuring the continuity or longevity of the enterprise and its mission, and therefore invest in building the business for the long-run benefit of various family members (Gomez-Mejia et al., 2007; James 2006, Habbershon and Pistrui, 2002).

Miller et al. (2008) described family-owned businesses as displaying more stewardship over the continuity of the business by making more future-oriented investments in product research and development, in reputation development, and in market share development. Recent research also indicates that family businesses tend to show higher levels of corporate social responsibility than other firms (Berrone et al., 2010; Dyer & Whetten, 2006; Post, 1993).

Here we argue that businesses who intend to pass down their business to future generations are more likely to adopt eco-certification for their products. The reasons for this are multiple.

One possible explanation is that the emotional wealth or the affective endowment of family owners explains the adoption of eco-certification. This is because emotions flow back and forth between family members and affect how the firm conducts its activities (Berrone et al., 2012b; Baron, 2008).

Family-owned businesses pay more attention to socio-emotional factors than other businesses, and they are therefore more likely to be altruistic toward family members and to use corporate social responsibility as a way to enhance the family's image (Berrone et al., 2010). This emotional predisposition of family business owners to environmental and social issues might be enhanced when they have the intention to pass down their business to the next generation since they explicitly establish a link to the future via her children. Because eco-certification can signal the adoption of environmental practices to a broad set of stakeholders, family business owners should be more likely than other businesses to adopt eco-certification in order to communicate a positive image of their business (Berrone et al., 2012a).

Another explanation includes the objective to solidify the business for future generations.

Investments in the continuity of the business involve building market share and more enduring relationships with customers (James, 2006; Miller & Le Breton-Miller, 2003). Eco-certification can help firms gain access to emerging green markets and build long-term customer relationships based on sharing sustainable values.

Finally, eco-certification can help make the business more attractive to the future generations. It has been shown that one of the main difficulties for family business owners is to find willing offspring to take over their business. Eco-certification, by potentially improving the long-term sustainability of the business, might make it more attractive to the future generations. Inheriting a business with a smaller environmental footprint might also be attractive to future generations.

We therefore hypothesize the following:

Hypothesis 1: *Business owners who intend to pass down their business to their children are more likely to adopt eco-certification than those who do not intend to pass down their business to their children.*

In addition to the emotional factors that might drive family businesses toward non-economic behavior, we discuss below how quality and market motivations can be particularly important drivers to the adoption of eco-certification in the agricultural sector.

Intergenerational ties and quality motivations

The long-term view of business performance might be heightened in the agricultural sector where the adoption of sustainable practices can increase the quality of the crop and the long-term sustainability of farming operations more generally.

The basic principles of organic agriculture include a minimal use of off-farm inputs and a management system that relies on techniques such as crop rotation, green manure, composting and

biological pest control to maintain soil productivity and to control pests (OECD, 2011). Ecologically sound land management can improve soil quality, nutrient content and moisture holding capacity and farm productivity (Harrington et al., 2005; Khanna & Zilberman, 1997; Smolik et al., 1995; Stevens, 2011). Agricultural outcomes can also be enhanced through reducing losses from pesticide resistance, soil erosion and water pollution (Stevens, 2011). Research has started to link eco-certification with economic performance. For example, a recent analysis of 18 years of corn and soybean production demonstrated that organic farming was consistently more profitable and carried less risk of low returns than conventional farming (Delbridge et al., 2011).

In addition, many wine makers claim that the adoption of green practices is a way to increase the quality of their wines. For example, Ron Laughton from Jasper Hill Vineyards says that wines without chemicals can better express the flavors of the “*terroir*”:

“Flavors are created in the vine. The building blocks are the minerals in the soil. If you keep applying synthetic chemicals, you are upsetting the minerals in the soil. So if you wish to express true *terroir*, you should be trying to keep the soil healthy.”²

Similarly, wine maker John Williams, owner of Frog’s Leap Winery in Napa Valley, uses organically grown grapes to produce better wines. According to him:

“Organic growing is the only path of grape growing that leads to optimum quality and expression of the land in wine. And that’s for the same reason that a healthy diet and lifestyle make for healthy people. When the soil is healthy, then the vines are healthy. The analogy is almost totally complete.”³

We therefore hypothesize that family business owners who seek to increase the quality of their grapes and the long-term sustainability of their land might be more likely to adopt certification. Thus, we hypothesize the following:

² Biodynamics in the vineyard. *The Organic Wine Journal*:
<http://www.organicwinejournal.com/index.php/2008/03/biodynamics-in-the-vineyard/>

³ <http://www.thewineneers.com/augsep00/cover.html>
Accessed on October 26, 2007.

***Hypothesis 2.** Business owners who intend to pass down their business to their children and are motivated to **increase the quality** of their product and land are more likely to adopt eco-certification, as compared to those who do not intend to pass down their business to their children.*

Intergenerational ties and consumer demand

Research has shown that family business owners seek to build strong connections with outside stakeholders, and particularly with customers who can sustain the business in times of trouble (Gomez-Mejia et al., 2001). Family business owners might therefore seek to solidify or expand their relationships with customers through eco-certification. Here we argue that intergenerational ties impact existing relationships with stakeholders, namely customers.

Eco-labels may appeal to the altruistic values of environmentally aware consumers who would like to promote sustainable production. Altruistic customers may want to purchase eco-labeled products as a substitute for donations to an environmental organization (Kotchen, 2005). However, such altruistic customers might only represent a very small percentage of the consumer population. Emerging research indicates that consumers are more likely to purchase green products if the certified practices provide them with additional private benefits. Green products have been defined as an “impure public good” because they yield both public and private benefits (Cornes & Sandler, 1996; Ferraro et al., 2005; Kotchen, 2006). Magnusson et al. (2001) found that the most important purchase criteria for organic products were related to private benefit (i.e., quality) rather than the environmental attribute. Another private benefit commonly associated with green products is their health attributes. Many consumers presume not only that organic foods taste better, but that they also provide greater health benefits than their conventionally grown counterparts (Huang & Lin, 2007; Jolly & Norris, 1991). Cows that produce milk certified by the USDA as organic, for example, are not exposed to the carcinogenic hormones, antibiotics and pesticides of conventional dairy practices.⁴

⁴ <http://www.organicfacts.net/organic-animal-products/organic-milk/health-benefits-of-organic-milk.html>

Several other studies showed that health concerns were a major reason, along with environmental concerns, why people choose organic food products (Davies et al., 1995; Tregear et al., 1994; Wandel, 1994; Wandel & Bugge, 1997). While the organic market share still represents a small portion of the total food sales, it has outpaced the growth of total food sales in the US since 2000 (Organic Trade Association, 2012). Business owners with a longer-term view might therefore anticipate a continuation of this positive trend. For these reasons, we hypothesize the following:

Hypothesis 3. *Business owners who intend to pass down their business to their children and are motivated to **respond to customer demand** for their product are more likely to adopt eco-certification, as compared to business owners who do not intend to pass down their business to their children.*

In summary, we argue that heirs constitute an important stakeholder in the mind of current family business owners. Such businesses might have emotional reasons, but they might also seek to increase the quality of their product and strengthen the ties with their customers. This is because business owners who intend to pass down their business to their children might prefer to pass down a perennial business, which we argue can be facilitated through the adoption of eco-certification. In this context, family businesses might have a longer-term view of their business through the link to future generations and might seek eco-certification to reach long-term performance.

4. METHODOLOGY

Data collection

Because there is no existing publicly available data on the subject, the best method to obtain this information was to directly question wineries and vineyards in California through the dissemination of an online survey. California accounts for an estimated 90% of the US wine production, making over 260 million cases annually, and consists of family-owned wineries but also wineries owned by

corporations.⁵⁶ The survey questionnaire included questions about the winery characteristics, including size and eco-certification status and motivations to adopt eco-certification.

Population

Our population consisted of the 1900 California wineries identified in the California Department of Alcoholic Beverage Control database, which includes all wineries legally licensed to sell alcohol within the state. Phone and e-mail contact information was obtained through an Internet search. We distributed the survey employing several mediums, including: mailing a recruitment letter with the survey link, sending e-mails, and calling wineries and vineyards to ask for their participation in this survey. The survey was kept open for three weeks, with a reminder e-mail sent during that period.

Survey Administration

Out of 1,900 letters that were sent out, 39 were returned, thereby totaling 1,861 in letters successfully delivered. The study description and survey link were also sent out via e-mails. The first set of e-mails went out to 1,336 e-mail addresses on 4/15/2009, and of those, 150 bounced back due to incorrect characters or anti-spam software. These e-mail addresses were removed from the e-mail list, and the second and third waves of e-mails were distributed on 4/24/2009 and 4/27/2009.

The final attempt to encourage participation and increase the response rate was through direct phone calls. A total of 849 phone calls were made to California wineries and vineyards. By the closing of the survey, we received 378 responses out of 1,899 contacted, resulting in a response rate of 20%.

This response rate is comparable to other recent survey-based strategy research (Delmas & Toffel, 2008; Hoskisson et al., 2004; McEvily & Chakravarthy, 2002; Slater & Olson, 2001).

⁵ U.S. Treasury's Alcohol and Tobacco Tax and Trade division data.

⁶ USDA, NASS, California field office (2005) California Agriculture Overview.

We tested sample representativeness in several ways. First, we conducted t-tests to compare respondents to non-respondents along three dimensions. We used data on the non-respondents from the California Department of Alcoholic Beverage Control database. The survey respondents were 7.4% more likely to obtain eco-certification than the non-respondents ($p=0.01$). However, they did not differ in terms of the number of years in business ($p=0.46$). The overrepresentation of eco-certified respondents was to be expected, since such wineries would be more interested in responding to a questionnaire on the motivations for sustainable agriculture. To correct for this bias, we used the sample weight procedure for survey data in Stata and obtained similar regression results as those with the original sample presented in section 5.⁷ We also tested for nonresponse bias by comparing early and late respondents, since late respondents have been shown to be similar to non-respondents (Armstrong & Overton, 1977). We created a set of late respondents with those who responded after receiving the third reminder on April 27, 2009 (Cantwell & Mudambi, 2005). We did not find a significant difference between the late respondents and the other respondents ($p=0.180$).

Dependent variable

Our dependent variable represents the percentage of eco-certified production per winery, which is 18.2% on average. 19.35% of the vineyards have between 10% and 90% of their products eco-certified, and 10.97% reach 100% of eco-certified products.

Independent variables

There are three distinct sets of variables (see Table 1). The first set represents our main variables of interest. *Heir succession* (HS thereafter) is a dummy that identifies nearly two-thirds of the producers (61.3%) whose intention is to pass down the business to their heirs. Second, *quality motivations* (QM

⁷ Results available upon request.

thereafter) and *market motivations* (MM thereafter) are two continuous variables which correspond to the first and second principal components that were identified through a factor analysis described below.

Insert Table 1 about here

All respondents were asked to rank their motivations to adopt eco-certification on a 5-point likert scale. We selected the responses that received more than 10% responses, which included the following variables: *improve soil quality, provide a clean environment for future generations, improved quality of wine, increased demand from restaurants and retailers, and growing consumer demand*. We conducted a factor analysis with Varimax rotation of these variables, which resulted in two factors and explained 72% of the variance. The variables *improve soil quality, provide a clean environment for future generations* and *improved quality of wine* loaded on the first factor. The variables *increased demand from restaurants and retailers* and *growing consumer demand* loaded on the second factor. The first factor therefore represents quality and long-term sustainability-related motivations, while the second factor represents market motivations. To distinguish these two factors, we label the first factor *quality motivations* (QM) and the second factor *market motivations* (MM). See Appendix 1 for more details.

Controls

The controls (X thereafter) include winery age (7 categories) and size as proxied by the number of cases produced per year (19 categories). Wineries considered here were created 21.43 years ago and sell around 4,673 cases per year on average. *Vertical Integration* is another binary variable for those

wineries (85%) that own part or the totality of the vineyard as compared to purchasing grapes. Last, we control for the geographical location of the winery at the county level (CT thereafter) from a set of four dummy variables for the most represented counties: Napa Valley (28%), Sonoma Valley (21%), San Luis Obispo (8%) and Santa Barbara (6%) and others (37%), which is considered as the reference category.

Model

In model 1, the level of eco-certified production of winery i is seen as a function of *Heir succession* (HS), Market motivations (MM), Quality motivations (QM) and the exogenous controls (X and CT).

$$ECP_i = \alpha_{10} + \beta_{11} HS_i + \beta_{12} QM_i + \beta_{13} MM_i + X_i \chi_{14} + CT_i \theta_{15} + \varepsilon_{i1} \quad (1)$$

In model 2, we interact *Heir Succession* with QM and MM to check whether the impact of the motivations is affected by the intention to pass down the vineyard to the children.

$$ECP_i = \alpha_{20} + \beta_{21} MM_i \times HS_i + \beta_{22} MM_i \times (1 - HS_i) + \beta_{23} QM_i \times HS_i + \beta_{24} QM_i \times (1 - HS_i) + X_i \chi_{25} + CT_i \theta_{26} + \varepsilon_{i2} \quad (2)$$

Estimation Strategy

The dependent variable represents the percentage of eco-certified production per winery. It has two important features: It is a rate, and it includes both many observations clustered at zero (70.1%) and several observations in the far-right tail of the distribution (10.1% of our sample firms have all of their production eco-certified).

We adopt a Generalized linear model (GLM) or fractional logit approach, a flexible generalization of ordinary least squares, which is specifically designed to model how the mean proportion relates to the set of explanatory variables. In a GLM, each outcome of the dependent variable is assumed to be

generated from a particular distribution in the exponential family, and a link function provides the relationship between the linear predictor and the mean of the distribution function (see Nelder and Wedderburn, 1972). We estimated a series of two GLMs (one for each specification of our model) using a binomial distribution along with a canonical logit link function and robust standard errors. This estimation procedure that follows the method proposed by Papke and Wooldridge (1996) is particularly well-suited when the dependent variable is a proportion in the presence of zeros and ones.

In addition, we run a series of Logit models to check whether the drivers for adoption of green practices in the vineyard are stable or vary with the level of certification. This is done by regressing two series of 10 Logits (one for each retained specification) for the probability that firm i 's degree of commitment exceeds 0, 10, 20, 30, 40, 50, 60, 70, 80, 90%.

We also checked whether the drivers for proportions of zeros and/or ones are governed by a different process than the other proportions using a Zero/One Inflated Beta approach. This model consists of three parts: a logistic regression model for whether or not the proportion equals 0, another logistic regression model for whether or not the proportion equals 1, and a beta model for the proportions between 0 and 1. We do not reproduce the results following this approach, as these were not statistically different from the results we obtained using the GLM and Logit approaches that we interpret in detail in the following section.⁸

⁸ Results available from the authors upon request.

5. RESULTS

GLM regressions

GLM estimates for model (1) are presented in Table 2 and show a positive and significant (5% level) influence of the intention to pass down the business on the percentage of eco-certified wine. The marginal effect is at about 8.6%. These results therefore confirm hypothesis 1.

Insert Table 2 about here

The variable representing quality motivations is significant at the 5% level (+5.7% per standard deviation), while the one representing market motivations came out highly significant at the 1% level (+6.4% per standard deviation). The negative sign we get for *number of cases produced* indicates that small businesses are more likely to invest in the certification process than big estates. The impact of winery age seems negligible here. Vertical integration has no significant influence.

Our goal with model 2 (see Table 3) is to check whether there are some motivational differences due to the fact that the decision maker intends to pass down his/her vineyard. The use of *Heir Succession* (HS) as an interaction term clearly shows that this variable is of great importance in explaining the choice of certifying production for quality reasons (+6.6% per standard deviation) or market reasons (7.6% per standard deviation). These results confirm hypotheses 2 and 3. There is no statistical difference between these two coefficients. The impact of vertical integration on the degree of eco-certification remains questionable in this second specification given the weak level of significance we find for this coefficient (10% level).

Insert Table 3 about here

Logit regressions

To investigate further whether the influence of our main variables of interest (HS, QM, MM) varies or not with the percentage of eco-certified wine (i.e., with the degree of green commitment), we estimate in the second part of this section a series of Logit regressions for the probability that certified production exceeds 10, 20, 30, 40, 50, 60, 70, 80 and 90% respectively. The first models presented in Table 4 borrow from the econometric structure of model (1), which include the interaction between motivations variables and the *Heir succession* variable. The second set of results (see Table 5) follows the structure of model (2).

Insert Table 4 about here

Figure 1 reproduces the z-statistics for HS, QM and MM, as it does not make sense to compare their predictive power from their coefficients.⁹

Insert Figure 1 about here

Overall, we learn that the motivations vary substantially with the degree of commitment to eco-certification. *Market motivations* are important and the strongest motivations at any level, while

⁹ Comparing coefficients does not make sense here, as HS is a dummy, whereas both MM and QM are continuous variables (factors).

quality motivations tend to decrease as the level of commitment increases. These motivations become non-significant over 20%.

6. CONCLUSION

The literature has described short profit motivations as a barrier to the adoption of sustainable practices and calls for the need to develop new management models that include time in the analysis (Slawinski & Bansal, 2009). In this paper, we argue that family businesses who intend to pass down their business to their children adopt a longer time frame and are more receptive to the long-term sustainability of their business. We show that such businesses are more likely to adopt environmental practices and eco-certification. In doing so, our research contributes to several research perspectives.

While the stakeholder framework has been used to demonstrate how businesses tend to respond to stakeholder pressures by adopting green practices, this literature has mostly ignored family businesses but also the connections that businesses make with the future of their own family members. We contribute to this literature by showing that future generations should be considered as a main stakeholder since their existence influences business owners' decisions about eco-certification. As we demonstrated, future generations enjoy two main characteristics that qualify them as a stakeholder. They have a presumed claim on the family business because of their lineage and have the ability to influence firm behavior once they inherit the family firm. We have shown that future generations influence the adoption of eco-certification but also impact how current business owners envisage their relationships with their current stakeholders. Indeed, we showed that family business owners who intend to pass down their winery to their children are more likely to respond to customer demand for green certification.

Research focusing on family business has emphasized the role of noneconomic factors in the management of family businesses as the key distinguishing feature that separates such firms from other organizational forms (Gomez-Mejia et al., 2011). Scholars have argued that because of the ambiguous relationship between the adoption of socially responsible behavior and corporate performance, family firms tend to be more responsive to stakeholders for intangible reasons than for economic reasons (Berrone et al., 2012a) and has described socio-emotional wealth as the main driver of socially responsible behavior. Our results differ somewhat from this perspective, as we show that economic considerations might also play a role in the adoption of eco-certification. Indeed, family businesses tend to look at market demand and quality considerations as primary drivers for the adoption of eco-certification.

Research on the adoption of eco-certification has analyzed mostly eco-certification as a binary variable, with adoption and non-adoption being the only alternatives. However, eco-certification rarely covers all of the products or activities of the firm, and firms also make decisions on the level of eco-certification they want to adopt. Indeed, firms that have adopted 100% certification are the minority in our sample. We show that firms that certify less than 10% of the products have different motivations than those willing to certify the majority or the totality of the products.

Other industries may be adopting mechanisms that relate eco-certification to an increase in quality. We hypothesize that similar patterns could be at work for other agricultural products such as coffee, because the conditions may be similar to those identified for grape growing. Evidence from Costa Rica suggests that this might be the case (Muschler, 2001). Such patterns could also be present in the construction sector. Studies show that buildings that are built according to the Leadership in Energy and Environment (LEED) green building standard might have higher performance than conventional buildings: They are more durable and more energy-efficient (Von Paumgarten, 2003). The

manufacturing sector may also elicit a similar pattern if socially responsible investors use environmental management practices as a proxy for good management (Chatterji, Levine & Toffel, 2009).

Our research is not without limitation. First, our analysis was limited to the California context; future research should explore similar questions in an international setting, as scholars have identified international institutional differences regarding the implementation of environmental practices (Husted, 2005; Husted & Allen, 2006; Darnall et al., 2008; Delmas & Montiel, 2008; Delmas & Montes-Sancho, 2011). Second, while our survey included a rich set of variables that allowed us to control for many winery characteristics, its cross-sectional nature hampered us from conducting a dynamic analysis. Further research should examine whether the effects identified in this study persist over time, and should further investigate the precise nature of the dynamic interactions between the firm's external environment (e.g., the existence of informal or formal networks of producers), main business strategy, resources and organization, and adoption of eco-certification.

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Table 1. Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent variable:</i>					
Percentage of eco-certified production (ECP)	248	18.19	3.4	0	100
Heir succession (HS)	248	0.61	0.49	0	1
Market motivations (MM – factor)	248	0.01	1.05	-2.67	2.17
Quality motivations (QM – factor)	248	0.05	1.01	-4.07	1.44
<i>Exogenous controls:</i>					
Vertical Integration (VI)	248	0.85	0.36	0	1
Winery age *	248	21.43	19.25	2.5	100
Number of cases produced**	248	405,474	3,614,002	50.5	40,000,000
<i>Main counties:***</i>					
Napa valley	248	0.28	0.45	0	1
Sonoma valley	248	0.21	0.41	0	1
San Luis Obispo	248	0.08	0.28	0	1
Santa Barbara	248	0.06	0.25	0	1

* < 5 years ; [5 ; 10] ; [11 ; 20] ; [21 ; 50] ; [51 ; 100] ; > 100 years.

** [1 ; 100] ; [501 ; 1000] ; [1001 ; 5000] ; [5001 ; 10000] ; [10001 ; 20000] ; [20001 ; 35000] ; [35001 ; 50000] ; [50001 ; 75000] ; [75001 ; 100000] ; [100001 ; 200000] ; [200001 ; 500000] ; [500001 ; 750000] ; [750001 ; 1000000] ; [1000001 ; 2000000] ; [2000001 ; 5000000] ; [5000001 ; 10000000] ; [10000001 ; 20000000] ; [20000001 ; 30000000] ; [30000001 ; 50000000] .

*** The full distribution includes the following counties: Alameda (2.02%), Amador (2.82%), Calaveras (1.61%), El Dorado (2.82%), Humboldt (1.61%), Lake (1.21%), Los Angeles (0.40%), Madera (0.81%), Mariposa (0.81%), Mendocino (4.44%), Monterey (2.02%), Napa (27.82%), Nevada (1.61%), Orange (0.40%), Placer (0.81%), Riverside (1.21%), Sacramento (0.81%), San Benito (1.61%), San Diego (1.61%), San Francisco (0.40%), San Joaquin (2.42%), San Luis Obispo (8.47%), Santa Barbara (6.45%), Santa Clara (1.21%), Santa Cruz (1.61%), Solano (0.40%), Sonoma (21.37%), Yolo (0.81%), Not specified (0.41%).

Table 2. The motivations of Eco-certification (GLM)

	(1)	Marginal Effects
Heir succession (HS)	0.741** (2.14)	0.086** (2.29)
Quality motivations (factor)	0.462** (2.09)	0.057** (2.19)
Market motivations (factor)	0.523*** (3.39)	0.064*** (3.39)
<i>Exogenous controls:</i>		
Vertical integration	0.622 (1.18)	0.065 (1.35)
Winery age	0.305* (1.71)	0.037* (1.76)
Number of cases produced	-0.146** (-2.24)	-0.018** (-2.24)
Constant	-2.962*** (-4.66)	
N	248	
Log pseudo-likelihood	-96.96	

Robust standard errors in parentheses ; *** p-value<0.01, ** p-value<0.05, * p-value<0.1 ; County dummies included. GLM estimates are derived using a canonical logit link and a binomial distribution.

Table 3. The drivers of eco-certification and Heir succession (GLM)

	(2)	Marginal effects
<i>Heir succession (yes):</i>		
Quality motivations (factor)	0.527* (1.81)	0.066* (1.88)
Market motivations (factor)	0.600*** (2.81)	0.076*** (2.85)
<i>Heir succession (no):</i>		
Quality motivations (factor)	0.379 (1.32)	0.048 (1.35)
Market motivations (factor)	0.389* (1.78)	0.049* (1.77)
<i>Exogenous controls:</i>		
Vertical integration	0.866* (1.74)	0.088** (2.07)
Winery age	0.287 (1.63)	0.036* (1.66)
Number of cases produced	-0.127** (-1.96)	-0.016** (1.97)
Constant	-2.764*** (-4.66)	
N	248	248
Log pseudo-likelihood	-98.50	

Robust standard errors in parentheses ;
 *** p-value<0.01, ** p-value<0.05, * p-value<0.1 ;
 County dummies included. GLM estimates are derived using a
 canonical logit link and a binomial distribution.

Table 4. The drivers of eco-certification and vertical integration (logit analysis on % of eco-certified production) – Econometric specification: Model (1)

	> 0%	> 10%	> 20%	> 30%	> 40%	> 50%	> 60%	> 70%	> 80%	> 90%
Heir succession	0.892*** (2.67)	0.866** (2.36)	0.768** (2.00)	0.896** (2.24)	0.896** (2.15)	0.693* (1.65)	0.643 (1.53)	0.691 (1.58)	0.606 (1.38)	0.498 (1.08)
Quality motivations	0.376** (2.00)	0.655*** (2.68)	0.536** (2.29)	0.487** (2.05)	0.475* (1.88)	0.581* (1.90)	0.500* (1.80)	0.445* (1.70)	0.436 (1.55)	0.290 (1.07)
Market motivations	0.363** (2.37)	0.500*** (3.07)	0.483*** (2.82)	0.539*** (2.94)	0.537*** (2.71)	0.581*** (3.06)	0.667*** (3.22)	0.725*** (3.31)	0.697*** (3.08)	0.620*** (2.71)
Vertical Integration	-0.808* (-1.65)	-0.256 (-0.45)	1.888* (1.80)	1.780* (1.68)	1.623 (1.53)	1.542 (1.44)	1.483 (1.41)	1.407 (1.33)	1.282 (1.21)	1.145 (1.06)
Pseudo R-square	0.076	0.114	0.134	0.138	0.142	0.140	0.134	0.127	0.115	0.075
Log pseudo-likelihood	-140	-122	-109	-102	-97	-93	-90	-87	-83	-73
Observations	248	248	248	248	248	248	248	248	248	232

Z-statistics in parentheses; ***p-value<0.01, **p-value<0.05, *p-value<0.1 ;

Exogenous controls and county dummies included.

Table 5. The drivers of eco-certification and vertical integration (logit analysis on % of eco-certified production) – Econometric specification: Model (2)

	> 0%	> 10%	> 20%	> 30%	> 40%	> 50%	> 60%	> 70%	> 80%	> 90%
Heir succession : yes										
Quality motivations	0.415* (1.66)	0.692** (2.15)	0.580* (1.88)	0.562* (1.73)	0.592 (1.63)	0.716* (1.65)	0.591 (1.62)	0.503 (1.61)	0.489 (1.45)	0.338 (1.10)
Market motivations	0.379* (1.82)	0.560** (2.43)	0.496** (2.13)	0.560** (2.23)	0.593** (2.12)	0.654** (2.50)	0.791*** (2.75)	0.896*** (3.01)	0.854*** (2.77)	0.858*** (2.63)
Heir succession : no										
Quality motivations	0.312 (1.17)	0.637** (2.07)	0.488 (1.52)	0.371 (1.22)	0.286 (0.96)	0.357 (1.04)	0.366 (1.02)	0.399 (1.03)	0.398 (0.97)	0.346 (0.77)
Market motivations	0.327 (1.49)	0.365* (1.70)	0.449* (1.86)	0.486** (2.00)	0.443* (1.79)	0.463* (1.77)	0.463* (1.74)	0.436 (1.57)	0.439 (1.54)	0.249 (0.85)
Vertical Integration	-0.433 (-0.99)	0.058 (0.11)	2.155** (2.09)	2.076** (2.00)	1.910* (1.84)	1.751* (1.66)	1.660 (1.60)	1.579 (1.50)	1.424 (1.37)	1.219 (1.13)
Pseudo R-square	0.076	0.114	0.134	0.138	0.142	0.140	0.134	0.127	0.115	0.075
Log pseudo-likelihood	-140	-122	-109	-102	-97	-93	-90	-87	-83	-73
Observations	248	248	248	248	248	248	248	248	248	232

Z-statistics in parentheses; ***p-value<0.01, **p-value<0.05, *p-value<0.1 ;

Exogenous controls and county dummies included.

Figure 1 – Logit regressions – Model (1)

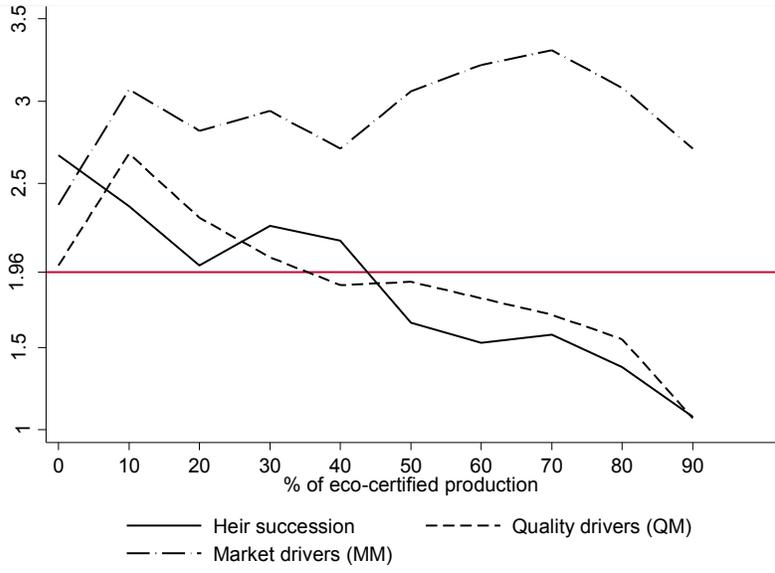
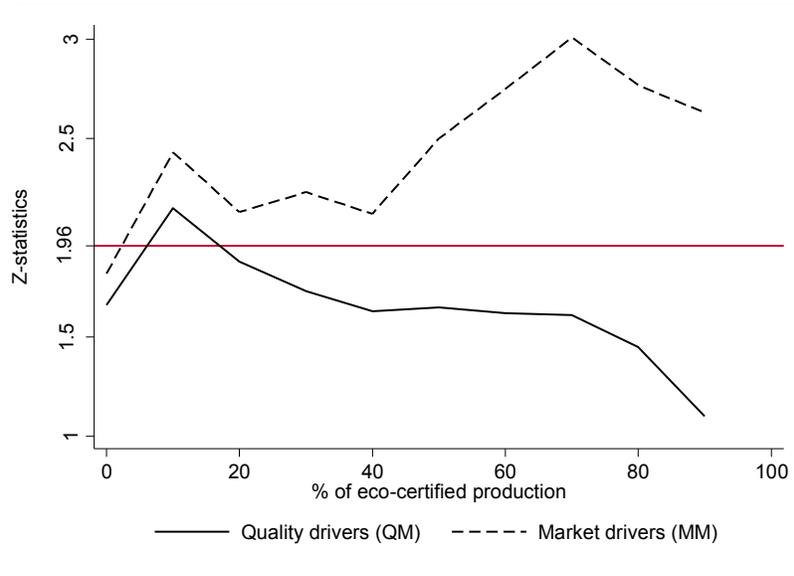
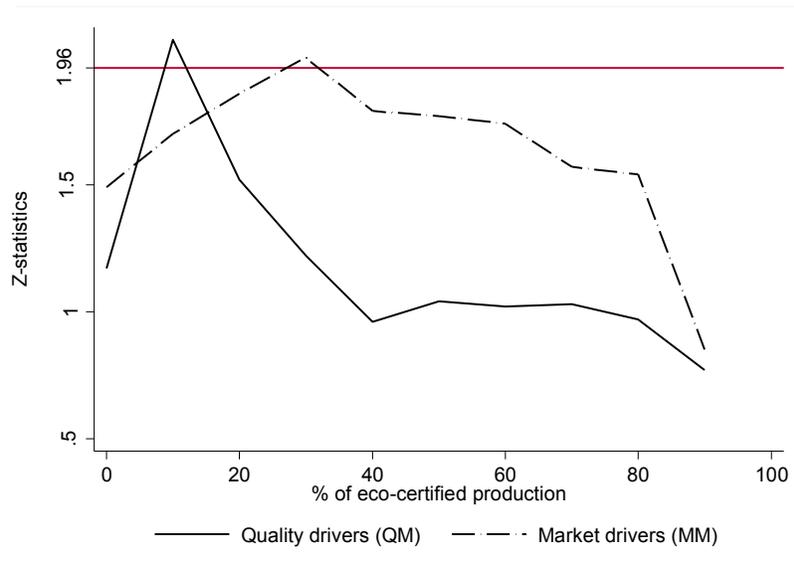


Figure 2 – Logit regressions – Model (2)

2A – Heir Succession Plan: Yes



2B – Heir Succession Plan: No



Appendix 1. Factor analysis of motivation for pursuing sustainable certification.

“In your opinion, how influential are the following factors FOR pursuing sustainable certification?”

Variables	Factor 1	Factor 2
Improve soil quality	0.9	0.156
Provide a clean environment for future generations	0.884	0.074
Improved quality of wine	0.818	0.067
Increased demand from restaurants and retailers	0.08	0.936
Growing consumer demand	0.129	0.928