
The Role of Contracts in Wine Grape Supply Coordination: An Overview

Iain Fraser
Department of Economics and Finance
La Trobe University, Vic 3086
and
Department of Agricultural Science
Imperial College, Wye, UK

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Abstract

In this paper the role of contracts in coordinating the supply of grapes between independent wine grape growers and wineries is examined. A review of technical issues that underpin the design and implementation of contracts provides insights into the wine industry. A review of the economics literature on contractual relations in the wine industry indicates that although grape contracts are important they are subject to a number of problems. In particular, the precise determination of grape quality is a source of tension, as are current pricing arrangements.

1. Introduction

In 2001 Australian grape growers delivered over 1.4 million tonnes of grapes to wineries, an increase of 25 per cent on the level of grapes produced in 2000. At the same time there was a slight decrease in the price paid for most grape varieties resulting from the over-supply of grapes.¹ This over-supply, according to Stanford (2000), is currently being expressed in terms of winemakers' preferences – they can pick which grapes they will use and reject those that do not meet their desired specifications.

The imbalance in supply and demand has affected the business relationship between independent growers and wineries. There are numerous examples of strained relations between growers and wineries. For example, the *Australian Grapegrower and Winemaker* (May, 2001) reported that the Wine Grapes Marketing Board in the Riverina, "had fielded numerous complaints from growers this vintage about the use of questionable grading for pricing purposes."(p.8). There have also been accusations about price collusion leveled at wine companies by growers. These relationship problems have continued into 2002 and 2003 with growers in some of the warmer inland grape-growing regions unable to sell their grapes or receiving prices

¹ The over-supply of grapes is not a new phenomena. Excess grape supply in the 1980's lead to the establishment of grower pools, cooperatives, family wineries and the South Australian Vine Pull scheme.

significantly below the cost of production. For example, BRL Hardy significantly reduced the price paid for fruit in excess of that contracted from CCW, a cooperative representing more than 740 growers in the Riverland (*National Grape Grower*, August, 2002). Also, a decision by Simeon Wines to introduce colour testing for grape quality was challenged by growers in the NSW Supreme Court. Although Simeon Wines did not carry out colour testing, it is likely to introduce contracts in 2002 that will include colour testing.²

These relationship problems are important in two ways because many wineries rely on independent grape growers to supply grapes. First, Darling (1999) estimates that there are between 6,000 and 7,500 independent winegrape growers in Australia. Second, in terms of production, a high percentage of grapes converted into wine are sourced from independent growers. The AWBC National Winegrape Crush Reports, 2000 and 2001, bear this out. In 2000 81 per cent of white grapes and 77 per cent of red grapes were sourced from non-winery-owned vineyards. In 2001 this has changed marginally to 76 per cent for white grapes and 73 per cent for red. There is, however, a significant degree of regional variation. For example, in 2001 the Coonawarra region reported that 15 per cent of white grapes and 24 per cent of red grapes were sourced from non-winery-owned vineyards. For the Barossa Valley 85 per cent of white grapes and 80 per cent of red grapes are sourced from non-winery-owned vineyards. Clearly the state of the relationship between grape growers and wineries to facilitate and coordinate the supply of grapes is very important.

Central to the relationship between independent growers and wineries is the coordination of grape supply. In general, crop type and technology (production and processing) determine the form of coordination. In the case of grapes, their perishability and bulkiness requires concentrated production and careful scheduling. In such a context we would anticipate the use of contracts to coordinate the business relationship is a practical option. This conjecture is borne out by Scales *et al.* (1995) and KPMG (1999) who state that the use of contracts to coordinate the supply of wine grapes has become much more common since the beginning of the 1990's.

In practice, contracts allow wineries to articulate their requirements with regard to the quality of grapes produced by growers, as well as clearly defining to growers their input requirements so that wine grapes meet market specifications. However, the implementation of contracts to coordinate the supply of grapes is subject to various complicating factors. Indeed, many of the aforementioned problems between growers and wineries stem from the nature of the existing contractual arrangement. To further our understanding of these issues for the Australian wine industry, we review the form and role of contracts in this paper.

We begin in Section 2 by examining issues of grape quality measurement. It is important to understand the difficulties inherent in measuring grape quality. The difficulties associated with measuring grape quality affect the implementation of contracts and are therefore fundamental to many of the coordination problems currently being experienced in the industry. In Section 3 we consider why contracts are frequently the method of supply coordination. This is followed by a review of the role of contracts in coordinating the actions and demand of buyers and sellers. In Section 4 we examine information currently available about the use of contracts between growers and wineries. Finally, in Section 5 we summarise our findings.

2. Measuring Wine Grape Quality

Measuring wine grape quality is complex. However, quality measurement is important as it increasingly determines the price received by growers for grapes supplied. There is an extensive scientific literature that examines the issue of grape quality both in terms of vineyard production and post-harvest measurement. In this section we briefly review the technical literature. We also described how Southcorp Wines implement wine quality measurement in practice.

2.1. Vineyard Management

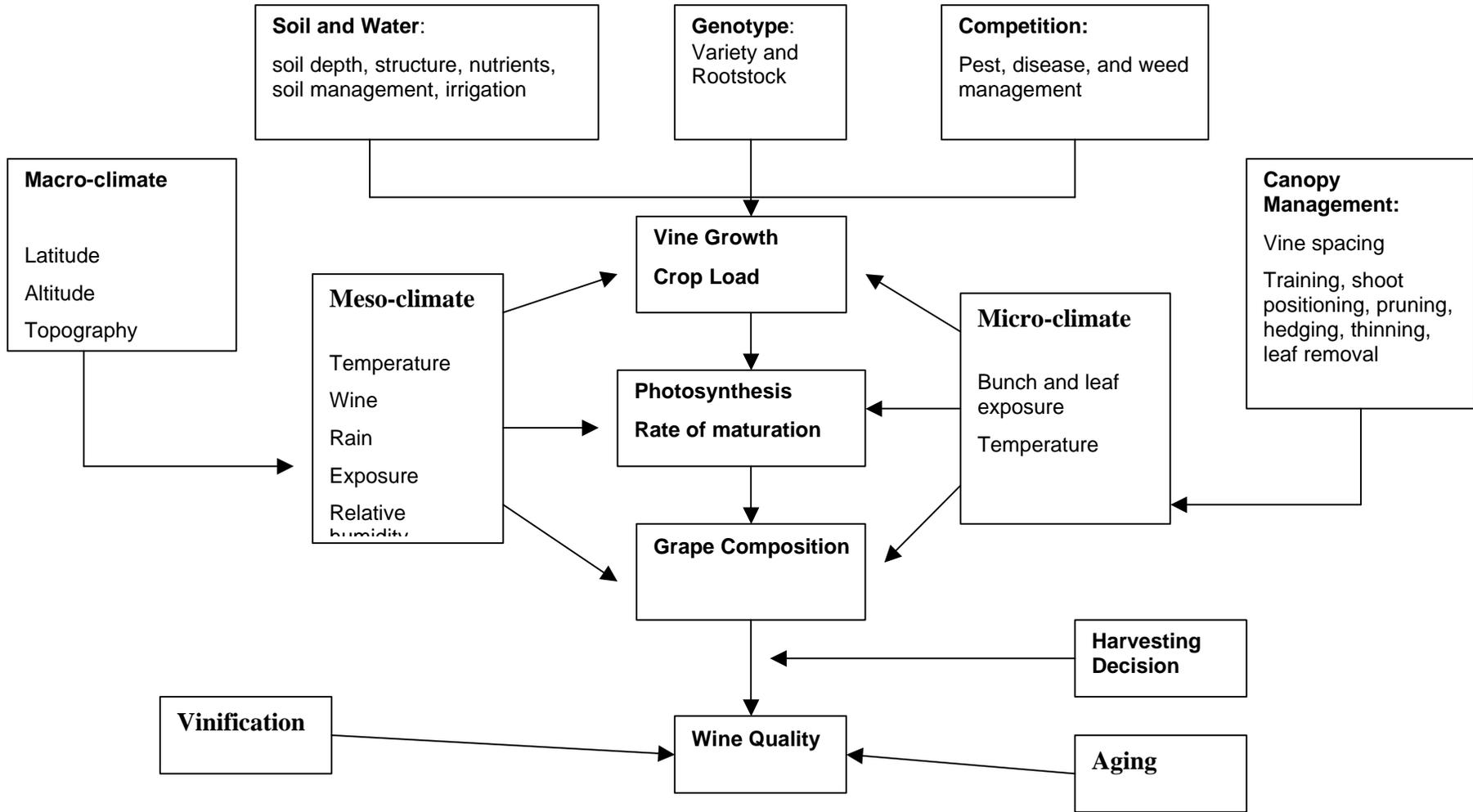
A useful point of departure in terms of understanding how grape quality is achieved is provided by Jackson and Lombard (1993). They provide a comprehensive overview of what grape quality is, as well as how it is achieved. Jackson and Lombard summarise their analysis with a flow diagram that explains how grape quality is achieved in the vineyard.

Their diagram is presented in **Figure 1**.

² A useful source of information on the industry and many of the current tensions is the Murray Valley Winegrape Growers' Grapevine newsletter (<http://www.murrayvalleywinegrapes.com.au/>)

Figure 1

Environmental and Viticultural Inputs into Grape Composition and Wine Quality



Adapted from Jackson and Lombard (1993)

Figure 1 shows that both viticultural/cultural practices (endogenous) and environmental effects (exogenous) combine to influence grape quality. The key message to emerge from Figure 1 is that the factors that cause changes in grape composition and in turn grape quality can frequently be ephemeral, as well as complex. There are a wide range of external factors that influence vine growth and performance. In turn, decisions that alter vine growth and/or performance can change grape characteristics that can also influence the quality of wine eventually produced.

DeGaris (2000) discusses how environmental effects (e.g., climate, irrigation/rainfall, soils) and vineyard management (e.g., vine nutrition, yield, pruning and canopy management) influence grape quality in Australia. There are many viticultural parameters that can be measured (e.g., crop load, fruit exposure, berry size, leaf area/fruit ratio, cane development), but achieving particular parameter measures does not guarantee fruit quality. However, the significance of the relationship between viticultural practice and grape quality is widely acknowledged in the literature. For example, Vagnarelli (2000) states that best quality grapes come from well-managed vineyards. A well-managed vineyard is achieved when all the elements of growth are in balance - vines grow with a combination of adequate nutrition and the right amount of stress at the right time to produce the best quality wines.

The importance of vineyard management cannot be overstated in terms of producing quality grapes. For this reason we will find that good management of a vineyard is becoming a central feature underpinning the relationship between grower and winery. However, Donald and Georgiadis (2000), although acknowledging that vineyard practices can affect grape quality at the margin, claim that ultimately individual regions have a tendency to yield grapes appropriate for only a fraction of the total style/price spectrum (i.e., the environmental effect).

2.2. Grape Quality Measurement

DeGaris (2000) describes the grape quality attributes commonly measured by wineries:

1. Soluble Solids (SS) normally expressed as Baume or Brix is a measure of the sugar content in grapes and the potential alcohol yield after fermentation. SS are considered a useful indicator of grape ripeness and quality, and, as such, payments to growers are frequently adjusted depending on the level recorded at harvest, although it can sometimes be misleading except in the case of fortifieds. Kennedy and James (2000) argue that Baume could be made more useful if linked to end-wine quality, colour, flavour and depth.
2. Organic acids, tartaric, malic and citric are usually measured by titration (TA). The development of TA depends on photosynthesis. A reduction in TA during maturation stems from the respiration rate of the grape and can be related to temperature.
3. pH levels of around 3.6 are required. If pH is high then there will be an increase in activity of micro-organisms which cause wines to have problems with aging.
4. Phenolics are responsible for the tannic component of wine and this drives bitterness and unpleasant flavours. Anthocyanins are a major component in red wine colour.
5. Matter other than grapes (MOG) is material such as stems and leaves.

In terms of measuring grape quality characteristics the various methods currently available yield less than perfect results. For example, Damberg *et al.* (2000) explain that Brix can be tested by refractometry that is both fast and accurate (i.e., pre-harvest, field testing and point of delivery). However, they note that fruit that achieves the Brix levels earlier tends to be of a better quality than later-harvested fruit. Given the complexity of measuring grape quality, they therefore suggest that it is necessary to have a second-order measure. They suggest several possibilities:

1. The type of wine produced from the fruit is a good guide to quality. However, Damberg *et al.* (2000) note that, "*it is difficult to objectively assess fruit at the point of delivery*" (p. 45). Furthermore, the need to keep batches of grapes separate throughout processing depends on the wine-making process used, and this may not suit all producers. Moreover, growers must trust the assessment of the winery as to how to convert their fruit into the best possible wine. If the winery produces a range of wines and if there is an excess of quality fruit, but better quality wines are subject to restricted supply, then the price received by a grower may not be as high as they are entitled to.
2. It is possible to assess flavour, anthocyanins and phenolic compounds by measuring total glycosyl-glucose (GG). For vineyard-specific fruit, GG increases with maturity although there can be variation from different vineyards with the same Brix range. Although GG is a very promising secondary quality measure, the current GG assay is complicated and takes time, making practical application difficult.

3. With red wines colour is an important quality. Dambergs *et al.* (2000) note that there is some evidence to support the observation that wine quality is positively correlated with grape colour. Colour is easier to assay compared to GG but there is still not a simple procedure. An approach that has become the focus of much research is Near Infra-red Spectroscopy (NIRS), but there are problems. First, the cost of machinery is expensive so there is a need for simplification and cost reduction. Second, NIRS is unable to measure certain compounds at low levels that may produce faults in wine that have a profound sensory effect on quality. Vagnarelli (2000) suggests that colour is a useful guide to quality for growers. It is visible and appeals to the grower's intuition. But there are limitations in that colour does not give an indication of the complexity of wine or provide help when it comes to blending of grapes. However, colour does draw attention to bad aspects of production. Thus, Vagnarelli states, "*I would suggest that a colour test is a legitimate way of determining that fruit is good enough or not, for bottle quality.*" (p. 32)

The importance of various grape quality characteristics to the industry has recently been revealed in a court case brought before the NSW Supreme Court (*Merewyn Pty Limited v Simeon Wines Limited*, 2002). A group of growers in the Sunraysia Murray Darling Wine District challenged the right of Simeon Wines Limited to introduce colour testing of red grapes. There was no explicit clause in their contracts that stipulated the need for a colour test. In the proceedings of the trial Mr Angus Kennedy of BRL Hardy gave evidence of the colour standards employed by BRL Hardy in this grape-growing region. He stated that, "*there is a strong relationship in a chemical and statistical sense between grape colour, as measured in total anthocyanins of red grape berries, and the quality of wine made from those grapes*" (Clause, 59). At the same trial Mr Philip Laffer of Orlando Wyndham stated that for grapes from the Sunraysia region there are three factors used to determine quality, and these factors in order of importance are: flavour; colour; and baume (Clause, 69).

2.3. Theory into Practice

Several of the large Australian wine companies provide interesting examples of putting theory into practice. For example, Southcorp Wines have a system called the Grape Value (GV) System that combines vineyard assessment and grape quality measurement. Donald and Georgiadis (2000) explain that by identifying particular quality categories for particular wine markets, given a vineyard's capabilities, a vineyard can be managed with a particular wine type in mind. Thus, parcels of fruit can be batched to maximize bottle quality. This means that fruit quality is judged on end use and growers are expected to produce fruit at a certain standard aligning the objectives of the grower and winery. This approach allows Southcorp Wines to identify differences in quality from one vineyard/block to the next and provides a basis for explaining to growers why their grapes received a particular level of payment i.e., bonus or penalty. Donald and Georgiadis (2000) argue that the GV System provides a sound basis upon which to form contractual relations. With the GV system it is not possible to measure all components objectively. Grape quality is objectively measured whereas vineyard characteristics are subjectively assessed. In terms of assessing the vineyard, a weight is assigned to each variable and the relationship between the variables to GV is left to the subjective assessment of the individual assessing the vineyard. Despite the subjective aspects of the method, Southcorp Wines argue that with practice vineyard assessors are able to achieve very consistent ranking of scores.³

3. Contracts and Supply Coordination

The use of contracts is by no means a new phenomenon in coordinating agricultural production and supply. For example, in California lettuce has been grown almost entirely under contract since the 1930's. However, in the agricultural economics literature that examines supply relationships, it has been observed that contracts are becoming increasingly important (Hueth *et al.* 1999).⁴

Contracts can vary very significantly in style and content. In the case of informal contracts such as verbal/handshake deals, enforcement can take the form of implicit cultural conventions, reputation and repeated interaction. Even with formal (i.e., written) contracts, because of the incomplete nature of contracts, many features may well be left unstated and implicit between both parties. However, irrespective of the form of the contract there are three reasons why a contract is used to coordinate the supply of wine grapes. First, contracts introduce certainty into both grape and wine production, allowing allocation of resources with greater confidence. Second, contracts allow market participants to share both financial and production risks. Third, contracts can be used to motivate performance by the use of bonuses and penalties.

To achieve the coordination benefits that contracts can potentially provide, it is necessary to design and implement a contract. The contracts offered by a winery will reflect a trade-off between the extent that a

³ Steiman (1999) details how Southcorp Wines employs the GV classification system on all its own vineyards and those it has under long-term contract from independent growers.

⁴ There is also a literature that examines the role of contracts in agriculture from a sociological perspective. For example, Burch *et al.* (1996) contains a number of interesting case studies that examine contract farming in Australia.

winery is willing to provide “insurance” to a grower and the need to provide incentives so that the grower exerts the necessary effort to produce wine grapes of a desired quality, given that effort may not be perfectly and costlessly observable. The issue of efficient risk-sharing depends on whether the grower is risk neutral or risk averse. Furthermore, the design of the contract is complicated if a grower can shirk, that is, undertake the tasks necessary to satisfy the contract in a sub-optimal manner. This problem is referred to as moral hazard. Clearly, a winery needs to design a contract that offers incentives to prevent shirking but then does not place the grower in danger of excessive risk. To address this problem in practice, contracts will frequently contain a flat fee (the risk-sharing component) plus various performance incentives (bonuses and penalties for quality).

There may also be problems of adverse selection that can further complicate the design of the contract. Adverse selection refers to a situation in which one party to the transaction is better informed than the other about the characteristics of what is being exchanged. To minimize this problem, a common solution advocated in the literature is that contracts could be auctioned. However, in the case of agricultural production it is more likely that upfront capital investment by the grower acts as a signal of intent to conduct business in the desired manner.

Contract design is also complicated if there is downstream price risk. If the winery is risk neutral then this is not an issue for the grower and will not impact on contract design. However, if the winery is risk averse then the contract may well be designed in such a way that some of the risk will be passed on to the grower. In practice, this is likely to mean that the price paid for grapes will, in part, reflect the bottle price of the wine. This practice is referred to as residual claimancy in the literature.

In an effort to minimize informational problems associated with contract design and implementation, a winery can attempt to influence the behaviour of growers in four possible ways.

1. A winery can monitor grower effort. This can be done in a number of ways such as making visits to the vineyard during the grape-growing period. These visits can be used to share information about optimal vineyard management, discuss with the grower the state of crop development and coordinate harvest activities with winery requirements. Although vineyard visits might not be explicitly considered to be monitoring, they can help to inform the winery about vineyard practices, which might be important if there is a dispute about the payment of the contract.
2. A winery can exert more direct control over vineyard activities by specifying input use such as the form of rootstock used or the choice of irrigation technology employed. Clearly, the more the winery imposes on the grower the less responsibility the grower has for the outcome of the quality of the grapes.
3. A winery can measure the quality of grapes supplied. Quality measurement is used to determine bonus and penalty payments. Currently, measures of Baume/Brix, and colour are used.
4. A winery can make payment contingent on the price of wine in the bottle (i.e., residual claimancy). The technology to allow a winery to monitor grapes from the vine to the bottle has significantly improved in recent years.

The most important variable in determining the mix of these contract coordination instruments will be the commodity itself. Specific commodity attributes influence how contracts will be designed and implemented. For example, the ability to measure quality, crop production, cycle and crop physiology will influence the relative cost effectiveness of each behavioral instrument. For wine grapes, quality (within a region) is a function of grower effort and as such there will be investment in technology to measure quality.⁵

4. Contracts and Grape Production – Current State of Knowledge

In this section we examine the extent of contract use and what information is known with respect to contract design and implementation in wine grape production.⁶ We draw heavily on two sources of information: Scales *et al.* (1995) and Fraser (2002). Scales *et al.* is a wide-ranging study of the Australian wine industry and as a result it contains a significant amount of information relating to contracts. Fraser surveyed over 2,500 wine grape growers in various regions of Australia receiving in excess of 500 returns and, as a result, provides extensive information regarding contract use.⁷

We also consider what is known about contracts in Australia compared to information in other countries. Our research has revealed that apart from the US, specifically California, very little information about the use of

⁵ Bogetoft and Olesen (2002) provide an interesting analysis of how various commodity attributes influence the design and implementation of supply contracts in Danish agriculture.

⁶ Taylor (1996, 1999) provides a useful overview from a legal perspective as to the necessary minimum set of clauses to be included in a supply contract.

⁷ Several court judgments in Australia provide interesting information on the detail of contracts. e.g., Merewyn Pty Limited v Simeon Wines Limited, 2002 in the NSW Supreme Court. These are available online at www.austlii.edu.au.

contracts exists. The only exception is Swann (2002) who provides a useful overview of contracting practices in a number of countries around the world. His key finding is that Australia is at the forefront of contract use.

In relation to the Californian wine industry and contract use, Goodhue *et al.* (1999) provide significant information. Their examination of contractual relationships between growers and wineries in California is based upon an extensive survey. They mailed approximately 12,000 growers, receiving over 1,300 responses.

4.1. Extent of Contract Use

Although we know the percentage of grapes supplied to wineries by grape growers is approximately 75 percent it is less clear what proportion of grapes are supplied under contract. Currently, to assess contract use we have to draw on various sources of information.

For example, in a case study of the relationship between Orlando Wyndham and its more than 350 independent growers Hoole (1997) states that these growers supply up to 85 per cent of Orlando Wyndham grape requirements. KPMG (1999) state that Southcorp Wines source approximately 70 per cent of grapes from independent growers.⁸

Haughton and Browett (1995) in a study of the McLaren Vale wine industry noted that growers and winemakers increasingly employ contracts. They found that those wineries that were dependent on purchased grapes established semi-informal relationships with growers and that these relationships would yield 75 per cent of all grape needs. Importantly they found,

“Over half the firms interviewed purchased the majority of their grapes on the basis of long-term relationships, with no written contracts, but an evolved basis of mutual trust.” (p. 55).

Contract use in the Murrumbidgee Irrigation Area (MIA) Region, according to Pritchard (1999a), is less than ten per cent of all grapes sold. More recently, Fraser (2002) found that written contracts are used by 85 per cent of growers compared to 15 percent who employ oral/handshake arrangements. He also reports that 65 per cent of growers had always used a written contract to coordinate the supply of grapes. In comparison, Goodhue *et al.* (1999) found that contract usage is widespread in California as almost 90 per cent of all growers had contracts.

The extent of contract use may relate to a changing business environment and the need to have a contract to be able to secure financial support. Boon *et al.* (1999) stress the importance of a contract when setting up a vineyard and when dealing with financial institutions.⁹ McDougall (1999), also explains that Southcorp have encouraged contracted growers to expand their operations using their contract as means to secure additional financial backing from the banks.¹⁰

In terms of the future prospects for the use of contracts, Scales *et al.* (1995) received evidence that wineries were attempting to secure greater supply security by expanding their own grape production capabilities to ensure quality requirements. This change in production has been observed in the MIA region with a significant expansion by wineries to own-source their fruit to have greater control over the quality of grapes produced (Pritchard, 1999b, p. 196). The need for greater quality is driven by higher quality wine production.

4.2. Grape Supply Contract Content

Term/duration

Scales *et al.* (1995), Edmonds (2000) and Anderson (2001) state that typical contract duration is between three and five years and frequently ten. Fraser (2002) found that contract duration is typically in excess of three years with 83 per cent of respondents indicating that they had contracts in excess of three years with average contract length of 6.9 years. The length of contract is much the same in California. Goodhue *et al.* (1999), found average length of contracts was three and a half years with many of five and ten year durations.

Scales *et al.* (1995) report that there were more long-term contracts in place when they conducted their research than at any time in the history of the industry. This change can be traced to business needs. For example, Southcorp Wines in their submission to Scales *et al.* noted that to satisfy financial institutions that

⁸ The extent to which Southcorp sources grapes from independent growers under contract, has become a cause of concern in the financial press (e.g. *Australian Financial Review*) given the severe financial difficulties being experienced by the company. Several financial analysts have attributed part of Southcorp's weak financial position to the pricing arrangements adopted in their grape supply contracts.

⁹ The importance of who the contract is with has been stressed by Mike Stone (*National Grape Grower*, August 2002, p. 6). Growers contracted to larger wineries attract higher payments than those with smaller wineries.

¹⁰ It has been reported in the *Australian Financial Review* (Wine Blight Withers Vineyards, p. 52, March 3rd, 2003) that banks have become concerned about the extent of their exposure to uncontracted vineyards.

growers are assured payments that reflect less the price paid per tonne of production, but rather a sensible rate of return on their vineyard investment, that a long-term supply contract needs to be in place.

Quantity or hectares of fruit grown.

For grapes of lower quality Scales *et al.* (1995) note that contracts tend to be focused on quantity supplied. Fraser (2002) found that 41 per cent of contracts are based on yield per hectare. This can be contrasted with only three per cent of contracts that pay growers based on the number of hectares harvested. In relation to the quantity of grapes produced, Goodhue *et al.* (1999) found in California that 22 per cent of contracts specified maximum tonnage although almost half the survey respondents indicated that there was some expectation as to the quantity of grapes produced.

Interestingly, Fraser (2002) also found that 43 per cent of growers assumed that all their fruit would be taken although it was unclear if all fruit would attract the specified contract price. Recent experience in South Australia (i.e., BRL Hardy and CCW) would suggest that contracts which explicitly stipulate the quantity of fruit to be supplied need only take excess fruit at reduced price levels.

Pricing.

There are numerous methods employed in determining the price received for grapes: minimum price; fixed price for a fixed term with CPI indexation; market price; market price with fixed minimum and maximum; market price with bonus and penalty schedule; and residual claimancy (bottle price).

Scales *et al.* (1995) observed that lower quality grape contracts with a focus on quantity supplied will include penalties (and sometimes bonuses) for grapes that fail particular quality tests, e.g., Brix, Baume, MOG, colour. In general, prices for lower quality grapes are likely to reflect a market price or spot price for the specific variety in a given locality. As Scales *et al.* note, at the lower end of the market the likelihood that grapes will not be accepted, or only accepted at much lower prices than expected, is not unusual.

Darling (1999) noted that many contracts do not contain real pricing clauses. They make reference to average regional prices as the basis of the price in the contract. He notes that the "better" contracts contain a defined base price, a market demand component plus a bonus/penalty scheme that relates to quality. However, as Kennedy and James (2000) note, the valuation of the crop (grapes) is complex. The complexity stems not only from the nature of grapes as an intermediate input, but also from the form of relationship between growers and wineries. Boon *et al.* (1999) make a similar point noting that because some grape quality characteristics are difficult if not impossible to measure, premium prices are being offered to growers with a good track record of producing the wine grapes desired by wineries. Boon *et al.* view this as part of the movement toward longer-term strategic alliances between growers and wineries. They argue that such alliances will in turn yield higher returns for growers.

Fraser (2002) found that the most common form of payment type is a fair market price. He also found that specified maximum and minimum pricing arrangements are popular in the Riverland and Riverina regions. As to how price is determined, Fraser found that most growers received a price based on a combination of grape assessment in the vineyard, and at harvest. In addition, some 20 per cent of growers receive payment that is contingent on the final bottle price of the wine made from their grapes (i.e., residual claimancy).

In terms of the role of bonus and/or penalty payments, Fraser (2002) found that 86 per cent of growers said that their contract included a clause relating to Brix/Baume. The next most important measure was disease damage (76 per cent) followed by physical damage (62 per cent). Interestingly, colour testing is only included in 46 per cent of contracts and there is a clear regional bias. Growers in the Murray Valley and the Riverland reported a high incidence of grape colour testing.

In California, Goodhue *et al.* (1999) identified a wide range of price setting arrangements. They found that a reference price was the most widely employed, that is, a price based on some industry-wide information such as an average district price published by the California Agriculture Statistics Service. However, many contracts contain more than one price determination method such as stated maximum and minimum, in addition to the reference price. Another component of the price determination examined was the use of bonuses and penalties. Penalties are included in contracts 35 per cent of the time whereas bonuses are only included 10 per cent of the time.

Harvesting

Fraser (2002) found that clauses detailing harvest timing, method, and bins for grape collection only occurred in 25 per cent of contracts. However, transportation of grapes to the winery was found to be important in 41 per cent of contracts. What was interesting in relation to harvesting was the risk associated with leaving grapes on the vines after they have achieved the desired quality parameters. Wineries frequently have to schedule the harvesting of grapes and, as such, cannot pick all grapes at the optimal time. 83 per cent of

growers indicated that the risk associated with this practice was theirs. It came as no surprise, therefore, to find that many growers indicated that the winery should bear some of this risk.

Title and risk

The point at which grapes and associated risks pass from grower to winery is unclear. This issue has been brought to the fore in the Australian wine industry by recent winery collapses. In 2001 Norman's Winery in South Australia went into receivership owing between three and four million dollars to 70 Sunraysia growers. These growers are considered unsecured creditors, and as such are unlikely to receive any money for the grapes supplied. More recently, Haselgrove Wines in the MacLaren Vale went broke leaving growers unpaid for grapes supplied. To avoid this problem, a grower can insert a "retention of title" clause in invoices and other business documents.

Fruit Quality

With the current excess of grapes in some regions, wineries appear to be taking the opportunity to introduce new contracts that include additional fruit quality requirements. The importance of defining fruit quality explicitly in a contract has recently been brought to the fore by the court case between Merewyn Pty Limited v Simeon Wines Limited, 2002, in the NSW Supreme Court. The importance of this case stems from the meaning of the phrase "first fruit quality". It was ruled that this phrase in a contract means "the best" or at least "equal to the best" within a given grape-growing region. In the context of the case ie., Sunraysia District, first quality wine was defined as wine suitable to be bottled and equivalent in quality to Jacobs Creek or Nottage Hill.

In terms of grape quality assessment, Fraser (2002) found that most contracts do not allow for a third party to determine grape quality before, or at harvest. This means that the vast majority of independent grape growers depend on grape quality assessment by the wineries. There is potentially an incentive on the part of the wineries to underestimate grape quality as this reduces the price they have to pay for grapes supplied.¹¹

Control of Viticulture

A winery may wish to stipulate that certain viticultural practices need to be followed, as well as a right of access to the vineyard during the growing season. However, the degree of control appears to be implicit rather than explicit. That is, it takes the form of ongoing advice during the growing season as opposed to a clause in the contract. Alternatively, many growers are supplied with manuals that the winery expects them to use when growing grapes under contract.

Scales *et al.* (1995) note that in the medium-quality grape spectrum wineries are fostering closer relationships with growers. This stronger relationship often manifests itself in increased viticultural and management advice to the grower. Haughton and Browett (1995) also found that wineries have become more closely involved with long-term growers in an effort to maintain and/or increase grape quality. This involvement has taken the form of providing technical advice on water use, chemical applications, canopy management and general vineyard management. Haughton and Browett see this type of relationship as benefiting both parties.

The need to convey advice to growers in the drive for grape quality improvements has in some cases yielded a strengthening of the relationship between winery and grower. Hoole (1997) identified two key areas critical to the success of the relationship: quality and consistency of supply and top quality grower-liaison staff. To aid quality and consistency of supply, Orlando Wyndham proposed to introduce grower reports detailing performance against previous years and against other growers. The role of the grower-liaison officer was considered to be particularly important in building a successful working relationship. More time is spent with growers to give a clearer articulation of supply requirements by the winery, and how the growers can achieve these objectives.

In general wineries do not explicitly dictate in the contract viticultural practice, they offer advice that can take the form of discussions as a result of regular visits, or the dissemination of information by the use of a newsletter or information provided at grower meetings. For these reasons, Fraser (2002) found that 42 per cent of respondents indicated that in their contracts there is reference to general viticultural practice, but specific clauses are only in the contracts of 15 per cent of respondents. The exceptions to this are chemical use and pest control. This is to be expected because of issues of chemical residues in grapes.

¹¹ Several growers indicated that their grapes were considered awful by one winery and excellent by another. This difference in grape quality assessment is a major source of tension in the industry. As one grower commented in the survey return, "There's little value in having one winery praise your product and another (usually your contracted winery) telling you the same grapes are "shit"."

Dispute Resolution

Given the uncertainties inherent in the measurement of grape quality and resulting prices, some contracts have in place an explicit dispute resolution process. Fraser (2002) found that 46 per cent of respondents had a dispute resolution process in place. However, the dispute resolution process may only relate to grape quality assessment and it may not cover price. In recent communication with industry sources it has been explained that new BRL Hardy contracts in the Murray Valley do not contain dispute resolution clauses. Southcorp and Simeon contracts do include a dispute resolution clause but only for price and not grape quality assessment. However, Southcorp contracts contain subsequent clauses that negate the dispute resolution clause.

Contract Renewal

Many contracts include clauses that detail the right of contract renewal. Fraser (2002) found that many of the growers either had contractual renewal clauses or what is referred to as an evergreen clause. That is, the contract would continue indefinitely until either party gave notice of termination (generally two seasons). Goodhue *et al.* (1999) also found that growers in California had contracts that included explicit renewal options much like those in Australia.

Vineyard Assignment

Some contracts have clauses that detail the assignment of the vineyard. This is because a winery may wish to continue to be supplied from a particular vineyard, even after the sale of the vineyard to a new owner. Other contracts actually stipulate that the vineyard must be offered for sale to the winery first, before being placed on the open market for sale. There are even contracts which stipulate that growers cannot sell, transfer or lease any part of contracted vineyard blocks without the written approval of the winery.

4.3. Beyond the Contract

Although a contract is a necessary condition in many cases to facilitate the coordination of the business relationship, it is not sufficient. For both parties to maximize the returns of their business relationship there needs to be mutual understanding and trust. The need for trust in business relationships arises because there is always the problem of incomplete contracts. That is, it is impossible to write a contract that allows for every eventuality. Indeed, of maybe more importance than the number of clauses in the contract is that the contract can be enforced. The only thing a contract needs to ensure is that there is a cost associated with failing to honour the contractual obligation (eg, financial or reputation loss).

In practice, contracts for grapes are considered by many growers as of secondary importance compared to a grower-winery relationship based on trust. For example, Scales *et al.* (1995) noted that because of difficulties in assessing grape quality, to ensure a supply of premium grapes wineries depend on either growing their own grapes,

“or on establishing long-term relations with individual growers based on trust and on the grower’s past performance in supplying a quality product.” (p. 187).

Darling (1999) also acknowledges the importance of trust and respect, in the relationship, and that there should also be a place for frank and open debate about mutual concerns. To this end Darling argues that there is no room for “price bashing or for deliberate misinformation” (p. 10). In the MIA Pritchard (1999a,b) notes that grower-winery relations are frequently based upon a “handshake deal”. So, although there are less formal contracts in existence, there is significant use of informal but socially binding arrangements. Pritchard argues that these informal relations have arisen and benefited from the existence of the statutory marketing legislation in the MIA region. This sentiment is shared by Riley (2000). He observes that because of the changing market for winegrapes, growers increasingly have to focus on maintaining their relationships with wineries.

However, wineries also need to maintain a good working relationship with growers. In early 2003 Peter Lehmann Wines was the subject of speculation in relation to a possible merger and takeover. As reported in the Australian Financial Review (January 17th, 2003) the relationship Peter Lehmann has with growers is a unique business asset and that any bid would need to maintain the relationships.

When the non-contractual aspects of the relationship are breached there can be a breakdown in the formal arrangements. For example, Haughton and Browett (1995) discuss how the industry reacted to actions by individuals that did not maintain the unwritten aspects of grower-winery relations in the McLaren Vale. They note that some winemakers criticized the efforts of some other winemakers to drive the price for grapes down as this militated against profitable grape growing which was considered to be a fundamental component of the flexible and successful wine industry in the region. They conclude on the relationship between grower and winery as follows:

"This ability to act individually and collectively with a supply-chain perspective is a vital ingredient of the success of the wine industry in the McLaren Vale" (p. 56).

Pritchard (1999b) argues how in times of excess/under supply the grower/winery can act in a manner that brings about dispute in the contractual relationship. For these reasons Pritchard maintains that there is no a priori reason to assume that individually negotiated contracts are the most efficient method of supply coordination. This is an important observation. The review of wine marketing legislation under NCP assumed contractual relationships to be efficient, and there is no need for government intervention in the coordination of wine grape supply. However, as Crocker and Masten (1991) argue, frequently "the role and functioning of contracting is oversimplified" (p. 69). Instead, all contracts do is to alter the threat points over which parties bargain. There is no a priori reason to assume that the use of contracts will yield effective or efficient outcomes.

Perhaps the concluding comments of Taylor (1996), a lawyer, are the most important in regard to contract use. In an article stressing the need to have a properly designed and functional contract he is of the opinion that a written contract is not "a replacement for a relationship of trust between producer and grower or producer and distributor." (p. 170). As Taylor stresses, both parties need to be happy to deal with each other and that they are working together for their mutual benefit.

4.4. Contractual Concerns

Contract Enforcement

Scales et al. (1995) observe that the legal status of many contracts is uncertain. The difficulties alluded to by Scales et al. in relation to contracts can be traced back to the problem of measuring quality and the lack of precise objective criteria to gauge quality. A submission by the South Australian Farmers Federation to Scales et al. based on best legal advice suggested that the typical contract in use was "unenforceable by either party." (Scales et al. p.188). This view was supported by Southcorp Wines. However, KPMG (1999) concluded that the lack of faith in contracts as legally binding instruments was misplaced. In particular, they argue that recent amendments to the Trade Practices Act in 1998 dealing with unconscionable conduct provide extra protection to growers in dealing with wineries. The legal judgment in the NSW Supreme Court (i.e., *Merewyn Pty Limited v Simeon Wines Limited*, 2002) would also suggest that certain aspects of these contracts are legally binding although the incomplete nature of contracts cannot prevent there from being reasons for dispute to arise.

However, growers remain skeptical as to the legal standing and protection offered by many contracts. Some of the problems encountered with contract use, it is argued by Scales et al. (1995), might be mitigated by standardizing contracts. As part of this process Taylor (1996, 1999) proposes that a contract should be written as this provides evidence of the contract, and that although unwritten (i.e verbal/handshake) contracts are legally binding they are much harder to prove compared to a written agreement. In addition, the process of putting the contract together can help both parties understand more clearly the issues being covered.

Price Determination

Until the mid to late 1980's wine grapes were subject to minimum pricing arrangements. Minimum pricing has been replaced by indicative pricing. For example, in South Australia the 1991 South Australian Winegrape Industry Act replaced legislated minimum pricing with an indicative pricing structure. Prices are announced in November and December. In the Riverland, in 1996, and the rest of South Australia in 1997, these prices were quoted by district, variety and Baume level.

The Winegrape Growers' Council of Australia now runs the annual National Winegrape Outlook Conference. This brings together growers, wineries and other industry bodies to collate and analyse data on the supply and demand for grapes. This forum provides an important source of information (e.g., forecasts yields, quality and price for forthcoming harvest) that can form the basis of negotiations between growers on wineries and establishing indicative prices for grapes by variety and region.

An important piece of data used to help determine indicative prices is last year's weighted average price by variety. However, there are problems in using the previous year's weighted average price. First, this price is found in wine utilisation surveys constructed for grape-growing regions. The price reported by wineries is the price expected before the addition of bonus payments for superior grape quality that manifests itself in higher value wine. For this reason the district average weighted price is assumed by many to be downwardly biased. Second, the number of wineries reporting the price paid for grapes is falling. This means there are issues regarding how representative the price that emerges in the utilisation survey really is. Therefore, despite the flow of information, the actual determination of price and how it relates to grape quality is a major problem.

The concerns regarding price determination could be resolved if a transparent pricing formula is written into a contract. The problem with many formulas, such as base price plus CPI, is that they cannot respond to changes in supply and demand for grapes. Furthermore, a formula will only be as good as the data used in it. If the data entered into the formula (i.e., average weighted price) are themselves subject to uncertainty then the resulting price may not be in keeping with the expectations of the grower or winery.

Another problem with price determination is that the wineries, via the contractual arrangements, generally dictate the quality of grapes to be supplied. If wineries stipulate in their contracts “first quality grapes” to be supplied from all growers without accompanying quantity restrictions, there may result an excess supply of quality grapes and as such, the price paid will fall. In general, the incentive for growing “first quality grapes” is a price premium but with excess supply this will disappear. So it might be the case that some wineries, as an insurance strategy, can in periods of excess supply push up the quality of grapes supplied, whilst at the same time letting market forces push down the price paid.

Another issue that is raised in relation to higher quality grapes is that the price paid is frequently insufficient to compensate the cost of additional inputs and the careful cropping and yield control techniques that reduce revenue. Most growers are happy to embrace production techniques that yield higher quality grapes but they need to be offered an appropriate set of incentives. Fraser (2002) found that many growers would be happy to accept a minimum pricing arrangement for grapes supplied with bonuses/penalties for quality. However, the minimum price would not be set each year but would be fixed and possibly tied to the CPI for the length of the contract. Growers appear happy to trade price uncertainty for lower but certain returns.

Several alternatives have been proposed to resolve many of the difficulties associated with pricing wine grapes. For example, Golan and Shalit (1993) used hedonic pricing models to estimate grape prices. They examined grape production in Israel to show how hedonic estimation techniques can be used to reveal a quality-based measure of price. This technique provides a possible means by which to link the price paid for grapes in terms of their contribution to wine quality.

Another approach that has been considered by Taylor (2000) is the use of futures contracts. The purpose of a futures contract is to reduce the risk associated with the exchange of a commodity. The grower could in principle lock in a price for supplying grapes to a given specification on a particular date in the future. The winery can in turn also lock in a buying price for grapes as well as securing the necessary level of supply. Clearly, futures contracts are designed to yield the same benefits that are meant to accrue from individual contracts currently employed. However, it is unlikely that we will see the development of futures contracts for wine grapes. Apart from the uncertainty associated with production of grapes as well as perishability it is highly likely that this type of futures contract will be too thinly traded. There are many varieties of grapes that are sold at different points on the price spectrum within particular grape growing regions. There is also a regional variation in price by variety. In this context it becomes very difficult to envisage how a futures contract would be attractive to enough growers and buyers to ensure that the market was sufficiently liquid.

Issues of Market Power

The issue of price determination of grapes has also become bound up with the exercise of excessive market power by wineries. Many growers are of the opinion that the wineries are able to exploit their power in the business relationship even when there are contracts in place. For example, a clause in a 2001 contract from a winery included the following terms:

“13. Market Disruption

If there is, or is likely to be, a significant decrease in demand for Australian wine or for any variety of Australian wine or a significant oversupply of Australian wine or any variety of Australian wine or a significant disruption in the market for Australian wine or any variety of Australian wine for any other reason, the Purchaser may do the following by notice given to the Grower:

terminate this agreement; or

Suspend this agreement, until further notice, as to all Grapes or as to the Grapes specified in the Purchaser’s notice.”

This clause places the grower entirely at the discretion of the winery in relation to interpretation of market trends. Taylor (2000) highlights the asymmetric nature of market intelligence noting that wineries will frequently know far more than growers as to changes in demand and costs of production.¹²

¹² The issue of market power is not restricted to the wine grape industry. In a submission to the Federal Government Review of the Trade Practices Act (see web site for details - www.tpareview.treasury.gov.au) AFFA (2002) states, “many primary producers are faced with an imbalance of market power in their vertical commercial relationships” (p. 10).

There has historically been legislation in place to deal with the potential excessive use of market power by wineries. For example, in 1933 the Wine Grapes Marketing Board was established to coordinate the supply of grapes in the MIA region of NSW. The objective of the Board was to act as a statutory marketing authority so as to “provide farmers with a means of countervailing the market power of the purchasers of their product.”(NSW, 2000, p.7). However, it is now considered appropriate to employ the Trade Practices Act to deal with abuses of market power rather than introduce countervailing marketing arrangements. Furthermore, it is suggested that the existence of marketing legislation may “insulate growers from developing marketing skills and impede the development of contractual arrangements which specifically address the range of concerns of individual growers and wine makers” (NSW, 2000, p. 13).

Current efforts to reduce the asymmetry of information in the wine industry revolve around forums in which information is shared and indicative prices for grapes are announced. Interestingly, KPMG (1999) found that indicative prices had little impact on actual prices for grapes. This is possibly not surprising as the indicative price takes the previous year’s price as a key input into its calculation. There is no reason a priori to expect prices on a year-to-year basis to be related.

An approach that we would expect to see if issues of market power are significant is the emergence of grower organizations (subject to certain legal restrictions). There have been attempts by various grower groups to form alternative negotiating arrangements and alter contract content. The template being followed is that of CCW in the Riverland of South Australia. CCW is an 800 member grower-owned cooperative that acts as a seller of all produce to a single winery – BRL Hardy. The members of CCW benefit from the bargaining power that CCW is able to bring to dealing with BRL Hardy. Moves are afoot in the Murray Valley for a similar organization to form with a membership of approximately 400 growers.

The existence of cooperatives in the Australian wine industry to offset the power of wineries is not a new phenomena. There is a history in Australia of growers forming cooperatives to process and sell their own wine. An example is the Barossa Co-operative Winery, owners of the Kaiser Stuhl brand that existed between 1931 and 1982 when it was sold to Penfold Wines (Steinberner, 1994).

Although beyond the scope of this paper it is interesting to speculate as to why cooperatives are not currently more prominent in the Australian wine industry. Given the nature of the wine producing sector, a small number of very large participants and a competitive fringe, the motivation for the introduction of cooperative structures would appear to be strong. Moreover, Plunkett and Kingwell (2001) argue that evolving marketing chain arrangements in Australian agriculture favour the development of farmer cooperatives.¹³

Another way in which the concerns of growers regarding the behaviour of wineries may be addressed is through the introduction of a code of conduct. In April 2003 Winegrape Growers Council of Australia and the Wine Makers Federation of Australia Industry Liaison Committee agreed for the need for the inclusion of dispute resolution clauses in all contracts. This clause would provide a process to resolve differences either by joint negotiation or referral to an independent third party. The committee is now in the process of developing a standard clause to be used in all contracts.

5. Summary and Conclusions

This paper reviews the literature examining contracts to coordinate the supply of wine grapes in Australia. Contracts are perceived as being an important mechanism for coordinating the supply of grapes in Australia. In the current climate of over-supply, a contract is seen as being essential in selling grapes.

The scientific literature reveals that despite improvements in the measurement of grape quality there is still significant room for improvement. Problems with quality assessment arise because of the complex relationship of grape characteristics and the uncertainty associated with the various methods of quality assessment. Undoubtedly there will be advances in technology that will improve grape quality assessment. However, the complex nature of grape quality is such that differences of opinion will remain for the foreseeable future.

The economics literature reveals further uncertainty in that there is very little existing research that has documented or examined contracts in this industry (or other Australian primary industries for that matter). From the information that is available, contracts are an important coordination mechanism. However, there are problems that relate to their design and implementation as well as the non-contracted aspects of the business relationship between grower and winery.

It is unlikely that these problems will be resolved quickly. Take the issue of price determination for grapes. Whilst uncertainty surrounds quality assessment there will always be an element of distrust between many

¹³ The role of cooperatives to provide balance in negotiations between primary producers and processors has been considered as part of the Review of the Trade Practice Act. Several submissions to the review (e.g., NFF and AFFA) supported the role of cooperatives.

growers and buyers in terms of the price paid for grapes. The issue of quality is further compounded by fluctuations in supply and demand. Supply of grapes is to a certain extent dependent on the season and demand will change conditional on the preferences of consumers. In addition the perishability of grapes means that there is a limited window of opportunity to conduct protracted negotiations if problems occur. All these issues taken together mean that unless grower and winery have a good working relationship, based on trust, there will always be the potential for problems in the exchange of grapes.

Given the number of unresolved issues that face this industry there are several opportunities for further research. Of maybe most importance is a closer examination of the price discovery and determination process. With the growth in contracts and the differences in industry structure between growers and wineries the need to understand this process will increase. A related topic is the extent to which indicative grape prices help in the efficient operation of the market. There are currently a number of concerns being expressed about the information contained in these prices. There is also a number of interesting industrial organisation questions that could be addressed. For example, an understanding of the reasons why wineries buy or make (grow) grapes could help to inform grape growers as to the likely evolution of the industry. There are also significant variations in grape growing regions and it remains to be seen if there are associated differences in contracts. Contract theory would suggest that this would be expected.

Finally, there are several lessons that other industries might learn as a result of the use of contracting in wine grape supply. First, for contracts to work business relationships must be based on trust. Irrespective if the contract, written or verbal a lack of trust will inhibit the efficient business coordination. Second, there are obvious benefits from having a written contract. The act of formally constructing a contract helps to clarify thinking in terms of what is important in a particular context. Third, there are number of clauses that should be included in all contracts. In particular, if there are likely to be problems because of differences in opinion with respect to quality measurement and/or price determination a contract should include a dispute resolution clause. The recent wine industry agreement to develop and incorporate a standard dispute resolution clause in supply contracts provides an interesting example that many other industries can learn from. Four, the changing marketing environment in Australian agriculture and the increasing importance of contracts to coordinate supply means that primary producers need to be aware of the role and limitations of the Trade Practices Act and the role of the ACCC.

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