

# GRAPE SUPPLY RELATIONSHIPS IN NEW ZEALAND: A MULTI-THEORETICAL VIEW

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## **Abstract**

*Purpose:* Managing the grape grower/winery supply relationship is one of the most critical exchanges in the wine industry. To understand these relationships, Transaction Cost Economics (TCE) is often used as a key theoretical approach that assumes contracts are characterised by bounded rationality and opportunism. To complemented TCE, this paper employs a multi-theoretical approach that is better suited to examine the nuance of these socio-economic exchanges. Thus, we examine the rationale for grape supply arrangements and argue that the effectiveness of the state's legal system could be the primary explanation for the ubiquitous use of contracts within the wine industry.

*Design/methodology/approach:* Through a mail survey of 116 New Zealand wineries and employing multiple regression, this study investigates why contracts are still widely used to coordinate grape supply relationships.

*Findings:* The study found that New Zealand's reasonably effective legal system promotes the use of contracts, trust and incentives. We also found moderate support for the legal system in promoting the use of the spot market, while our contention that an effective legal system discourages vertical integration was also supported.

## **1. Introduction**

There are a number of factors that impact a consumer's value perception of wine, and the quality of the input grapes is certainly one of these (Smith & Whigham, 1999). As noted by Wilson and Goddard (2004), one of the most important inter-firm buyer-seller relationship in the wine industry exists between the grape grower and wine producer. However, an enduring challenge is that of achieving close coordination of the various members of the supply chain who are all sovereign entities in their own right. This is a particularly relevant problem for our grape grower/winery relationships. As such, in the quest to efficiently do business and safeguard these exchange relationships against opportunism, firms establish governance structures that link firms together in an array of complex inter-firm sourcing arrangements.

A number of theoretical perspectives have been advanced in the literature to explain how governance structures in buyer/seller relationships are determined (Gwynne, 2008; Williamson, 1979). One of the primary perspectives is the Transaction Cost Economics (TCE) theory of Williamson (Williamson, 1981, 1991). This theory assumes that exchange partners act with bounded rationality and tend to behave opportunistically. These tendencies are tied to three characteristics of exchange; asset specificity, market uncertainty and frequency of the exchange (see Williamson, 1979; also Williamson, 1985; 2008 for the tenets of TCE). TCE argues that due to bounded rationality and the fact that it is impossible to anticipate and contract for every possible contingency, all contracts are said to be 'incomplete' (Williamson, 1971).

Further, inter-firm exchanges take place in a market place that is itself governed by the legal system of the host country. Hence, the efficacy of the host country's legal system and its impact on exchange governance mechanisms is of particular relevance, but actually little studied in

literature. We argue that the effectiveness of a states' legal system could be a primary explanation for the on-going ubiquitous use of contracts as a prime exchange mechanism. Indeed, the World Bank (2010) publishes data on the effectiveness of the legal systems of 183 countries and their contracting relationships (Gwynne, 2008). The legal system facilitates exchange among anonymous individuals and firms by providing impartial and predictable enforcement of contracts (Kahkonen & Meagher, 1997).

The link between grape growers and wineries seems to be a good candidate to apply and test the principles of TCE and other theoretical approaches. This is so because asset specificity is common within the wine industry, and the relationship between grape growers and wineries is usually prone to uncertainty (Hayward & Lewis, 2008). As such, this current research focuses primarily on contract use within the wine industry, particularly between grape growers and wineries (Somogyi, Gyau, Li, & Bruwer, 2010). Hence, the current study seeks to investigate the relationship between the perception of the effectiveness of the state's legal system and governance structures used whilst controlling for other factors that were identified in previous research as predictors of governance structures. As the World Bank (2010) has ranked New Zealand's legal system as number 10 overall, the basic premise of the current study is that a strong effective legal system is associated with governance modes that emphasis security of contract. Thus, the widespread use of 'incomplete' contracts within the wine industry can be explained.

## **2. Literature Review**

TCE makes two main assumptions about actor behaviour: bounded rationality and opportunism (Williamson, 1985). Bounded rationality means that exchange partners can not anticipate future contingencies as they design their exchange agreement. This could expose one exchange partner to the opportunistic tendencies of the other partner who may wish to re-negotiate the agreement as the future unfolds. Opportunism is defined as self-seeking with guile (Williamson, 1981) and implies that given the opportunity, actors will take advantage of their trading partner's vulnerability whenever they can, particularly when asset specificity or uncertainty is high.

In Williamson's view (1985) a strong legal system creates an attractive environment by making provisions for future contingencies and legally enforceable sanctions to discourage opportunistic behaviour. Interestingly, studies that investigated the influence of the legal environment on governance modes are rather few. Du, Lu and Tao (2010) investigated the relationship between the quality of contracting institutions and vertical integration across various cities in China. They found that weaker contracting institutions cause firms to be more vertically integrated. In addition, Ma, Qu and Zhang (2010) used data from 28 developing countries to investigate how judicial quality affects firm exports through relationship specific investments. They found that sound contract enforcement and a good quality legal system significantly encourage export performance of firms that have to invest in relationship specific investments. We argue that assessing the effect of the legal system on TCE governance mechanisms is currently underdeveloped in literature.

Applying the principles of TCE to the wine industry, vertical integration between grape growers and wineries would be expected to be a prevalent practice within the wine industry. However, findings from previous research indicate that contracts are still widely used to coordinate exchange relationships within the wine industry (D'Silva, Uli, & Samah, 2009; Dawes, Murota, Jera, Masara, & Sola, 2009; Goodhue, Heien, Lee, & Summer, 2003). Further, Fraser (2005) found that 85 per cent of growers in Australia had written contracts and 15 per cent had oral or handshake normative agreements with wineries; while Goodhue *et al.*, (2003) reported that 90 per cent of grape supply is contracted by the California wineries. Furthermore, reviews of TCE empirical studies (Carter & Hodgson, 2006; David & Shin-Kap, 2004) also found that despite contract incompleteness, asset specificity does not always lead to vertical control. This raises

the question of why the use of contracts within wine supply chains is still prevalent while these chains are likely to be characterised by high asset specificity and high uncertainty?

Indeed, wine production requires large capital investments including an insulated hot room for control of secondary ferments, bottling hall with bottling line, a warehouse, crushers, fermenting and storage tanks, cooling plant and other valuable equipment (New Zealand Wine Company, 2007). Those expenditures represent physical asset specificity. Wine making also requires knowledgeable experience and specialist skills in grape processing, control of the fermentation process, and bottling (Bigsby, Trought, Lambe, & Bicknell, 1998), which represent human asset specificity. Further, when studying the determinants of make / buy decisions by wineries, distance between the vineyard and the winery, soil quality, sun exposure, and the climate are often considered (Fernandez-Olmos, Rosell-Martinez, & Espitia-Escuer, 2009), and these represent site asset specificity. Moreover, Hayward and Lewis (2008) acknowledge the importance of grape production practices in influencing the quality of the grapes. They point out that vineyard management decisions (site selection, vine spacing, monitoring fruit development, selecting varieties, removing bunches, thinning and other practices) are important for the production of good quality grapes. These are all measures that the wine producer may seek to invest in.

Additionally, Smith and Whigham (1999) argue that it is widely recognised within the wine industry that the less grapes harvested per hectare, the better the quality of the grapes. An opportunistic grower may decide to produce larger volumes of grapes per hectare at the expense of quality, and sell the grapes at the price of good quality grapes. The potential for such opportunistic behaviour needs to be mitigated when designing the exchange agreement (governance mechanism) between grape growers and wineries. However, due to bounded rationality, it is impossible to anticipate all possible grower behaviour that may compromise the quality of wine and lock the wine maker into this exchange relationship *ex ante*. Furthermore, uncertainty within the grower-winery relationship may arise due to many factors including climatic conditions or biological threats. It should also be remembered that the wineries can also behave opportunistically as well – there are always two sides to an exchange (Steiner, 2011). Nevertheless, despite the likelihood of opportunistic behaviours within the wine industry, contracts are still commonly used to coordinate exchange relationships.

## **2.1 Complementary Perspectives - Agency and Relational Exchange Theories**

Given the limitations of TCE as a complete explanation, two other theories can be employed to help illuminate the strategies for exchange protection, and perhaps help explain the widespread use of contracts in the wine industry, these being Agency and Relational Exchange theories. Agency theory controls opportunism by designing a contract in such a way that agents are provided with incentives (outcome based contracts) not to behave opportunistically or/and monitored (behaviour based contracts) to ensure that they behave in line with the expectations of the principal (Steiner, 2011; Turner, 1994). According to the Relational Exchange theory, opportunism can be dealt with by adopting a more social orientation to doing business in which relational norms and self-enforcement of agreements would bind trading parties and hence discourage opportunistic behaviours (Macher & Richman, 2008; Podolny, 1994; Uzzi, 1997). Nevertheless, while Agency and Relational Exchange theories can be utilised to attenuate opportunistic tendencies, their ability to protect against opportunism and hence their ability to explain the ubiquitous use of contracts, nevertheless, remains limited. As for Agency theory, bounded rationality and *ex post* renegotiation of incentives and the degree of agent monitoring is always a possibility that could negatively affect the performance of the exchange. Additionally, the theory of Relational Exchange has been criticised for its assumption that collaborative actors are devoid of opportunism (Lambe, Wittman, & Spekman, 2001). Even after achieving the highest levels of relational norms, differences and conflict between partners is still possible and may expose transactions to opportunism (Yang, Zhou, & Jiang, 2010). Furthermore, the literature has provided a number of other factors that have been found to be correlated with contract use, namely; firm size, firm age, and item criticality. For instance, Williamson (1974) argues that due to diseconomies of scale, small firms are more likely to contract or use the spot market rather than to vertically integrate. Additionally, previous studies have argued for a negative relationship between maturity of the firm and the decision to outsource (Everaert, Sarens, & Rommel, 2010; Gilley, McGee, & Rasheed, 2004). Item criticality refers to the importance the contracting firms attach to the inputs or procured items. As reported by previous research (Antia & Frazier, 2001), the less important the procured item, the more likely contractual or spot market arrangements will be employed as opposed to vertical integration. Nonetheless, the factors of firm size, firm age, and item criticality do not seem to fully explain the prevalent use of contracts within the wine industry. Consequently, there seems to be a need to search for another variable that can predict the variable of contracting and other governance structures better than the above cited theories and factors. In the current study, the effectiveness of the state's legal system is suggested as this predictor.

The legal system of a state is one of the institutions devised by society to create order, and in the economy, to reduce uncertainty in exchange (North, 1991). Legal systems establish and clarify property rights, reduce dispute resolution costs and provide exchange partners with protection against abuse (World Bank, 2010). They comprise the law of the contract and other bodies of the law that shape contractual ordering; and they also consist of the courts and procedures involved in enforcing contracts (Kahkonen & Meagher, 1997). A contract is a set of rights and obligations established between the transacting parties, but it is meaningless without a mechanism to enforce it (Alisena & Giavazzi, 2008). Any lack or weakness in contract enforcement exposes transactions to hazards, and it motivates opportunistic exchange partners as they benefit from dishonesty without any serious consequences. Hence, the state's legal system ensures contract enforcement by clarifying threat points in the contract and enforcing such threats in the event of default (World Bank, 2004). Hence, the current research argues that the exchange partners' perception of the effectiveness of the legal system is likely to shape the governance structure that governs their exchange transaction. Support for this view can be found in previous research. For example, Zhou and Poppo (2010) found a positive relationship between the perception of the legal system as credible and capable of providing added

safeguards to exchange relationships and seeking legal intervention. Based on these arguments, the following hypothesis is postulated:

H<sub>1</sub> *The effectiveness of legal system has a positive effect on the use of contracts when controlling for incentives, monitoring, trust, firm size, firm age, and item criticality.*

In addition to investigating the effect of the legal system on the use of contracts, we also complement hypothesis 1 with two additional related hypotheses investigating the effect of the legal system on the use of spot markets and vertical integration.

As stated previously, opportunism is more likely to arise when specific investments are involved. In the absence of specific assets, the spot market is the ideal governance choice where the transaction is governed by the dynamics of supply and demand and competitive market prices (Williamson, 2002). Such an exchange would be better conceptualised as an ‘arms-length’ relationship (Lambert *et al.*, 1996), for which the applicable legal recourse is general law (Macneil, 1978). We can see that the legal system also has a role to play in enforcing specificity-free spot market transactions. More specifically, the legal system gives assurances that opportunistic players within the spot market would be penalised (Beave & Saussier, 2010). Based on these arguments, the following hypothesis is proposed:

H<sub>2</sub> *The effectiveness of legal system has a positive effect on the use of spot markets when controlling for incentives, monitoring, trust, firm size, firm age, and item criticality*

With regard to vertical integration, a number of factors have been found to have a positive effect on vertical integration. Among these factors are item criticality, firm size, and firm age. For example, Fernandez-Olmos, Rosell-Martinez and Espitia-Escuer (2008) found that wineries producing wine for the premium market are more likely to internalise the grape production process to ensure that the grapes used are of high quality. Additionally, Larger firms are more likely to integrate as a way of reducing per unit costs (Scherer & Ross, 1990), and mature firms are more likely to integrate because they are likely to have, or more easily acquire, the resources (Everaert *et al.*, 2010). Because a strong legal system offers better protection to specific investments (Nunn, 2007), the effectiveness of the legal system was argued to be positively related to contract use. Conversely, it is also logical to argue for a negative relationship between the effectiveness of the state’s legal system and vertical integration. Hence, the following hypothesis is suggested:

H<sub>3</sub> *The effectiveness of legal system has a negative effect on vertical integration when controlling for incentives, monitoring, firm size, firm age, and item criticality.*

In the case of vertically integrated companies, the issue of trust does not arise, nor is it applicable as relational exchange theory is concerned with transactions between two independent actors. Under relational governance, firms create close ties with their trading partner(s) and transactions are projected into the future on a repetitive basis (Macneil, 1978). This does not apply to vertically integrated companies as they have internalised transactions.

### **3. Method**

According to Hair, Black, Babin, & Anderson, (2010) multiple regression can be used to ascertain how a number of variables simultaneously predict an outcome variable. To that end, confirmatory multiple regression analysis will be employed in the current study to test the research hypotheses. The ten variables in the study will be measured using a questionnaire. Three of these variables are outcome (dependent) variables; contracting, vertical integration, and spot markets. The remaining variables are predictor (independent) variables; legal system, incentives, monitoring, trust, firm size, firm age, and item criticality. All measures of these variables were adopted from previous studies and modified, where necessary, to suit the context of the current research. The following measures were developed from literature:

**Table 1: Item Scale Sources and Measures**

<i>Dependent Variables</i>	<i>Source</i>	<i>Scale</i>	<i>Cronbach Alpha</i>
Spot Market	D'Silva <i>et al.</i> , (2009)	Percentage of grapes sourced from each sourcing strategy	Proportion last full year
Contracting	Scales, <i>et al.</i> , (1995)		
Vertical	Williamson (1979)		
Integration	2002)		
<i>Independent Variables</i>			
Trust	Lambe <i>et al.</i> , (2001), Ring & van de Ven (1992), Kumar <i>et al.</i> , (1995)	5 point Likert	$\alpha = 0.917$ (six items)
Monitoring	Fraser (2005)	5 point Likert	$\alpha = 0.913$ (five items)
Incentives	Fraser (2005)	5 point Likert	$\alpha = 0.966$ (three items)
Legal System	World Bank (2010)	5 point Likert	$\alpha = 0.754$ (four items)
Winery Size	NZWINE (2009)	Ltrs produced pa	Ltrs produced pa
Item Critically	Antia and Frazier (2001), Fraser (2005)	5 point Likert	$\alpha = 0.838$ (five items)
Firm Age	Everaert <i>et al.</i> , (2010)	Years	Number of years in operation

The questionnaire was developed by utilising the scales from literature noted in Table 1 with only slight contextualising of the items. This was then validated by thirteen researchers and academics from two universities in New Zealand and South Africa with expertise in the current research topic. Their comments were incorporated as a way of refining the questionnaire, which helped with the initial face validity of the questionnaire. Furthermore, in line with Cooper and Schindler's (2006) guidelines, the questionnaire was also emailed to fifteen wineries as a pre-testing exercise. The wineries were asked to identify any ambiguities in the questionnaire and highlight them to the researcher. Nine of the wineries responded. Moreover, five winery managers within the Canterbury region of New Zealand were personally interviewed by the researcher to further improve the face validity of the research instrument. Useful feedback was obtained and incorporated into the questionnaire.

### **3.1 Sample Frame – Survey**

The population for this research was all the wineries in New Zealand. New Zealand was selected mainly due to the effectiveness of its legal system (World Bank, 2010), as sampling from an effective legal environment better reflects the major wine producing regions of the world. There were 683 wineries according to New Zealand Winegrowers (NZWINE, 2009), the national organisation for New Zealand's grape and wine sector. However, they could provide contacts for only 580 wineries (85%).

A mail survey was seen as the most appropriate data collection method as it allowed for wide coverage at reasonable cost. It also allowed for respondent flexibility, since respondents could fill the questionnaire when they had time (Zikmund, 2003). Further, it allowed respondents

enough time to think and reflect on their responses. Accordingly, questionnaires were sent to all 580 wineries in New Zealand, effectively a population study hence making it unnecessary to standardise the beta coefficients.

To improve the response rate and data quality, the questionnaire was sent to the targeted sample alongside a pre-paid reply envelope. In addition, respondents were given the choice of whether or not to be sent the summary of the results once the research is complete. Three weeks after the initial mailing, a reminder letter was sent with a new questionnaire and a pre-paid reply envelope. The first mailing resulted in 81 usable responses, whereas 35 were completed after the reminder letter. Non-response bias was tested through the independent samples t-tests to compare means from first and second mailing responses (Pallant, 2007), and results show no significant evidence of non-response bias. A total of 116 responses were usable, representing a 20.0% response rate, and is within the expected range of mail surveys (Zikmund, 2003). Also, 18 and 20 per cent response rates are also in line with reported response rates of other wine industry surveys (Fraser, 2005; Goodhue et al., 2003), and with rates from other marketing fields (Cao, 2001; John, 1984).

#### 4. Data analysis and Results

Reliability of the measurements was tested by calculating the Cronbach's alpha for all the summated scales, these are summarised in Table 1. All the reliability scores were above the acceptable levels of 0.70 (George & Mallery, 2009) demonstrating that the items building all the variables generally follow the same direction or 'hang' together.

The descriptive data are shown for the dependent variables in Table 2, as these variables deal with the substantive question of what coordination strategies are used by wineries in New Zealand to source grapes. The average amount of grapes sources by each strategy is also shown as a percentage of the total annual tonnage.

**Table 2: Descriptive Data for the Dependent Variables and Sources of Grapes**

Coordination strategy	Dependent Variables		
	Mean	Std. dev.	Contribution to total grapes %
Spot Market	1.181	0.387	14.435
Vertical	4.362	1.058	53.319
Integration			
Contract	2.638	1.050	32.245
		Total	100.00

##### 4.1 Contracting Regression Analysis

Given the three main hypotheses, three separate multiple regressions were conducted, one for each sourcing strategy. Preliminary analyses were successful in concluding that no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity were encountered. In the first regression model, legal system, incentives, monitoring, firm size, firm age, and item criticality were used to predict the use of contracts. The beta weights of the predictor variables are shown in Table 3.

**Table 3: Multiple Regression Analysis to Predict Variance in the use of Contracting**

<b>Model 1 DV = Contracting</b>				
Variables	$\beta$	t	Sig	VIF
Constant	-3.212	-2.360		
Trust	0.280	1.883	0.062***	1.195
Monitorin	0.354	4.691	0.000*	1.081
g				
Incentives	0.411	2.616	0.010**	1.074
Legal	0.631	1.815	0.072***	1.156
Item	-0.042	-0.299	0.765	1.049
Critical				
FirmSize	0.223	1.735	0.086***	1.094
FirmAge	-0.075	-0.729	0.468	1.043

$R^2 = 0.361$ .  $F = 8.714^*$

Significant at the \* $p < 0.001$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.010$  levels.

As indicated by Table 2, all the predictor variables were significantly related to contract use except item criticality and firm age. The model was statistically significant ( $R^2 = 0.361$ ,  $F = 8.714$ ,  $p < 0.001$ ). The legal system was strongly and positively predictive of contracting ( $\beta = .631$ ), which also lends support to hypothesis 1. Moreover, the legal system was the most predictive variable of contract use in the model. It is followed by incentives ( $\beta = .411$ ), monitoring ( $\beta = .354$ ), and trust ( $\beta = .28$ ), which are positively associated with contract use. Firm size is the least predictive variable in the model with a moderate positive effect of ( $\beta = .223$ ).

#### **4.2 Spot Market Regression Analysis**

In the second model, the variable of spot market was predicted by the same variables used to predict contract use (*i.e.* trust, monitoring, incentives, legal system, item criticality, firm size, and firm age). The regression coefficients between the predictor variables and the outcome variable are shown in Table 4 as follows.



**Table 4: Multiple Regression Analysis to Predict Variance in the use of the Spot Market**

<b>Model 2 – DV = Spot Markets</b>				
Variables	$\beta$	t	Sig	VIF
Constant	-0.504	-1.002	0.319	
Trust	0.307	5.600	0.000*	1.195
Monitorin g	-0.014	-0.488	0.626	1.081
Incentives	-0.151	-2.604	0.011**	1.074
Legal	0.231	1.801	0.074***	1.156
Item Critical	0.011	0.217	0.829	1.049
Size	0.131	2.752	0.007**	1.094
Age-Co	0.025	0.658	0.512	1.043
$R^2 = 0.358$ . $F = 8.590^*$				
Significant at the * $p < 0.001$ ; ** $p < 0.05$ ; *** $p < 0.010$ levels.				

In the above regression an  $R^2$  value of (.358) was obtained, which constitutes a strong prediction. Four predictors had significant beta weights; trust, incentives, legal system, and firm size. The positive beta weight of the legal system was ( $\beta = .231$ ) which suggested a moderate effect on contract use. Hence, we can say the only moderate support for hypothesis 2 is found. Interestingly, the use of the Spot market in the New Zealand wine industry was primarily predicted by trust ( $\beta = .307$ ).

#### 4.3 Vertical Integration Regression Analysis

In the final regression model, the dependent variable of vertical integration was predicted by all the variables used in the two previous sets of models with the exclusion of trust. As vertically integrated relationships are controlled by ownership, hence inter-firm trust is irrelevant. The beta weights of the predictor variables are shown in Table 5.

**Table 5: Multiple Regression Analysis to Predict Variance in Vertical Integration**

<b>Model 3 – DV = Vertical Integration</b>				
Variables	$\beta$	t	Sig	VIF
Constant	7.314	5.173	0.000	
Monitoring	-0.044	-0.559	0.577	1.064
Incentives	-0.217	-1.330	0.186	1.033
Legal	-1.025	-2.869	0.005**	1.085
Item Critical	0.468	3.193	0.002**	1.026
Firm Size	-0.437	-3.215	0.002**	1.093
Firm Age	-0.043	-0.395	0.693	1.042
$R^2 = 0.287$ . $F = 7.318^*$				
Significant at the * $p < 0.001$ ; ** $p < 0.05$ ; *** $p < 0.010$ levels.				

This regression model had a significant predictive power ( $R^2 = 0.287$ ,  $F = 7.318$ ,  $p < 0.001$ ). The outcome variable was largely explained by the variable of legal system which had a negative beta weight of (-1.025) lending support to hypothesis 3. In addition to the legal system, two other variables were the most predictive in the model, these being item criticality ( $\beta = .468$ ) and firm size ( $\beta = -.437$ ). The following table (Table 6) summarises the model fit statistics and hypotheses testing results.

**Table 6: Summary of Model fit Statistics and Hypotheses Testing**

Model	Sample $n=116$		
	Contracts	Spot Market	Vertical Integration
	1	2	3
$\beta$	-3.212	-0.504	7.314
t value	-2.360	-1.002	5.173
R <sup>2</sup>	0.361	0.358	0.287
F value	8.714*	8.590*	7.318*
H <sub>1</sub> Legal system (+) Contracts	Supported		
H <sub>2</sub> Legal system (+) Spot mkts	Partial Support		
H <sub>3</sub> Legal system (-) Vertical Integration	Supported		

\* $p < 0.01$ ; \*\* $p < 0.05$

## 5. Discussion

For the first regression model, predicting the variable of ‘contracting’ revealed results in line with what was hypothesised. Here, the legal system had the highest influence on contracting decisions. Thus, companies are likely to rely more on the efficacy of the legal system to protect transactions in a strong legal environment. Topically, this is supported by the outcome of a recent case in which Goldridge Estate Vineyards, one of New Zealand’s bigger wine producers took Kakara Estate (grape grower) to the High Court in Auckland following the latter’s attempt to terminate its supply contract to Goldridge owned company, Hillersen Vineyard Contracting (Krause, 2010). Goldridge sought and was granted an interim decision preventing Kakara from terminating the grape supply and vineyard management agreements (Krause, 2010). Interestingly, this appears to be a case of winery opportunism. Nevertheless, this example shows that the New Zealand legal system swiftly enforced the contract, which suggests that contracts in an effective legal environment reduces risk and uncertainty in wine supply relationships. Indeed, few studies have empirically linked the ubiquitous use of contracts with an effective legal system as the driver.

In regards to the variable of ‘spot markets’ (model 2), we hypothesised that the decision to buy from the spot market is positively related to the effectiveness of the legal system. However, this hypothesis was only moderately supported. This might be due to measurement errors, or the hypothesis might be incorrect, yet the regression model for spot market was significantly predictive. Future research is needed.

Alternatively, the results from the spot market model revealed that the governance mode of spot market is better predicted by the variable of trust ( $\beta= 0.307$ ). A look at the organisational and locational structure of the wine industry may shed light on the significant effect of trust. Wineries and growers are usually members of the national winery association (NZWINE, 2009) and often associate for events and tastings. Further, given the site specificity and clustered in growing regions, the grape growers and wineries are likely to be well known to each other, and hence inter-firm exchanges become iterative in nature enduring over the longer term. This provides further evidence of the normative effects of socialisation, thus influencing TCE’s contracting schema. It also highlights the important, even possibly overriding, role that trust plays in the spot market as an alternative to contracting in the wine industry.

As for vertical integration, the model shows a significant negative effect of the legal system on wineries’ decisions to vertically integrate with their grape suppliers. This negative effect was strong ( $\beta= -1.025$ ) in an effective legal environment (World Bank, 2010). This means that the

need for wineries to vertically integrate is reduced when wineries themselves perceive the legal system as effective. Furthermore, the higher the importance of the grapes, the more likely wineries would integrate with grape suppliers in order to reduce risk and uncertainty. However, while the effect of item criticality on vertical integration was the second most influential (and positive) variable ( $\beta = 0.468$ ), it was not as pronounced as the effect of the legal system. In other words, while the need for high quality grapes tends to be generally associated with vertical integration, wineries that produce high quality wine and who are operating in an effective legal environment would not find the alternative contractual arrangements as risky. Hence, this result also provides a strong rationale for the continued use of incomplete contracts in the wine industry. This is further supported by the first (contracting) model where the relationship between item criticality and contracting was found not to be significant.

One of the interesting findings of the current research is the effect of firm size on vertical integration. The third regression model revealed a negative effect of the winery size on the decision to vertically integrate. While this finding is not directly related to the core focus of the current study, it nevertheless marks a departure from previous findings that indicated a positive relationship. One explanation for this finding could be that the literature may have focused more on the economies of scale as a determinant of vertical control and paid little attention to issues of quality and the orientation of small wineries (Scales et al., 1995). Recent literature suggests that small wineries seem to concentrate on boutique wines and are therefore more likely to produce own grapes than larger wineries (Diez-Vial, 2009; Fernandez-Olmos *et al.*, 2009).

The combination of the three governance modes allowed wineries to harness the advantages offered by each of the three governance modes, perhaps even ensuring that the right balance of the governance strategies was in place. In particular, they employed vertical control so as to harness its utility when it comes to ensuring quality of grapes, security of grape supply, and an added marketing leverage. They used contractual arrangements to help them minimise costs, transfer risk and ensure geographical diversification of sources of grapes, and they used the spot market to meet unforeseen grape shortages as well as a source of wine blending grapes. The governance structures are therefore not substitutes but instead allow wineries to use a mix of the three governance strategies in combinations that allow them to achieve optimal sourcing of grapes (Wilson & Goddard, 2004).

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