

Adding value to Australian wheat: present problems and future prospects

F.Z. Ahmadi-Esfahani and P. H. Jensen*

Abstract

Exports of unprocessed primary products such as wheat and wool have historically formed the backbone of the Australian economy. However, the uncertainty surrounding corrupt international markets and the volatility in world prices for raw products have cast doubts on the future of Australia's agricultural sector. One potential solution that has received much recent exposure is value-adding. Proponents of value-adding argue that Australia could increase the viability of agriculture by processing primary goods before they are exported, and by increasing market segmentation and niche marketing. This paper examines the problems associated with further processing of wheat, and analyses some policy issues which may enhance the future prospects of value-adding in Australia. Despite the existence of a number of factors conducive to the further development of a wheat-processing industry, the recent performance of this industry has been far from outstanding. It is postulated that the main reason for this lacklustre performance is that there are significant sunk costs and barriers to entry to the market for processed wheat products. These barriers include concentration in the processing and retail markets, limited access to retail shelf-space, government regulations on food quality, and high advertising costs. It is argued that public policy should be designed to encourage the establishment of conditions in which competition in the domestic wheat processing market is fostered. The current economic environment in Australia appears not to be conducive to large expansions in wheat-processing activities in the near to immediate future.

Introduction

Australia has a long history of producing high quality, low cost primary products and exporting those products to the rest of the world. The bulk of these exports are made up of wheat, wool, meat and mineral ores. While primary exports have formed the backbone of the Australian economy, the fact that most of these exports are in a raw or unprocessed form has exposed agricultural producers to the effects of a gradual decline in the terms of trade, volatile unprocessed good prices, fluctuating demand and the trade-distorting policies of other exporters and importers. Although Australia exports a relatively small quantity of processed products, there exists a significant food processing industry in Australia which produces largely for the domestic market. The turnover of the processed food and beverage sectors exceeded \$35 billion in 1990/91, and accounted for approximately 20% of total manufacturing sales. In 1990/91, it also accounted for 17% of total manufacturing employment, and 19% of total manufacturing wages and salaries (Australian Bureau of Statistics 1992).

The food processing industry can be divided into a number of sectors, including flour and cereals; bread, cakes and biscuits; fruit and vegetables; meat; and milk. The focus of this paper is on the wheat processing sector, which produces flour, bread, cakes, biscuits, starch and gluten. Wheat processing for the domestic market accounts for approximately 20% of the wheat crop. The remainder of the Australian wheat crop is sold overseas to around 50 countries where it is processed into a wide range of products such as Arabic flat breads, noodles, steamed bread and dumplings (McMaster 1991).

Much of the available evidence indicates that the export performance of the wheat processing industry has been poor. Of the \$2 billion wheat crop in 1991, less than 5% was exported in a processed form (Australian Bureau of Agricultural and Resource Economics 1991). There have been widespread calls from both industry and government to improve this situation through value-adding, because 'value-adding provides the opportunity to diversify and expand our export base and to improve the profitability of our exports' (Crean 1992a).

Given the poor export performance of the processing sector, it is questionable whether Australia should pursue a policy of value-adding through further processing of wheat. The possible reasons for this sub-standard performance are that the domestic market is too small, the processing industry is too inward-looking to exploit economies of scale, that the industry is highly concentrated and that there are significant barriers to entry. The existence of significant sunk costs may suggest that the wheat processing industry is not contestable. The objectives of this paper are to examine the problems facing the domestic wheat processing sector and to assess its future prospects. The next section outlines the background to the wheat processing sector in Australia. The theoretical considerations and empirical observations are then provided prior to conclusion.

Background

The concept of value-adding is one which is often misunderstood, or perhaps misrepresented. It is a term which is derived from national income accounting and is defined as the value of a firm's output minus the value of the inputs that the firm purchases from elsewhere. It is, therefore, the return on labour, capital and other factor inputs employed in the production process. In this context, value-added is a form of gross margin which is added on to all costs of purchased inputs. By summing up all of the value-added by a country's firms, it is possible to derive an estimate of gross national product. Consequently, the argument often put forward that value-adding is the same as increasing a product's value is simply incorrect. What is of importance is the difference between the sales revenue and the cost of purchasing the raw materials required for production (Brown 1990). For a value-adding exercise to be of direct benefit to the economy, the returns to the factors of production must be positive and must also be greater than the returns possible from any other activity.

* Department of Agricultural Economics, University of Sydney, New South Wales 2006, Australia.

Mauldon (1991) has suggested three broad areas in which successful agricultural production, processing and marketing may occur. These areas are: the production of undifferentiated bulk products which are sold at a minimum cost for the going world price; the development of niche characteristics and services which are marketed into targeted countries at a higher cost but for differentiated returns; and adding value through processing grains in Australia. It is the third alternative which is the focus of this study.

Table 1 highlights the contribution of various processed wheat products to the turnover, employment, value-added, and wages of the total food and beverage industry in Australia in 1990/91. With respect to turnover, the most important of the processed wheat products are cereal foods and baking mixes, closely followed by bread. However, in terms of employment and wages, bread is the most important of the goods, accounting for 42% and 37% of the food industry totals respectively. The significance of bread in the wheat processing sector is not surprising since bread is one of the key staple foods in Australia. Bread has also been the most important product in terms of value-added. The sub-totals in Table 1 indicate that the wheat processing sector accounts for 20–25% of the food and beverage industry total in each of the statistics cited.

Recent government reforms have attempted to remove some of the impediments which have hindered the development of the food processing industry. For instance, on the macroeconomic front, the government has access to capital easier through deregulation of the banking industry, and the lowering of interest and inflation rates. There have also been microeconomic reforms affecting the waterfront, shipping, road and rail transport and statutory marketing authorities. Many food laws and regulations have also been amended. In the past, many of these laws were state-based and national companies were required to meet all of the different state rules—at a significant cost. This has now been addressed by the creation of the National Food Authority which is working towards the elimination of such anomalies (McMaster 1991). Despite these efforts, however, the wheat processing sector does not appear to be a growing sector. It is, therefore, important to investigate the underlying constraints impinging upon this sector.

Theoretical Considerations

The low level of processed wheat exports is surprising given the existence of a number of conditions which appear to be conducive to the development of a strong wheat processing sector. Firstly, Australia is an efficient producer of wheat and it has been estimated that the purchase of raw materials accounts for about 40% of the cost of processing (Department of Industry, Technology and Commerce 1991a). The competitiveness and efficiency of the Australian wheat industry is

evidenced by the fact that Australia has maintained its market share in the world wheat market despite the corruptive subsidising policies of the European Community and the United States (Ahmadi 1991). Secondly, the wheat processing sector has also experienced low rates of effective assistance. In 1991/92, for example, the effective rate of assistance for the production of bread, cakes and biscuits was actually negative, while the average for the total manufacturing sector was 15% (Department of Industry, Technology and Regional Development 1993). This implies that the wheat processing sector should be well positioned during the general phasing down of assistance measures in Australia. Thirdly, given the increasing convergence of real incomes and tastes in newly industrialised Asia, Australia should be able to take advantage of its geographical proximity by exporting to this region.

The theory of industrial organisation provides some insights into why the wheat processing sector has not developed as well as might have been expected. This theory studies how the performance of an industry is related to the number and size of firms in the industry by adding real-world imperfections such as asymmetric information, transaction costs, price adjustment costs and barriers to entry to the traditional model of perfect competition and analysing how firms compete in such an environment. In this paper, it is postulated that low levels of processed wheat exports are partly explained by the fact that the industry is not contestable: there are significant sunk costs which act as barriers to entry. Before considering the structural problems facing potential entrants to the wheat processing sector, some more background on the theory of contestability is presented.

The theory of contestability, which was developed by Baumol, Panzar and Willig (1982), is a generalisation of the concept of the perfectly competitive market. Baumol et al. state that perfect contestability is a benchmark for desirable industrial organisation, but that it is no more observable than a perfectly competitive market. A contestable market is defined as a market where entry is free and exit is absolutely costless. Freedom of entry implies that an entrant suffers no disadvantage in terms of production technique or product quality relative to the incumbent firm. A barrier to entry is defined as any factor that enables established firms to earn super-normal profits without the threat of entry. Bain (1968) identified three potential barriers to entry which could result in such profits: cost advantages for incumbent firms, product differentiation, and economies of scale.

In essence, a market is perfectly contestable if incumbent firms must post prices and abide by them for some period, say t days. It is further assumed that all capital needed by potential entrants is mobile from market-to-market or that there is a well-developed lease or re-sale market for capital, so that capital could be saleable or reusable with no unusual loss in value t days after its use in a particular market. Then, an

Table 1. Processed wheat product statistics 1990–91.

Goods	Turnover (\$ million)	Employment (people)	Value-added(\$ million)	Wages (\$ million)
Flour	746	2200	196	66
Starch and gluten	296	700	62	29
Cereal foods	1448	6300	517	182
Bread	1431	17600	693	364
Cakes and pastries	767	9500	368	185
Biscuits	643	5900	341	161
Sub-total	5331	42200	2177	987
Total food and beverages	34161	166200	11994	4406

Source: Department of Industry, Technology and Regional Development 1993.

entrant could 'hit' immediately after the incumbents' prices were posted and 'run' *t* days after, when the incumbents are first free to respond, all without cost disadvantages.

Intuitively, contestability can be viewed as providing conditions under which economies of scale, per se, pose no threat to market efficiency because they are not necessarily associated with barriers to entry. Economies of scale, if they reflect properties of production processes available to all firms, do not constitute a barrier to entry. Without such a barrier, excess profits can lead to competition for the market, rather than competition in the market. While it is true that the transfer of capital from one market to another may pose insuperable difficulties in practice, this problem is caused by the presence of sunk costs, not economies of scale.

The concept of contestability can readily be distinguished from the textbook notion of a perfectly competitive market. Both concepts involve markets in which there is frictionless free entry. However, the purely competitive model assumes that there is such a large number of firms in the market that each considers its production decisions to have no effect on market prices. In contrast, both incumbents and potential entrants in a contestable market realise that they cannot sell more than consumers demand at given prices, without bidding market prices down. Consequently, a contestable market need not be populated by a great many firms. Indeed, contestable markets may contain only a single monopoly enterprise or they may be comprised of duopolistic or oligopolistic firms.

The conditions required for perfect contestability in the wheat processing industry or for some close approach to it are demanding. They involve easy access to the market on equal terms for new entrants and old incumbents. More importantly, however, contestability demands that durable capital goods be easily transferable by second-hand sale or alternative deployment that recoups their cost. Contestability also requires that industry-specific human capital, market information and market development and promotion, among other things, should be transferable from market to market to avoid large personnel costs from hitting and running. Furthermore, there must be a delay before incumbents can meet an entrant's price. The empirical observations below reveal that such conditions are not widespread in the Australian wheat processing market.

Empirical Observations

The basic proposition underlying the value-adding argument is that Australia should take advantage of its comparative advantage in producing wheat by processing wheat in Australia and exporting the processed goods. There are a number of factors which may contribute to the low levels of processed wheat exports: high labour costs and low labour productivity relative to Asian countries, high capital and transport costs, uncompetitive work practices, high tariffs on processed goods in importing countries, and excessive regulatory requirements (McKerrow 1992).

While these factors are important, the existence of barriers to entry and sunk costs in the wheat processing market may also be significant. Barriers to entry and sunk costs can take many forms. Some of the most significant are: high up front capital costs for size economies, new product development, promotion for brand establishment and access to retail shelves; absolute cost advantages of incumbents which are independent of scale and cannot be cost-effectively substituted by potential new entrants; and obstacles to competitive import accessibility (Samuel and Ratnatunga 1993).

The existence of significant sunk costs has resulted in a wheat processing sector which is highly concentrated. The number of establishments producing flour mill products has fallen from 91 in 1968/69 to only 47 in 1986/87 (Industries

Assistance Commission 1989). Only one new firm has entered the flour milling market in the last 30 years (Reid 1991). Furthermore, the largest five firms involved in starch and gluten manufacture control 100% of the market. Structural concentration has been possible in Australia because 'allowing greater industry concentration has been accepted by the Trade Practices Commission as a way of lowering costs and hence improving international competitiveness' (Industries Assistance Commission 1989). However, the domestic market has remained small and fragmented, such that economies of scale and scope have not been realised. The only exception to this is the starch/gluten manufacturing sector which does possess a large, modern plant. While some of the other wheat processing plants are now fully automated, many of the older plants are outdated and not internationally competitive (Department of Industry, Technology and Commerce 1991b). This technology gap will augment the significance of sunk costs and may become the source of differential advantage to firms enjoying larger capacities to adopt new technology. Multinational firms have the greatest advantage as their overseas technology may be transferable to production in Australia, considerably reducing its cost of development and adoption. Investments in technology by these firms create a rent-yielding asset that could not be duplicated immediately by their Australian rivals.

Table 2 provides a summary of the concentration levels in the markets for some processed wheat products. This table indicates that for each of the products, the three-firm share of the market is at least 50%. The three-firm concentration level is lowest for flour which suggests that in the view of the consumers, flour is not a highly differentiated product. However, in each of the other product categories, breakfast cereals, biscuits, cake mixes and pasta, there is one dominant firm which controls over 50% of the market. This suggests that there is significant product differentiation in the market for processed wheat products. In the market for breakfast cereals, the largest selling type of cereal is the biscuit, accounting for 25% of the total market by volume. There are two leading brands of biscuit cereals, Sanitarium Weetbix and Uncle Toby's Vita-Brits, which are competing for the leading market share (Department of Industry, Technology and Regional Development 1993). Both products are heavily advertised as healthy, cheap and nutritious breakfast cereals. In an attempt to further differentiate its product, Uncle Toby's has recently introduced Vita-Brits made from organic wheat. Investments in advertising exhibit a similar behaviour as those in technology development and adoption. The firms create differential products that cannot be quickly duplicated, leading to additional barriers to entry.

One feature highlighted in Table 2 is that all of the dominant firms are wholly or partially foreign-owned. It is questionable whether foreign firms are interested in improving the export growth or efficiency of domestic firms. Their main objective is to increase profits via increasing domestic market share. In this respect, Australian subsidiaries have been referred to as 'cash cows' (Samuel and Ratnatunga 1993). The recent sale of 75% of the formerly Australia-owned Arnott's has caused much interest for a number of reasons. Firstly, there is concern that the entire biscuit making industry in Australia is now dominated by foreign firms. This means that most of the profits from Arnott's will now go overseas. Secondly, Australia has lost control of one of its oldest and most recognisable branded food companies, leading to further domination of foreign companies.

As argued by Samuel and Ratnatunga (1993), concentration at the retailer level may pose an equally significant barrier. If we consider that processors are the sellers and the large retail chains are the buyers, oligopsonistic behaviour by the retailers may force prices for processed goods down and facilitate

predatory behaviour among competing processors. Such behaviour threatens the profitability of small processors and effectively closes the door on potential new entrants. In 1985, the Australian retail environment went through a period of radical change with many retailers involved in horizontal integration, that is, mergers and acquisitions. Following these mergers, over 70% of the retail market was dominated by three groups: Coles-Myer, Woolworths and Franklins (Prices Surveillance Authority 1986). Since the retailers purchase goods in large volumes, their bargaining power is quite considerable (Samuel and Ratnatunga 1993). Ratnatunga (1985) has cited evidence of retailers exerting market power in the form of low prices to suppliers, which facilitates large retailers being able to sell higher volumes at lower profit margins.

The size and concentration of retailers has also enabled them to control access to shelf space, without which a processing firm would go bankrupt (Samuel and Ratnatunga 1993). Niche markets may be catered for through small unconcentrated retail outlets, such as corner shops, but an economically viable processor would need to produce at a reasonably large volume which would require widespread outlet exposure to sell the good. Dominant firms in a market are able to 'command unusual cooperation' with large retailers with respect to shelf space, promotions and pricing policies (Kotler, Chandler, Gibbs and McColl 1989). Small processors would, therefore, find it difficult to get adequate access to shelf space in the major retail outlets.

There are two additional vehicles used by large processors to disadvantage smaller processors and potential entrants: advertising and production of generic or house brands. Many of the major firms selling processed wheat products, such as Kellogg's, Uncle Toby's and Arnott's, spend considerable portions of their total revenue on advertising. The objective of such advertising is to lower the cross-price elasticity of demand between brands by enhancing product differentiation. The cost of launching a successful advertising campaign coupled with the research and development costs of introduc-

ing a new product line and the costs of conforming to government regulations on food quality constitute a significant barrier to entry. Production of house brands by dominant firms restricts access to shelf space by increasing the number of different products available and also provides larger firms with a method of supplying more products at the lower end of the price scale. Large processors may use this as an opportunity to dump excess production on the market. Clearly, many well-known characteristics of advertising (market development and promotion) give rise to sunk costs. Sunk costs create an important asymmetry between the incumbents firms and the entrants. Indeed, this fraction of investment in advertising is no longer part of the expenses of the incumbent firms, whereas the entrants must count it as an outlay.

Table 3 indicates that the export performance of the wheat processing sector has been relatively poor. Although processed wheat exports have increased at a greater rate than imports over the period 1988/89 to 1992/93, much of the increase in exports can be attributed to the cereal foods and baking mixes areas which increased by 145% between 1988/89 and 1992/93. Of the other exported processed wheat goods, the levels of biscuit, bread and flour exports actually fell (see Table 3). On the other hand, imports of all processed wheat products grew steadily over the same period. This suggests that the development of the wheat processing sector has been disjointed: some goods have experienced strong export growth with weaker import growth, while others have experienced weak export growth and continued import growth. As evidenced by this table, actual processed wheat product trade patterns are indicative of the presence of two-way exchange in goods of similar factor intensity: an observation which is clearly inconsistent with the free-trade ideal.

It seems that foreign direct investment is the preferred mode of international expansion by international processing firms in Australia (see Table 2). As noted above, this strategy is attributed to the roles of research and development (R&D) and advertising as proxies of technological progressiveness and

Table 2. Concentration in the market for processed wheat products.

Product	Market value (\$ million)	Leading brand (and ownership)	Market share (%)	3-firm market share (%)
Breakfast cereal	601	Kellogg's (United States)	59	91
Biscuits	725	Arnott's (Australian, 25%; U.S., 75%)	64	82
Cake mixes	46	White Wings (Australian, 75%; N.Z., 25 %)	63	86
Flour	58	White Wings (as above)	30	50
Pasta	46	Unifoods (U.K.; Holland)	56	86

Source: Department of Industry, Technology and Regional Development 1993

Table 3. Exports and imports of processed wheat products.

Goods	Exports (\$'000)		Imports (\$'000)	
	1988-89	1992-93	1988-89	1992-93
Flour	31633	25344	248	393
Starch and gluten	45110	59118	13159	20039
Cereal foods	116928	286730	42057	62597
Bread	1058	936	644	1432
Cakes and pastries	9489	13725	10597	41383
Biscuits	20464	19923	29730	43644
Sub-total	224682	405776	96435	169488
Total food and beverages	1916501	2973332	1773309	2428241

Source: Department of Industry, Technology and Regional Development 1993

product differentiation and, as such, may have enhanced the barriers to entry for Australian firms. In this respect, the absence of the Australian Wheat Board (AWB) in wheat processing activities is noteworthy. Since it is still the dominant grain trader in the domestic market and the single desk seller of export wheat, the AWB stands to gain the most from value-adding ventures. The AWB has exhibited little interest in these ventures even though it has received the legislative mandate from the government to be involved in grains based value-adding activities (Crean 1992b). For example, the AWB rejected an investment opportunity for a \$3 million noodle plant in Western Australia for exporting frozen noodles to Japan. While it has been recognised that Western Australian wheat is the best wheat for white salted noodles because of its unique starch quality, the goods were subject to a 25% duty once landed in Japan. Instead, the AWB has decided to establish a number of offshore investments, including a training bakery in Tianjin, China and a US\$1.2 million joint investment in a flour and feed mill in southern China (Wilson 1993). The AWB is also currently leading a consortium of Australian companies in a bid to secure A\$1 billion worth of construction work in China's grain storage and handling system (Lawrenson 1993). Whether this is the kind of commitment which is needed from the main player of the Australian grain market with respect to value-adding is an open question.

Structural constraints in the domestic market and perhaps in the international market may have discouraged the AWB from entering the value-adding industry. In other words, even the institutional potency of the AWB may not be sufficient to offset those impediments. Public policy can and should be designed to encourage the establishment of conditions in which contestability is fostered. If this is done, forces will be at work to ensure that even smaller firms could be attracted to the wheat processing industry. Potential entry not only provides incentive for each firm (large or small) to set prices at competitive levels, but it also ensures that each firm will operate at a scale of output that minimises the total industry cost. Monopolies and oligopolies that represent an efficient utilisation of resources can exist in contestable markets, where there is free and costless exit and entry; monopoly power can be absent even in the presence of monopoly.

Another key area that must be addressed if the Australian wheat processing industry is to develop a competitive base is the levels and types of R&D activity. As with much of the food processing sector, the current levels of R&D activity in wheat processing are low and are concentrated in public sector organisations like CSIRO. The government has attempted to stimulate private sector R&D activity recently by introducing initiatives such as the 150% tax break (Department of Industry, Technology and Commerce 1991b).

In addition to research on technologies, processes and procedures in wheat processing, it is important to focus on economic research into the structural impediments to processing both domestically and internationally, into the nature of competition in grain and grain products markets, and in particular, into overcoming the paucity of data. Markets for high-value products often violate competitive market assumptions such as product homogeneity and constant returns to scale. Dimensions of imperfect competition have long been recognised in international markets by using constructs based upon industrial organisation theory. Perhaps a similar approach has merit in the domestic market. Further work in this area of significance to the wheat industry and the Australian economy should aim to marry industrial organisation with conventional scientific and empirical research.

Conclusion

The focus of Australian agriculture and its associated manufacturing industries appears to have changed in recent years. Given the continued uncertainty over subsidies and other corruptive influences in world markets, and the long-run downward trend in Australia's terms of trade, the spotlight now appears to be on processing primary goods rather than simply exporting raw commodities in bulk at undifferentiated prices. Value-adding has emerged as a key strategy to enhance the position of the wheat industry. This paper has concentrated on the issue of processing of wheat because processing is arguably the most important component of the value-adding debate.

While the value-adding issue may appear simple to resolve, it is not. Many of the world's wheat importing nations, particularly those in newly industrialised Asia, are reluctant to import processed products because they are interested in building up their own manufacturing sector. Much of the estimated growth in wheat trade over the next 10 years is expected to come from Asia. However, the bulk of it may come only in the form of unprocessed wheat. On the domestic side, there appear to be significant barriers to the development of an efficient wheat processing industry. These factors include high concentration in the processing market, limited access to shelf-space in retail outlets and high levels of advertising for processed wheat products such as breakfast cereals and biscuits. The wheat processing market does not seem to be contestable.

The overriding policy implication of this observation is that the obstacles to contestability should be eliminated. Although there is benefit to having a pool of competitors who can respond to profit opportunities by entering the wheat processing market, it is argued that given the presence of high sunk costs, only larger entrants may potentially succeed in this environment. Alternatively, given the absence of regulation, the large entrants may opt for acquisitions and takeovers via which contestability will be further undermined. Accordingly, there may be an active role for public policy in that a large pool of small entrants should be attracted to the wheat processing industry. There is clearly some indication of processors' and retailers' concentration in processed wheat product markets that does cause concern and requires careful investigation and further research. Deregulation of the wheat industry cannot be fully justified if the concentration at the processing and retail ends of the market are allowed to continue.

Finally, a closer look at consumer prices of processed wheat products is called for. There is evidence that Australian consumers pay far higher prices, for example, for breakfast cereals than their North American counterparts, implying that monopoly prices or price fixing practices may be common in this country. This may also invite government intervention and effective public policy response. Contestability implies that efficiency can be obtained without intervention. Conversely, the absence of contestability means that inefficiency exists and regulation may be appropriate. Given the current anti-regulation environment in Australia, however, it is unlikely that there will be much support for public policy intervention to enhance contestability in the processed wheat product market.

In summary, the domestic market for processed wheat products appears not to be contestable implying that there exist high barriers to entry and concentration. There also exist a reasonable degree of two-way trade flows in processed wheat products which may be indicative of intra-firm trade. As a result, the growth of the Australian wheat processing sector seems to be constrained by strategic responses of rival foreign

and domestic firms rather than by profit opportunities open to any potential entrants. These conditions, coupled with high labour and capital costs and the small size of the Australian market, suggest that large expansions in wheat processing activities are unlikely in the near to intermediate future.

References

- Australian Bureau of Agricultural and Resource Economics 1991. Commodity statistical bulletin. Canberra, Australian Government Publishing Service.
- Australian Bureau of Statistics 1992. Catalogue No. 8221.0, Canberra.
- Ahmadi, F. 1991. Australia's performance in the grains trading game. In: Copeland, L. and Ahmadi, F., eds, Proceedings of the Grains Research Symposium 1991: Products Processing Marketing, The University of Sydney, July, 13–29.
- Bain, J. 1968. Industrial organisation. New York, Wiley and Sons, 678 p.
- Baumol, W.J., Panzar, J.C. and Willig, R. 1982. Contestable markets and the theory of industry structure. New York, Harcourt, Brace and Jovanovich, 510 p.
- Brown, B. 1990. Value-adding will not solve economic problem. Australian Rural Times, November 14.
- Crean, S. 1992a. Value-adding in agriculture: a government perspective. Agricultural Science, New Series 5, 2, 24–26.
- Crean, S. 1992b. Government announces new wheat marketing agreements. Media Release, 8 October.
- Department of Industry, Technology and Commerce 1991a. Australian processed food and beverage industry. Canberra, Australian Government Publishing Service.
- Department of Industry, Technology and Commerce 1991b. Australian wheat processing industry: opportunities for further processing. Canberra, Australian Government Publishing Service, 20 p.
- Department of Industry, Technology and Regional Development 1993. Food Australia: processed food and beverages industry, third edition. Canberra, Australian Government Publishing Service, 61 p.
- Industries Assistance Commission 1989. Food processing and beverages industries, Report No. 424. Canberra, Australian Government Publishing Service, 39 p.
- Kotler, P., Chandler, P., Gibbs, R. and McColl, R. 1989. Marketing in Australia, second edition. Sydney, Prentice-Hall, 748 p.
- Lawrenson, J. 1993. Australia's position in the international wheat market—meeting the commercial realities. Australasian Agribusiness Review 1, 2, 24–28.
- Mauldon, R. 1991. Concluding comments. In: Copeland, L. and Ahmadi, F., eds, Proceedings of the Grains Research Symposium 1991, University of Sydney, 99–104.
- McMaster, G.J. 1991. Wheat: the technical integration of production, processing and marketing. Paper presented at the Grains 200 Conference, Canberra.
- McKerrow, P. 1992. Value-adding to agriculture. Agricultural Science, New Series 5, 2, 27–33.
- Prices Surveillance Authority 1986. Inquiry in relation to retail prices of food and groceries, Report No. 9. Canberra, Australian Government Publishing Service.
- Ratnatunga, J. 1985. Financial controls in the Australian food marketing industry: a qualitative study. International Fellowship for Social and Economic Development, Canberra.
- Samuel, S.N. and Ratnatunga, J. 1993. Structural constraints to the development of food processing industries: a new research agenda. Australasian Agribusiness Review, 1, 1, 50–79.
- Wilson, L. 1993. Adding value to grain. Agricultural Science, New Series 6, 1, 46–48.