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Title: Collaborating to compete: the imperative for the South Australian citrus industry

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Abstract:

This paper arises from a series of economic reports into the South Australian citrus industry undertaken by the Department of Primary Industries and Resources South Australia (PIRSA).

The citrus industry faces a number of significant challenges. Future prosperity depends on the response. Principles of Transaction Cost Economics are drawn upon to understand the nature of the investments involved in citrus growing, permitting the identified problems to be viewed in light of inefficiencies and opportunism and the solutions to focus upon collaboration. Collaboration, in both the vertical and horizontal dimensions, through both formal and informal mechanisms, is presented as the key imperative for the industry.

The themes emerging from our analysis present a significant departure from the competition-focussed policies that have dominated government involvement in industry development.

Key Words: Citrus, Collaboration.

All responsibility for the contents of this paper remains with the authors. The views expressed in this paper are the author's and should not be taken to represent the view of the South Australian Government.

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Introduction:

This paper follows a series of economic reports undertaken by the Department of Primary Industries and Resources South Australia into the South Australian citrus industry in 2005 (PIRSA 2005a, 2005b, 2005c). The work was largely a response to problems encountered in season 2004-05 which led to significant quantities of good fruit being dumped but it is also part of a larger process to assist the industry in determining its future strategic direction. Following the release of the analysis into the citrus industry, PIRSA has been facilitating a series of industry workshops aimed at formulating a strategic plan.

The citrus industry in South Australia faces a number of significant challenges and the way in which these are confronted will largely determine its future prosperity. Principles of Transaction Cost Economics are drawn upon as a means of understanding the nature of these challenges by identifying problems in terms of inefficiencies and opportunism, the solutions to which revolve around one principal notion – collaboration. Collaboration, on both vertical and horizontal dimensions, through both formal and informal mechanisms is presented as the key to the future prosperity of an industry that oversees a significant competitive advantage.

Emerging from this focus upon collaboration are implications for government policies that in the past have principally been geared towards intensifying the levels of competition in an industry. This paper does not argue that competition should be done without, only that for a decade or more, under the influence of market theory, too much stress has been placed upon it. The time has come to re-allocate attention towards collaboration rather than rivalry.

Section 1: Overview of citrus production

In citrus there are two main channels for the distribution of fruit, fresh consumption and processing (predominantly as juice although some small quantities are used for other purposes). Fruit destined for fresh consumption can be consumed on either domestic or export markets.

In the South Australian industry, oranges are the predominant citrus fruit, representing approximately 80% of total citrus production in 2005 (PIRSA 2005b, p.72). Within the orange variety there are two main sub-varieties - Valencias (44% of total citrus production in 2005) which are primarily used for the production of juice and Navels (35% of total citrus production in 2005) which have better characteristics for fresh consumption while also being less suitable for juicing (PIRSA 2005b, p.73). Returns are much greater (anything from 2-20 times) for fruit sold as fresh rather than for juice.

Globally, citrus consumption in developed nations is more or less static with growth in the juice segment offset by declines in fresh. Only the premium segment of the fresh industry is growing. In developing nations growth rates are greater but from a low base. Overall, developed and developing together, global production and consumption are growing at around 3.5% per annum (PIRSA 2005b, p.70). Within these developments are moves towards the so-called 'easy-peeler' varieties, Tangelos, Mandarins and Navels within the fresh fruit segment.

Australian production is increasingly export focussed with exports of fresh citrus fruit growing strongly at approximately 5%, much faster than the 1% growth in domestic sales. Total South Australian citrus production (approximately 25% of Australian total) has been declining slowly, with slow increases in exports of approximately 1.7% (PIRSA 2005b, p.71).

These facts are partly the result of a gradual shift in focus away from the production of fruit most suitable for juicing, Valencias, toward produce more consistent with South Australia's competitive advantages which lie in the production of high quality fruit (mostly Navels) for fresh markets, of which exports are and will continue to be the key to growth. Indeed, the Riverland region, where almost all South Australian citrus is grown, has a competitive advantage in high quality fruit because it possesses the right environmental and climatic conditions. In fact the Riverland is widely regarded as the best place in the world for producing high quality Navels.³ All this means that the focus for the South Australian industry is and should continue to be increasingly on fresh fruit for domestic and export markets, with juice production an adjunct that can absorb excess fruit but only on a marginal cost recovery basis at best.

Section 2: Challenges confronting the industry

PIRSA encountered many challenges facing the citrus industry, having as much to do with the nature of citrus production as with the people that undertake it and the systems they institute. We focussed upon a number of key problems. South Australia has some prime citrus growing regions but competitors in other nations are also actively developing their industries and it is possible to be displaced from export markets and local retail chains as other nations intensify efforts. Once a market is lost, it is difficult to regain.

Our analysis focussed initially on the problem of large quantities of good Riverland oranges being dumped in 2005. The problem can be explained as the complicated interplay of a combination of factors typical in the industry - variability, rumour and gaming. While there were some peculiar issues in the last year⁴, the problem arose fundamentally because citrus production (like many horticulture crops) is inherently variable with an irregular but roughly biennial variation between bumper and lean harvests. Since citrus production varies significantly and somewhat unpredictably from one year to the next, this can mean that there is a relative shortage of fruit in some years and a relative abundance in others. One outcome of this is that the proportion of total production going to the three uses: fresh domestic consumption, juice or exports, varies from year to year. The inherent variability of citrus production makes it difficult to supply demanding markets with the right quantity of high quality fruit at the right price and time, placing particular importance upon effective communication along the supply chain.⁵

³ For example, DNE fruit, accounting for nearly all of Australia's citrus trade with the US says that local fruit are; "praised by many as the best tasting navels in the world" and that they are, "America's favourite summer orange" (PIRSA 2005b).

⁴ These include:

- Cool-stored summer navels marketed later in the season within the traditional timeslot for early Valencia
- Fresh premium orange juice sales declined, partly due to price increases and lower perceived quality in this category because of concentrate addition.

⁵ Particularly so with regard to crop forecasts.

That importance was evident in the problems which emerged in 2004-05. After crops of Valencias in South Australia had been lighter than anticipated for two successive seasons, forecasts were initially pessimistic but later revised when it became clear that yields would be better than expected. The early talk of shortages and expectations of subsequent high prices had tempted some growers to hold back their uncontracted fruit in anticipation of higher prices later in the season. Some juice processors responded by increasing their frozen juice imports to ensure they could meet their commitments.⁶ At the same time, leaving oranges on the trees meant that yields and fruit sizes increased further, adding to the emerging glut. The end result was a large over-supply, with much of the Valencia crop in particular remaining unutilised, despite juice processors honouring all contracts and more.⁷ This over-supply of Valencias also affected the market for juicing-grade Navels (even though they are inferior to Valencias as a juicing fruit).

Another challenge is more concerned with the nature of citrus fruit, which imposes significant difficulties on agents along the supply chain. The quality of fruit produced and sold along the citrus supply chain is assessed on two grounds, taste and appearance. Both are crucial characteristics, stringently assessed in demanding market channels and thus they determine marketability. However, they do not necessarily correlate: good appearance characteristics need not translate into desired taste. Indeed, there is an invisible dimension to the quality of a particular citrus fruit.

Many of the factors that determine taste and appearance relate to the specific processes applied in growing the crop so it is this step which is crucial in quality control and assurance. The subsidiary steps involve logistics along the supply chain, which too have their difficulties, because citrus are seasonal fruit and unlike crops such as apples they are difficult to store, making the time of crop maturity critical in supplying the premium, fresh market. It makes the logistics of supply to fresh markets a major factor and this places importance on the linkages that enable it to be monitored and controlled. The lack of such linkages can cause significant challenges, impacting not only on particular agents along the supply chain but indeed the region and the fruit variety itself. For example, in export markets although Navels from the Riverland are differentiated from fruit of other nations and other varieties (thus possessing a slight departure from a simple commodity) they are not differentiated between fruit from any particular grower or other agent from the Riverland.⁸ This means that all fruit will have a bearing upon the reputation of the entire supply. Any opportunistic behaviour or negligence in the way of quality control can be to the detriment of everyone, creating a situation of inherent interdependency amongst growers, packers and agents in the Riverland.

In export markets, there are also some other challenges for the industry. As South Australia's competitive advantage is recognised to lie in supplying high quality fruit for fresh markets and exports are the main focus for expansion of the industry, developments in these markets play a significant role in the prosperity of the industry. A number of recent problems have emerged including:

- Australian citrus had been getting into China through Hong Kong (the so-called 'grey trade') but this has been recently curtailed. It is now opening up again.

⁶ Typically in the juice industry, processors market a range of products using in varying degrees, juice from local fruit and imported Frozen Concentrate Orange Juice (predominantly from Brazil).

⁷ Berri Ltd alone purchased an additional 30% above contract obligations (PIRSA 2005a)

⁸ This is particularly so for fruit exported to the United States' market.

- The appreciation of the Australian dollar has reduced competitiveness in price sensitive markets such as Malaysia
- That has been exacerbated by the growth in Navel exports from China
- There are on-going problems with exporting to Japan (Sanitary and Phyto-Sanitary issues)

Additionally, there are various problems associated with the characteristics of South Australian production, particularly the small scale and the conservative attitudes of many in the industry. The historical legacy of the Riverland region has meant that orchard blocks are generally of small scale and many growers undertake more than one activity on these blocks, often combining horticultural crops in the 'fruit salad' operations of grapes, citrus and stone fruits. Some estimates are that 80% of orchards are of that sort (PC, 2002, p.43). Many growers also supplement their income by including non-farm or off-farm sources. Work by the Productivity Commission (2002, p.80) has claimed that as many as 2/3rds of all Australian orchards are of insufficient size – and South Australian orchards are generally smaller than the national average. The great bulk of Riverland orchards are quite small: 75% are less than 10 hectares and 90% are less than 20 hectares; the average is 11.7 hectares⁹ (PIRSA 2005b, p.28).

Highlighting the relevance of the generally small scale of South Australian orchards, data based on work by PIRSA and the Productivity Commission on the costs and relative importance of various inputs into citrus growing indicate that overheads are high, high enough to suggest that citrus might be grown more cheaply in larger orchards.¹⁰ Further to the fact, PIRSA (2005b, p.29) analysis of long run average cost curves for Navel and Valencia production in South Australia, indicate that economies of scale in conventional citrus growing are significant and that view is broadly consistent with other studies which have shown that larger orchards are generally lower cost, more profitable operations.¹¹

Apart from impacting directly upon production costs, small scale can also inhibit for example, the adoption of technologies and application of expertise that can enhance yields, quantity and consistency. Most of these factors will in turn impact upon production costs. Larger scale also makes it easier to institute deeper and closer contractual and other relations with downstream citrus users.

Accompanying these physical legacies are a prevalence of traditionalist attitudes and an industry wide culture of distrust, altogether restricting the uptake of new leading technologies. An example of such technologies is the Advanced Fertigation Technique, by which the tree is watered and fed simultaneously and virtually constantly.¹² There are some who are introducing the new technologies, especially the new corporate players, but they are few and fewer still are taking advantage of the expanding and under-supplied market for organic citrus.

⁹ The average hides differences within the Riverland, varying from 19.9 ha in Renmark, to 11.8 ha in Waikerie and 7.5 ha in Berri.

¹⁰ Overheads may range from 8-20% of total inputs into citrus growing. For table displaying the relative importance of inputs to citrus growing, see PIRSA (2005b, p.28).

¹¹ PIRSA's long run average cost curves show the costs of producing Valencia and Navel oranges from orchards of various sizes. For further information see PIRSA (2005b, p.29).

¹² PIRSA has explored the feasibility of different production systems building on previous feasibility analyses of conventional, Advanced Fertigation Systems (AFS) and Martinez Open Hydroponic Technology (MOHT) systems, undertaken by the CSIRO (Colloff et al, 2003) and private research by Yandilla Park Ltd. For further information see section 4.3 (PIRSA 2005b).

Section 3: PIRSA's analysis

PIRSA's analysis of the citrus industry was influenced by a body of thought variously described as the New Institutional Economics or as Transaction Cost Theory or, after its founder, as Coasean Theory.¹³

We focus upon so-called, idiosyncratic investments made along the supply chain. In other words, on investments which are dedicated and sunk so that they cannot be costlessly switched to transactions with other parties or to other uses. Ownership of idiosyncratic investments exposes the investor to the possible extraction of unpaid for benefits or the imposition of uncompensated costs. In these circumstances competition becomes relatively ineffective – to the extent that it is costly to switch partners, relying on competition provides scope for inefficiency.

In order to govern this potential for opportunism and so restrict the scope of inefficiencies, parties specify, monitor and enforce contractual arrangements. The costs of doing so (and the costs of doing so imperfectly) are the transaction costs involved and the theory says that the organisational forms which typify modern capitalism arise because they economise on the total of these costs. Economic organisation can take various forms along a spectrum from control within a single entity, through various forms of collaboration (e.g., joint ventures, industry cooperatives, collaborative institutions, etc.), to the extreme where no organisation is needed because the assets are not idiosyncratic and so the transactions are governed effectively by competition

Applying these notions to citrus production, we see that the major, sunk investments are those made by growers in their orchards. There are others, such as those idiosyncratic investments made in relations with others in the supply chain, investments that must be written off in competitive switching. However, focusing on the growers as a means of illustration, they are committed for as much as a generation to a particular variety, to a particular orchard layout, to a particular number of trees.¹⁴ They can switch among buyers, at least among those close at hand, at relatively low cost but they cannot change what they produce or its volume. This inability to switch exposes growers to the opportunism of those with whom they are interdependent, particularly to those down the supply chain and to other growers.

The ability of others to exploit growers' inability to switch by imposing costs or extracting benefits without payments amounts to opportunism, to take opportunities for personal gain at the expense of trading partners and unexpected by them – what Williamson calls, “self interest seeking with guile”. To govern this potential growers can choose between using the spot market (i.e., relying on competition without contractual arrangements and resulting obligations) and suffering the transaction costs that would arise from this exposure, or incur different costs in devising institutional and/or contractual arrangements.

¹³ This paper's exposition of Coasean theory relies heavily on the work by Oliver Williamson, especially his 1985 classic “The Institutions of Modern Capitalism”.

¹⁴ Citrus orchards are generally agreed to have a lifespan of 25 years, although this varies as the older the tree becomes the less productive are its yields.

Two of the specified problems in the industry, the dumped oranges in 2004-05 and some of the problems on export markets can be described effectively in terms of idiosyncratic investments and opportunism. Firstly, in regards to last year's situation, even without opportunism, uncertainty alone can cause the problem that arose, given that orchards are unchangeable in all but the long term. However, it was not uncertainty alone that was to blame. Through field work conducted in the Riverland, it was asserted that the inaccurate expectation formed by growers that last year's would be a small crop with rising prices was actually a matter of rumour started by someone with a vested interest.¹⁵ It is not hard to think of a number of scenarios where a player, a grower or a packer or an agent, might seek advantage by fomenting false views about the season's crop. Nor is it hard to see how a more trustful environment, engendered by a vibrant industry organisation, or closer cooperation and greater transparency among growers, packers and processors, such as might be found in collaborative relations, could have lessened the problems or avoided them completely. The opportunism might pay off for the rumour-monger (or it might not) but we know it will harm some industry members and damage industry relations in the longer term.

The other evident problem is that related to export markets. There again PIRSA heard evidence of small packers who have faulted on quality control on the basis that their cartons would be part of a bigger shipment and were therefore unlikely to be checked. That too is opportunistic and it exploits costs sunk into developing relationships and contractual arrangements among the parties. Such opportunistic behaviour is symptomatic of a fractious and disengaged industry, where individual agents do not see how, when it comes to reputation of fruit variety and of the region as a whole, there is a need for an interdependent approach to matters such as quality control. Finally, PIRSA also heard of export agents who deterred the use of single desk type arrangements for exports by threatening to refuse to handle the growers' and packers' other fruit. Again, the costs of switching to other agents meant that the growers and packers put up with the inefficiencies. They should have joined their fellows in pursuing the common interest of servicing the export market by some collaborative means.

Section 4: Recommended solutions for industry

Having described some of the major challenges facing the industry and understood some of them with the help of transaction cost principles, we turn now to some of the implied recommendations for the citrus industry. PIRSA's recommendations are principally that industry should collaborate. Collaboration is required in both the vertical and horizontal dimensions. Vertically, the citrus industry needs closer links along the chain between end users and growers. There are few long term contracts in the citrus industry so that growers are unsure if each year's crop will sell; packers are unsure how much fruit will be available and when and hence where they will place the quality thresholds (which determine how much fruit is packed for different quality-conscious uses and how much is left over for processing); retailers too are unsure how to ensure they have enough fruit of the right qualities. More and better contracts along the chain will improve but not completely resolve each of these issues. The virtual absence of such arrangements makes it particularly difficult to operate in this industry given the problems of variability, rumour and gaming outlined previously.

¹⁵ PIRSA interviewed growers, packers and juice processors in the Riverland.

Collaboration among separate, private players is however not the only solution. Sometimes it will be more efficient to bring some links along the supply chain within a single firm, so industry development through mergers and acquisitions and other firm-based rationalisation, also fits within our assessment of possibilities. Others include joint ventures established to deal with particular issues. Examples of such collaborative structures include cooperatives to link growers, packers and individual export markets or to institute logistical changes to improve the supply chain. Given the scale issues identified in production, for some in the industry rationalisation might be inevitable.

One of the difficulties in developing vertical collaboration is the lack of collaboration in the second, the horizontal dimension. There are some organisations that link growers together but these are much associated with the old style cooperatives, most of which have simple, democratic structures and so fall into the control of the many small growers, thereby discouraging the involvement of big players. New forms of collaboration are required within structures that provide incentives better aligned to economic efficiency, such as those seen in wine grapes with organisations such as CCW Cooperative Ltd.¹⁶ In citrus, one such arrangement is the Riversun collaborative arrangement that brings together growers and packers to service the US fresh citrus market and it does very well indeed.¹⁷

Horizontal collaboration can also address issues confronting a single link of the supply chain, whether growing, packing or processing. For example, we previously referred to the new Advanced Fertigation techniques for growing citrus. These technologies are expensive with high, sunk up-front costs. They can be introduced by smaller firms selling out to bigger firms but also by a cooperative of small growers collaborating to share the costs and benefits of introducing fertigation. Sometimes collaboration among firms is superior to organising within a single firm and the matter turns on a composition of the transaction costs associated with each alternative. That insight is important as an alternative to the get big or get out mantra so often heard in agriculture¹⁸. Regarding the application of these new technologies, they might in fact require collaboration on a larger, regional level, as any physical restructure of orchards to accommodate these new technologies might benefit from joint problem solving with the other dominant industries in the Riverland region such as the wine-grape industry (given the so called 'fruit-salad' structure of many blocks).¹⁹

We believe that the common interests among citrus industry members are far more important than the interests that make them rivals and as such, we have presented collaboration as the key. This is particularly so given, as we explained previously, the industry and regional interdependencies in effective export marketing and quality assurance given the lack of differentiation between citrus fruit from the Riverland when it arrives in export markets. Fruit exported from the Riverland to markets overseas (mostly Navels) do not have brand recognition associated with the particular grower or packer from which it originated. Any opportunistic behaviour or negligence in the way of quality control stands to harm everyone, creating a situation of inherent interdependency amongst growers, packers and agents in the Riverland.

¹⁶ Examples of such structures have been variously termed 'new generation cooperatives' (UManitoba 2005)

¹⁷ A review of three successful examples of collaborative marketing in citrus is provided in PIRSA (2005b, p.25). Riversun's website can be accessed on: [<http://www.riversun.com.au>]

¹⁸ Fargher (2005), CEO of the National Farmers Federation outlines his belief in the continued relevance of this notion, for Australian agriculture.

¹⁹ PIRSA (2005b) comparisons of production systems indicate that new technology systems such as AFS and Open Hydroponic Technologies may require consolidation of land and orchards.

All fruit originating from the Riverland and arriving on export markets are essentially ambassadors of not only the variety, but the region and possibly country as a whole, this recognition or engagement needs however to transmit right up the supply chain back to the grower.

Section 5: The future in government policy

Although this paper has not aimed to delve into the implications of our analysis or collaboration among private players more generally upon the role of government, we do make two final points alluding to that effect. The first concerns the implication of our analysis and thus of collaboration, upon competition. We argue in this paper that competition is generally a weak force because of idiosyncratic investments. In such cases competition becomes relatively ineffective - to the extent that it is costly to switch partners, relying on competition provides scope for inefficiency. Further, as noted previously, we regard the common interests that exist among citrus industry members as being far more important than the interests that make them rivals. Having said that, we do not argue that competition should be done without, only that for a decade and more, under the influence of market theory, too much stress has been placed upon it. The mantra previously provided to agriculture has been to compete, and within this, to get big or get out. Although for some, as previously mentioned, the merger/acquisition/rationalisation choice might provide the only options, collaboration in its various forms poses a significant opportunity for not only efficiency gains in the industry as a whole but for many players to stay within the industry.

Secondly, as part of the strategic planning process for the citrus industry and following the release of PIRSA's review papers, a series of industry workshops have been conducted in the Riverland. The workshops were held in several locations in the Riverland and brought together approximately 90 industry participants, including growers, corporations, packers and processors in an effort to ensure that each member of the citrus industry had an opportunity to identify issues and solutions and have their views included in the Industry Strategic Plan.

Although there were some recognised faults with the resulting outcomes, the process was praised by the industry. In fact it has been stated by many that merely getting this fractious and disengaged industry to come together, recognise their common future and collaboratively work to find solutions was a major step forward, for the industry and indeed the Riverland region.

This is a prime example of government making a significant contribution to an industry. In such examples, government involvement deals more with people-centric factors – initiatives that improve understanding among industry players, codes of conduct that set a minimum standard of behaviour, etc. The importance of such initiatives is undeniable and has been highlighted in other Australian industries such as in the case of steel. In outlining some of the successful collaborative initiatives undertaken on the part of Smorgon Steel and Onesteel, chairman Graham Smorgon (2001) stated that; "...it was the change in attitude that made it possible...in contrast to the earlier relationship with BHP, Smorgon Steel and OneSteel management, set aside the baggage and war mentality of the past". He adds that following the lessons learnt from this process; "the door is open to discuss other matters of common concern, such as industry standards, with benefits to Australian industry as a whole".

The citrus industry in South Australia's Riverland has shown us how people-centric factors can have such a significant bearing upon an industry. We have found that initiatives promoting a collaborative culture can go some way to reducing the incidence of opportunism and the costs of constraining opportunism.

The themes emerging from our analysis pose many implications for the role of government. We have only alluded to that fact in this section and it is an area needing further analysis and elaboration, a task that PIRSA intends to pursue together with industry and other relevant stakeholders.

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