

Sugar supply chains and regional development

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Abstract

The coastal Queensland regions are heavily dependent upon the sugar industry and are likely to remain so. The interplay between sugar industry and regional development is little understood beyond the historical record. Yet current reform proposals place great store on regional initiatives to rejuvenate both sugar and its host communities. Such proposals are at best naïve as will be seen in this paper.

A key feature of sugar and like industries is a high degree of supply chain interdependence which is embedded in place and time. Reflecting this, sugar regions have a more diverse skills mix and a more advanced manufacturing and services capability than many other agriculturally-oriented regions, notably broadacre grain and beef.

Central to the emergence of such a regional industrial structure are inter-industry transactions. These will be considered in both an input-output framework and from a transactions cost basis. Associated insights point to the inadequacy and likely failure of initiatives based on current “efficiency/productivity” thinking. Alternative ways to view the industry are discussed along with a recommendation that those involved with sugar regionally revisit current plans.

Sugar supply chains and regional development

Relationships between those in sugar supply chains and some implications for regional development are explored in this paper which is in five main parts:

- 1 Transactions cost economics is reviewed
- 2 Perceptions on an economy are conceptually explored
- 3 Relations between supply chains and transactions costs are considered
- 4 Representations of sugar, transactions and supply chains are advanced
- 5 Some implications are briefly drawn

It will be seen that the use of limited perceptions on transactions is encouraging somewhat foolhardy thinking and flawed policy prescriptions with implications not only for those in sugar but also for the regions which host the transactions.

1 Transaction Cost Economics (TCE)

TCE pertains to the co-existence of different forms of organizations and mechanisms for co-ordinating economic transactions: firms, markets, and hybrid forms of governance of exchange relations. It 'emerged as a reaction to the neoclassical theory of the firm which ignored the friction inherent in transactions' (Wilson, 1996). The seminal work of Coase (1937) identified this limitation of the neoclassical paradigm.

Williamson (1985, 1991) has since developed Coase's original insights to draw together the core concepts of "transaction cost" in TCE. Williamson reasoned that bounded rationality and opportunism are characteristic of human behavior and, when incorporated with informational asymmetry and asset specificity, result in transactions costs. Wilson (1996) referring to Cheung (1992), classifies these dimensions as 'a spectrum of institutional costs' including those of information, negotiation, and monitoring (enforcement) costs.

Loader (1997, p. 25) adds that Williamson (1979) further distinguishes between:

- 'Frequency' (volume/number of transactions per time period) as the 'cost-determining attributes of individual transactions', and
- 'Uncertainty' as the 'environmental, political, social or economic risk' related to transactions.

These additional characteristics lead to costs in carrying out transactions.

The human characteristics encompass all informational activities that influence transaction costs within a supply network and on the efficiency (minimization of transaction costs) of alternative transaction modes. Therefore, simply stated, transaction costs are the costs of gathering information prior to a transaction, negotiating the actions of carrying out the exchange, and monitoring enforcement to ensure that pre-arranged terms of the transaction are adhered to (Boger, Hobbs & Kerr, 2001). Coase (1937) opines that these costs are an incentive to integration, either through cooperation or by buyout of chain partners.

Further, Boger, Hobbs & Kerr (2001) state that prohibitively high transaction costs will stifle economic exchange, deter investment and impede the transition process. Transaction costs are, therefore, considered as one of the main motives for interaction, co-operation, co-ordination and collaboration to alleviate the uncertainty of the market,

reduce risks, and to increase the efficiency of economic exchange. Heide (1994) also emphasized the need ‘for establishing and managing channel relationships’ especially where mutual dependence of firms involved in transactions is acknowledged. Mentzer (1993) states that ‘from a channel relationship perspective, the long term relational orientation and the limited supplier decisions tend to make the channels more strategically oriented and relationships more cooperative than conflictual’ (p. 32).

In the objective to achieve reduced transaction costs, Wilson (1996) also endorses the establishment of ‘a lasting relationship based on trust’ among players to ‘“synergize their strengths” to improve the supply and development of the market’ (p. 29). This precludes the need for contracts and expensive negotiation. Batt (2003), while citing Hawes, Mart, and Swan (1989), states that ‘for any particular potential exchange, trust will be critical if two situational factors are present: risk and incomplete buyer information’ (p.66).

In addition to trust for the establishment of successful long-term relationships, commitment is also recognized as an essential ingredient (Gundlach, Achrol, Mentzer, 1995). They further write that:

Committed partners are willing to invest in valuable assets specific to an exchange, demonstrating that they can be relied upon to perform essential functions in the future (Anderson & Weitz, 1992). These self-interest stakes help stabilize associations, alleviating the uncertainty and cost of continually seeking and consummating new exchanges (p.78).

Morgan and Hunt (1994) drawing on The Commitment-Trust Theory mention that ‘when both commitment and trust – not just one or the other – are present, they produce outcomes that promote efficiency, productivity and effectiveness’ (p.22).

Therefore, if reducing transaction costs is the objective of an economic arrangement, this can be achieved by building long-term ‘channel relationships’ based on trust and commitment. Transparency and openness among the chain members helps lessen the appeal of essentially short-term alternatives in favor of the long-term benefits, and reduce uncertainty. Such conditions of cooperative behaviors will result in awareness, trust, efficiency, transparency and rewards. The basis is internal choices informed by a more complete understanding of the implications of transaction alternatives in both the short and long run.

2 Perceptions on an economy

Markets and networks provide alternative models of economic activity. In a market participants exchange items. In a network participants are specifically linked (or not). The focus in the former is on the exchange, in the latter on the linkage. Of course, a linkage may pave the way for various exchanges and similarly an exchange provides an at-least momentary linkage. Common to both are transactions, but they are viewed in markedly different ways.

Consider as a practical example the Australian sugar industry. This can be conceived as “a market for sugar” with the “sugar” commodity exchanged between two sets of parties. The industry can also be conceived as a series of markets for the various products (such as fertiliser, cane, mill sugar, raw sugar, refined sugar) that are involved

in various exchanges originating with cane sugar. In economic analysis, the former would typically be approached by neoclassical analysis of a market (containing many entities associated with a single product, and an emphasis on price and quantity in transactions) with a general equilibrium approach of adjusting prices adopted for the latter (which is of many markets, each containing many entities). Such an approach has been widely adopted for sugar (as can be found in Industry Commission 1992; CIE 2002 for example). Other views might be adopted (McGovern 2003). For example, a set of durable production entities (farms, mills, harvester groups and the like) can be assumed as focal. These might be sectors in an input-output transactions table, stages in a supply chain or nodes in a network. A typical analytic challenge is to describe and understand transactions between the entities as they are generated and governed by significant entities that exist and persist. This view is, arguably, appropriate when stress is present, industry situations are to be addressed, interdependencies are high or transactions are managed.

Distinctly different points of focus are involved. A neoclassical equilibrium view (essentially aggregative, *a priori* and *ex post*) is of a market within which exchange between largely inconsequential entities occurs. Alternately the view is of a consequential entity by which production occurs (essentially distributed, *ex ante* and *a posteriori*). Each view is built on an initial perception (and associated assumptions) of existing participants and of the transactions between them.

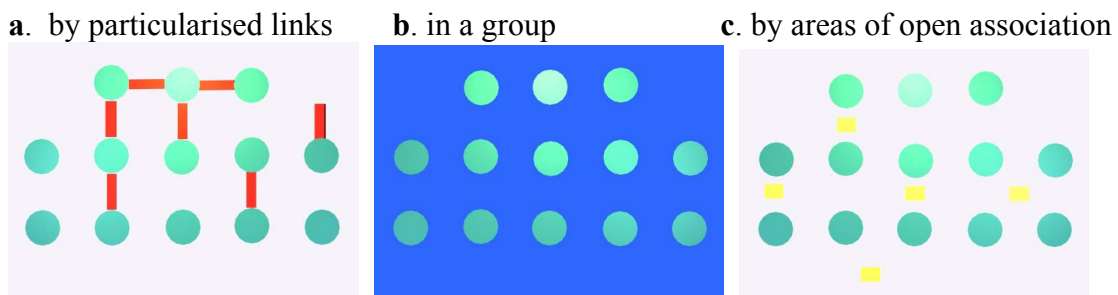
Each participant will be an economic entity in its own right, but markedly different entity and transaction aspects are focal. For purposes of illustration consider the circles in Figure 1 as potential participants. Neoclassically these would be markets (or market participants) with product quantity and price in determined transactions of interest. Alternatively these can be production centres, with various attributes of associated transactions being of interest. Behavioural and other attributes which can only be assumed in neoclassical economics can be more richly addressed using TCE.

Figure 1. A group of potential participants



Such participants are then to be made somehow made part of the economy. One possibility is to specifically link participants. This is shown by the rectangles fully linking between the circles in Figure 2a. The network so formed is an explicit articulation of “collected” interactions. A second possibility is to group all participants. Such an approach creates an overarching or encompassing entity, shown as the larger darker rectangle in Figure 2b. A third possibility is to allow open linkage areas to which many participants may associate in some suitable way. This is essentially the accessible area view, with such areas shown as squares potentially linking between the circles as in Figure 2c.

Figure 2. Linking the participants



Each picture is distinctive. Each can be used to illustrate possibilities and distinctive features of the three modes of association.¹ Structure is emphasised in the first picture, inclusion in the second and various possible associations in the third. While some participants are “fully linked in” the first (and others are not), all are “in” the second (with none out) and each “may be linked in” the third depending on how the remaining distance is to be spanned. While the first is not inclusive it is perfected in terms of fully completing all spaces between selected participants. The second is fully inclusive (and so perfect in this way) but is not at all completed as to how specific links might be built. The third is imperfect both in term of inclusion and linking.

Such are some of the general types of description that can be applied to an economy. Four definitions are involved in the particular description above:

- Entity, a demarcated and separable region of economic activity.

¹ While various algebraic representations can also be built from such a basis, this will not be undertaken here. Nor will detailed investigations of immediate applicability and the like be undertaken: Figure 2b provides a basis formulation of the perfectly competitive market for example. Rather various pictorial developments will be used to explore possible combinations and implications in a general way.

- Link, a pathway for associating entities in a pairwise fashion.
- Group, a collection of entities or other contained things.
- Market, a somehow accessible area within which exchange occurs.

Any one of these may form a foundation upon which to build a world view. In the above we defined the entities and then asked how they might be linked. Alternatives would be to choose links, groups or market areas as “the” foundation and then ask how entities or other non-foundation members might relate. Various world views can thus be constructed by building from distinctive foundations. Such views are orthogonal in that they are directed from somewhat exclusionary starting points. Yet transactions would be seen to be a common component. Such an assumption overlooks how what is presumed to be “the same” transaction may be differently specified or actualised, or need to be, in different contexts.

3 Supply Chain and Transaction Costs

Supply chain management (SCM) focuses on interdependent economic entities transacting along a supply chain. It is built on a foundation of trust and commitment (Lee and Billington, 1992). In contrast to the atomistic competition in a competitive market, SCM is seen in its basic form as a move towards co-operation in building a long-term relationship. ‘These long-term relationship lead to reduced political social or economic risk, reduced transaction costs, and access to economies of scale by bypassing traditional market arrangements’ (Loader, 1997; p.22).

Consider the transaction cost basis. McAdam and McCormack (2001) highlight that as supply chains develop, complexity increases with:

- Increase in the number of linkages to be managed;
- Difficulty in the communication of a common goals; and
- Increase dependency on each other among the chain members.

Echoing similar concerns, Loader (1997) referring to Hakansson (1982) notes that ‘exchange relations are not always co-operative, and therefore the notion of rationalizing and economizing on transaction costs in the comparison of the different modes of organization becomes crucial’ (p.25).

Following Williamson (1985), an efficient alignment of the governance mode and the characteristics of the transactions are expected to exist. In the context of the above, it is imperative to understand both the contracting process and governance.

The **contracting process** and the world it creates can be considered in the words of Williamson (1985, p. 30):

The world of contract is variously described as one of (1) planning, (2) promise, (3) competition, and (4) governance (or private ordering). Which of these descriptions is most applicable depends on the behavioral assumptions that pertain to an exchange and on the economic attributes of the good or service in question.

The key concepts of TCE that underpin the contracting process are uncertainty, bounded rationality, opportunism, and asset specificity.

- (i) ‘Uncertainty’ in various degrees is present in any economic exchange. This contributes to costs in carrying out transactions.
- (ii) ‘Bounded rationality’ acknowledge limited judgements of individuals. This means that though the individuals may try to act rationally, they may be by partially successful in realizing their intentions.
- (iii) ‘Opportunism’ is defined by Williamson (1985, p. 47) as ‘self-interest seeking with guile’. This recognizes individuals to behave opportunistically to exploit a situation to their own advantage.
- (iv) ‘Asset specificity’ signifies investment characteristics and denotes dedicated inputs.

Williamson (1985) writes that the ‘most critical dimension for describing transactions is the condition of asset specificity’. Lyons (1994) while stating that ‘modern transaction cost theory is predicted on two key behavioral assumptions, opportunism and bounded rationality’, maintains that the transaction cost theory ‘is made operational by the central role given to asset specificity’ (p.314).

These characteristics also have a major influence on the efficiency of alternative transaction modes. Based upon the above dimensions, the variances in the contract process can be considered as presented in Table 1.

Table 1. Attributes of the Contracting Process

Behavioral Assumption			Implied Contracting Process
Bounded Rationality	Opportunism	Asset Specificity	
0	+	+	Rational & cognitive planning – taking an educated account of all relevant issues & potential problems.
+	0	+	Promise – based on complete trust & honesty of parties leading to self-enforcement for mutual benefit.
+	+	0	Competition – in the market will overcome problems
+	+	+	Governance – internalization of contracting

Notes: + denotes presence in significant degree; 0 denotes absence

Source: Adapted from Williamson (1985) and Loader (1997).

The table suggests the following implications:

- (1) When a situation arise where bounded rationality is absent, that is, full rational judgment is assumed with dedicated inputs and opportunistic parties, then the contractual process becomes one of rational and cognitive planning. In such situation, contract between parties is accurate and effective and based on full and informed account of all possibilities. When opportunism is absent, and parties need to base their judgements on limited information with assets dedicated to the specific transaction, then the contracting process is based on promise that is a result of trust between them and makes the contract self enforcing.
- (2) When asset specificity is absent, that is, the input can be freely selected with opportunistic self-interest and limited judgement being present, then the contracting process is in the realm of competition where the market decides. In this situation neither parties are interested about each other or on establishing any relationship.
- (3) This is a situation where conditions of limited judgement, opportunistic self-interest, and dedicated inputs are present at the same time. In a case like this rational and cognitive planning is not effective, promise does not hold, and competition does not persist due to dedicated inputs. This results in internalization of the contract process where internal governance holds.

Governance can be achieved in various ways and with varying emphasis on effective influences. Transactions may be assumed as somehow coherent in their own right. They may also be seen as externally or internally influenced. Governance needs and preferred contract arrangements will vary with the situation.

TCE acknowledges that the variety in the contractual process is mainly explained by underlying differences in the attributes of transactions and ‘that each generic form of governance...needs to be supported by a different form of contract law’ (Williamson, 1991; p. 271).

There are three main types of contract: classical, neoclassical, and relational.

- **Classical Contract:** Classical contract law endeavors to implement discreteness and applies to the ideal transaction in law and economics...in which the identity of the parties is irrelevant. Classical contract law is congruent with and supports the autonomous market form of organization. The emphasis is on legal rules, formal documents, and self-liquidating transactions (Williamson 1985, p. 69; Williamson 1991, p. 271).
- **Neoclassical Contract:** Neoclassical contract law, which relieves parties from strict enforcement, applies to contracts in which the parties to the transaction maintain autonomy but are bilaterally dependent to a nontrivial degree. A recognition that the world is complex, the agreements are incomplete, and the some contracts will never be reached unless both parties have confidence in the settlement machinery thus characterizes neoclassical contract law (Williamson 1985, p. 70; Williamson 1991; pp. 271-272).

- **Relational Contract:** ‘Continuing contract between the parties where a range of social and economic relationships help to define and support a range of transactions’ (Loader, 1997, p. 26).

To successfully accomplish transactions, appropriate governance is needed. The structure for efficient governance in regard to the volume and recurrence of transactions and investment characteristics is depicted in Table 2. It is seen that standardized nature of transaction stems from classical contracting and implies market governance. In this, the alternatives to opportunistic self-interest behavior are available from the market.

Different arrangements are evident:

- Trilateral governance (middle row in Table 2) implies that contracts stipulate arbitration as the settlement mechanism in case of disputes and also employs performance evaluation.
- Continuing contractual contract is the characteristic of the bilateral governance with the autonomy of the parties maintained.
- Unified governance implies unification of some sort and in some way(s), with internalization of the contracting process.

Table 2. Efficient governance structure based on principal dimensions of transactions

Nature of transaction	Frequency	Asset Specificity	Type of Contracting	Expected governance structure
Standardized	Occasional and Recurring	Non-Specific	Classical	Market ^a
Non-Standardized	Occasional	Mixed and highly specific	Neo-Classical	Trilateral ^b
Non-Standardized	Recurring	Mixed and highly specific	Relational	Bilateral ^c / Unified ^d

Notes:

^a Alternatives are available (from the market) which can be used if dishonesty persists and protect each party against opportunism by his opposite.

^b Contracts are built with safeguards and third-party *assistance* (arbitration) in resolving disputes and evaluating performance is employed.

^c Bilateral governance implies continuing contractual contract, but with the autonomy of the parties maintained.

^d Unified governance implies internalization of the contracting process.

Source: Adapted from Williamson (1985) and Loader (1997).

Four distinct governance structures are delineated. Their appropriateness depends on the situation. Situations should properly be analysed if governance choice is to be apt.

4. Transaction Cost, Sugar and the Supply Chain

The factors that make for an integrated approach as applicable in the food supply chains involve complex issues such as perishability, transportation of low value products, and increasing consumer demands for safety (Hobbs, 1996; Folkerts and

Koehorst, 1997). This is also applicable in the sugar industry. The chain can achieve integration through joint strategic planning by all participants working together through open and transparent sharing of information based on mutual trust and respect.

In search of efficiencies in the Australian sugar industry, Muchow (2000) has referred to 'exploiting linkages and interdependencies across the farming, milling, and marketing sectors' with the 'shared ownership of local issues' and 'a commitment to proceed on a partnership basis'. He has further stressed on the fact that integration of the growing, harvesting and transport, and milling sectors is complex, but essential, to assess the benefits and costs of different cane supply scenarios.

Milford (2002) observes that there has been recognition in the sugar industry of Australia, almost since the inception, for the need for some form of chain management. This is primarily 'due to the highly integrated nature of the chain and the potential for adverse power relationships within it'. He further notes that, in Australia,

the sugar industry supply chain has been managed in the past through legislation. ...This mediated the power relationships, obviated the need to develop other forms of relationship and led to the establishment of strong sectoral representative bodies and linkages (pp. i & 2).

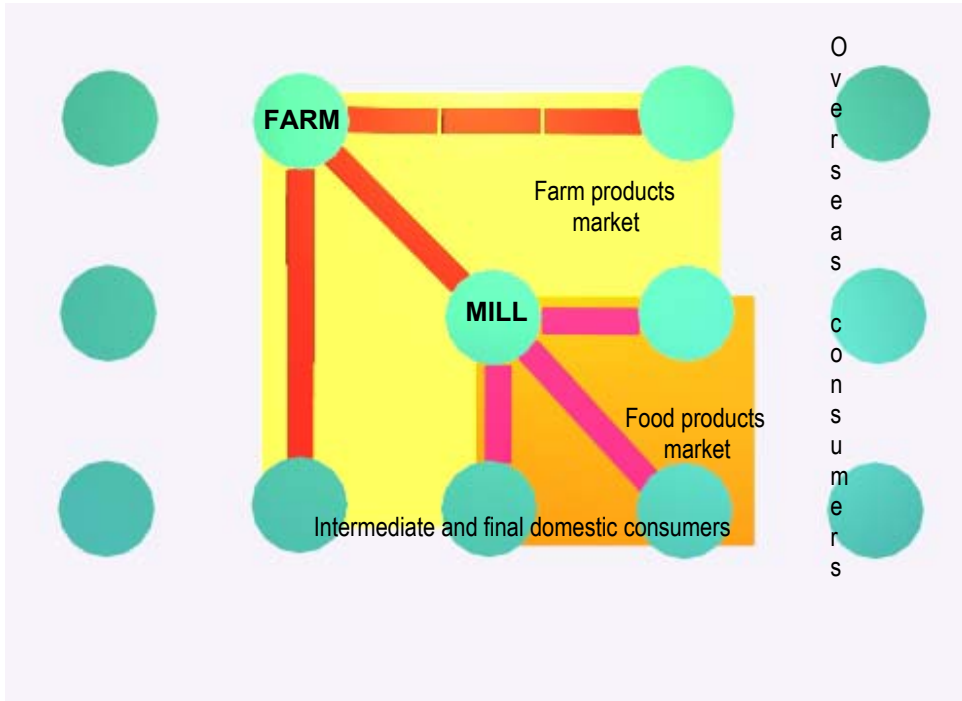
How might such things be presented in terms of the earlier perceptual models? The illustration provided in Figure 3 highlights a number of things including:

- The presence of multiple entities
- The pattern of flows emanating from FARM
- The existence of two distinct markets reflecting two distinct product groups
- That MILL operates across the interface between two markets
- The existence of several places of potential interconnection for consumers be they domestic or overseas.
- The coexistence of markets and networks with entities interacting with these in unspecified ways.

A broad context is thus depicted within which things such as power and relationships play out.

The diagonal FARM-MILL link is a focal arena for much discussion and dispute. Given the non standardised nature of transactions and that they are occasional in the sense of being event-affected, and also given the mixed and highly specific assets involved, a trilateral governance structure might be expected (as detailed in Table 2). Which of the circular entities might provide the third party arbitrator and advance a neoclassical contract environment? Also is the mooted involvement of regional coordinating groups not a shift towards relational contracting. While this may be appropriate for those things that are recurring, the need for a third party is not at all established if the arguments behind Table 2 are accepted.

Figure 3. A particular (planar) perception on cane-sugar flows

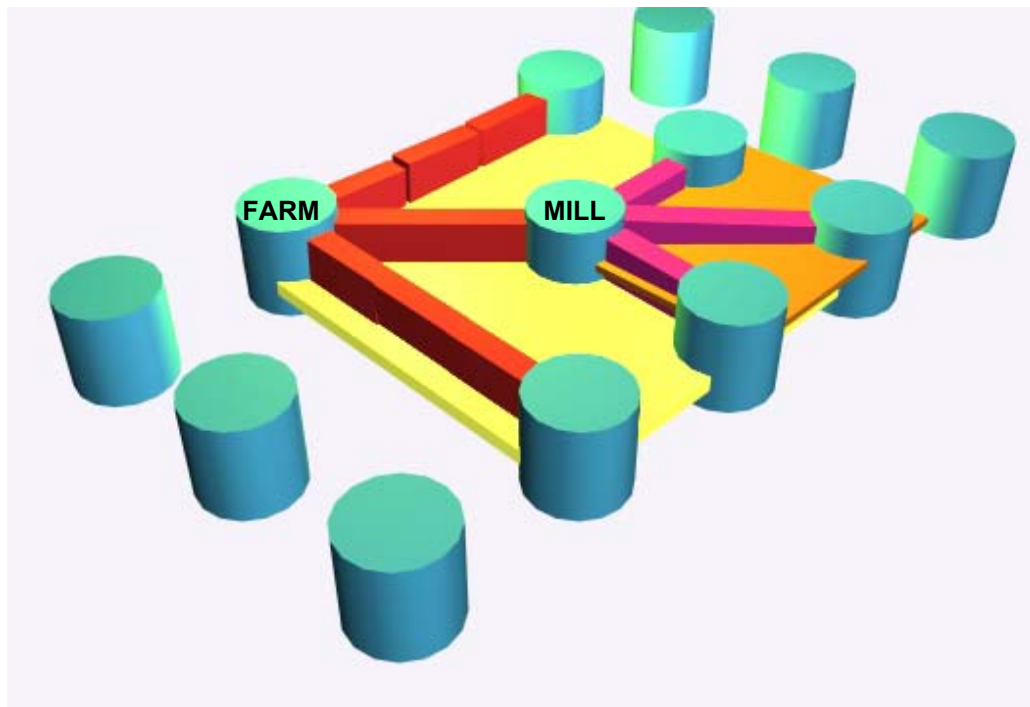


Interpretation of such an illustration is aided by the use of words. These can name and group the various parts. They can also aid focus and lend emphasis. Such things enable an ordering of what would otherwise be unintelligible. Such specification does embed bias, however. Imputation by the observer is also important, a reader inferring such things at the direction of flow from earlier discussions. Interpretations by “unprepared” readers may vary.

A particular interpretation of combinations of entities, links, markets and groups is present in any such illustration. The markets involve groups and links are of two types, for example. There is no indication of any entity differentiation with respect to market or link interactions. The MILL entity has two of each with which to interact. Typically we would just assume that the interactions occur appropriately. In reality there are likely to be conflicts with stress on the entity and strain within it.

Such a representation can be also seen as a special case of a more general form. Only one facet for each of entity, link, market and group are shown. If more than one facet is shown (as in Figure 4) a more complex set of possibilities are apparent. A much richer variety of interpretations are now possible. Depth is introduced, and with it many possibilities that would be otherwise overlooked. Simplicity is lost, however. Analysts will need to choose as to the balance between such richness and simplicity.

Figure 4. An alternative “richer” perception, showing more than one facet for each element



The three “red” bars from the FARM “cylinder” can be variously interpreted, typically as the input and output flows to the sector. The FARM-MILL link is singled out on the diagonal as previously. All manner of interactions are involved in developing this aggregated transaction which can be considered and analysed in various ways. An interesting visual approach is to segment the FARM sector but not the MILL, reflecting the actual compositions of sectors in any region. Should the link also be segmented, and if so how? Also if a single farm is assumed to be somewhere at the top of the FARM sector cylinder, while it might have a view of MILL it need not have a view of other farms lower down the cylinder. Such developments highlight more of the detailed nature of the situation, and also the limitations of assumptions sometimes put such as each farm being able to negotiate with MILL. A criticism, then, of much current sugar thinking is that it lacks depth.

Consider now **transaction costs** as arising in the cane sugar industry. This is a common focus of those in the industry with a usual goal of cost reduction and sometimes minimization. In an attempt to reduce transaction costs Milford (2002), referring to Chapman, Milford, and Burrows (1997), provides some examples of transaction costs in the sugar industry. They include:

- The costs of miller-grower negotiations; that is preparation, meetings, grower feedback meetings, expert assistance, mediation and arbitration, technical and negotiation support;
- The costs of compliance with industry regulations; e.g. applying for cane production area;
- The costs that arise because of asymmetric information; that is seeking information known to the other side, mistakes made due to lack of knowledge;

- The cost of entering into a harvesting arrangement and uncertainty arising due to any change in the arrangements.

How would such things be built into Figure 4, or in some like representation?

Reflecting on Section 2, a starting point is the chosen entities and their transaction attributes. There are a wide range of conditions that enable and then determine the “success” of a transaction (including its ultimately revealed cost). Not only should aspect such as those in the previous paragraph be explicitly incorporated, leading to comprehensive economic cost accounting instead of current nominal costing. Also governance issues need addressing, with the locale of decision making being explicitly considered on strong economic grounds. Specifically reflecting Table 2, would unified, market, bilateral or trilateral governance be appropriate? In terms of Figure 4, should decision making about cane supply to mill, say, be made in a MILL cylinder, in each FARM cylinder, across all FARM cylinders, or in an outside cylinder (external party, in the region or beyond?). Also, where should regimes permeate: which cylinders, bars or planes, and how? Additionally, what costs and risks attend each choice, and how might returns be distributed under different scenarios?

The dominant position espoused by State and Federal agencies is one of market governance but there are clear grounds for alternatives in the arguments that have been presented. At the very least it would seem appropriate in a multibillion dollar industry operating in a variety of market situations and circumstances to at least explicitly consider governance in some depth rather than assume an almost automatically beneficent market form. A similar argument applies in any situation of marked interdependence, such as occurs in regional development. Transactions need to be explicitly addressed if an enterprise is to become embedded in a region, and part of its development. Enclave enterprises live on the fringe of the regional economy sourcing transactions elsewhere with few if any beneficial regional impacts.

Alternatives to market governance may also be appropriate if transactions are to be effective and efficient. The clear preference under National Competition Policy, for example, is to rely upon market governance but issues of “regional development” provide one of the eight allowable bases for alternative approaches. Clearly a transactions based approach could be used to build a case that what we might term “standard competition” is inappropriate in specified situations of sectoral or enterprise interdependence, or regional intradependence. Figure 4 might be cast as a services cluster, for example, one that may meet regional needs more adequately and in a less costly manner than external or competitive provision.

Further, a common assumption is that activity reduction or interaction “simplification” in some area would reduce transactions costs. Reducing the part is assumed to reduce the whole. However such a position may overlook how parts of the interconnectedness affect global outcomes. Just as cost minimization is not consistent with profit maximization (as demonstrated abstractly by neoclassical analysis and by common sense in the field), so also reducing elements of a transaction need not reduce overall transaction cost. Such considerations complement those of the previous section.

5. Implications

Using neoclassical market models for transactions such as those in sugar is then essentially a misspecification. Considerations of supply chains and of transactions costs can advance understanding further than an assumption of, or desire for, a competitive market. Simply laying out the patterns of interactions, as in the simple Figures, can provide a way for illustrating some possibilities. The importance and relevance of structures and positionings are revealed in an appropriate specification.

The development presented here is essentially a preliminary one. It shows some of the possibilities in working from alternative bases to those popularly proposed, most notably the abstracted commodity market. Further development by extension from this basis has been developed, as is reported elsewhere. The present focus is on analytical choices and the implications of choices made. Such things appear to have had very little consideration by those in the Queensland cane sugar sectors or by those now advising the industry. Diligent care and due comprehension are needed if the industry is not to be weakened further by inappropriate recommendations from mis-specified models and flawed analysis

Sugar supply chains can be regarded in several ways, as indicated. There are various ways in which the implications of transactions cost in sugar can be assessed. Proper use of such concepts is recommended as a high priority. This is so not only for those in the regions and industry but also at all levels of government. This is a real challenge but it is one which will need to be met if sugar and its regions are to be successfully advanced.

REFERENCES:

- Batt, P.J. 2003. Building Trust Between Growers and Market Agents. *Supply Chain Management*, 8(1): 65-78.
- Beamon, B.M. 1998. Supply Chain Design and Analysis: Models and Methods. *International Journal of Production Economics*, 55 (3): 281-294.
- Boger, S., Hobbs, J.E. and Kerr, W.A. 2001. Supply Chain Relationships in the Polish Pork Sector, *Supply Chain Management*, 6 (2): 74-82.
- Chandra, C. and Kumar, S. 2000. Supply Chain Management in Theory and Practice: A Passing Fad or a Fundamental Change? *Industrial Management & Data Systems*, 100 (3): 100-113.
- CIE (2002). Cleaning up the Act: The impacts of Changes to the Sugar Industry Act 1999. Canberra, Centre for International Economics: 133.
- Folkerts, H. and Koehorst, H. 1997. Challenges in International Food Supply Chains: Vertical Co-Ordination in the European Agribusiness and Food Industries. *Supply Chain Management*, 2 (1):11-14.
- Gundlach, G.T., Achrol, R.S. and Mentzer, J.T. 1995. The Structure of Commitment in Exchange. *Journal of Marketing*, 59 (January): 78-92.
- Heide, J.B. 1994. Interorganizational Governance in Marketing Channels. *Journal of Marketing*, 58 (January): 71-85.
- Hildebrand, C. 2002. Report: Independent Assessment of the Sugar Industry Appendix B, *Ministry of Agriculture, Fisheries and Forestry, Canberra ACT, Australia*.

- Industry Commission (1992). The Australian sugar industry. Canberra.
- Loader, R. 1997. Assessing Transaction Costs to Describe Supply Chain Relationships in Agri-food Systems, *Supply Chain Management*, 2 (1): 23-35.
- Lummus, R.R. and Vokurka, R.J. 1999. Defining Supply Chain Management: A historical Perspective and Practical Guidelines. *Industrial Management & Data Systems*, 99 (1): 11-17.
- Lyons, Bruce R. 1994. Contracts and Specific Investment: An Empirical Test Of Transaction Cost Theory. *Journal of Economics & Management Strategy*, 3 (2): 257- 278.
- Mason-Jones. R. and Towill, D.R. 1997. Information Enrichment: Designing the Supply Chain for Competitive Advantage. *Supply Chain Management*, 2 (4): 137-148.
- McAdam, R. and McCormack, D. 2001. Integrating Business Processes for Global Alignment and Supply Chain Management. *Business Process Management Journal*, 7 (2): 113-130.
- McGovern, M. (2003). Articulating Queensland Cane and Sugar Situations. Summit on Sugar, QUT, Brisbane, ACFA.
- Mentzer, J.T. 1993. Managing Channel Relations in the 21st Century. *Journal of Business Logistics*, 14 (1): 27-42.
- Milford, B. 2002. The State of value Chains in the Australian Sugar Industry, *CRC Sugar Occasional Publication*, Townsville, June 2002: 1-22.
- Morash, E.A. 2001. Supply Chain Strategies, capabilities, and Performance. *Transportation Journal*, 41 (1): 37-54.
- Morgan, R.M and Hunt, S.D. 1994. The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, 58 :20-38.
- Muchow, R. 2000. Sugar Needs Innovation in the 21st Century, *CSIRO Media Release*, Ref 2000/50 – Feb 16, 2000.
- Novack, R.A. and Simco, S.W. 1991. The Industrial Procurement Process: A Supply Chain Perspective. *Journal of Business Logistics*, 12 (1): 145-167.
- O’Keffe, M. 1998. Establishing Supply Chain Partnerships: Lessons from Australian Agribusiness. *Supply Chain Management*, 3 (1), 5-9.
- Spekman, R. E., Kamauff (Jr), J.W., and Myhr, N. 1998. An Empirical investigation into Supply Chain Management: A Perspective on Partnership. *Supply Chain Management*, 3 (2): 53-67.
- Treacy, M. and Wiersema, F. 1993. Customer intimacy and Other Value Disciplines. *Harvard Business Review*, 71 (1): 84-93.
- Williamson, O.E. 1991. Comparative Economic Organization: The Analysis of Discrete Structural Alternatives. *Administrative Science Quarterly*, 36 (June): 269-296.
- Williamson, O.E. 1985. *The Economic Institutions of Capitalism*. New York: The Free Press.
- Wilson, N. 1996. Supply Chain Management: A Case Study of a Dedicated Supply Chain for Bananas in the UK Grocery Market. *Supply Chain Management*, 1(2): 28-35.
- Wilson, N. 1996. The Supply Chains of Perishable Products in Northern Europe. *British Food Journal*, 98 (6): 9-15.