Appendix B Markets, marketing and ginning

World market for cotton

Chapter 3 described the main characteristics of the world cotton market and some of the trends which have occurred. Charts B1 and B2 provide further information on these characteristics and trends.

Recent key developments

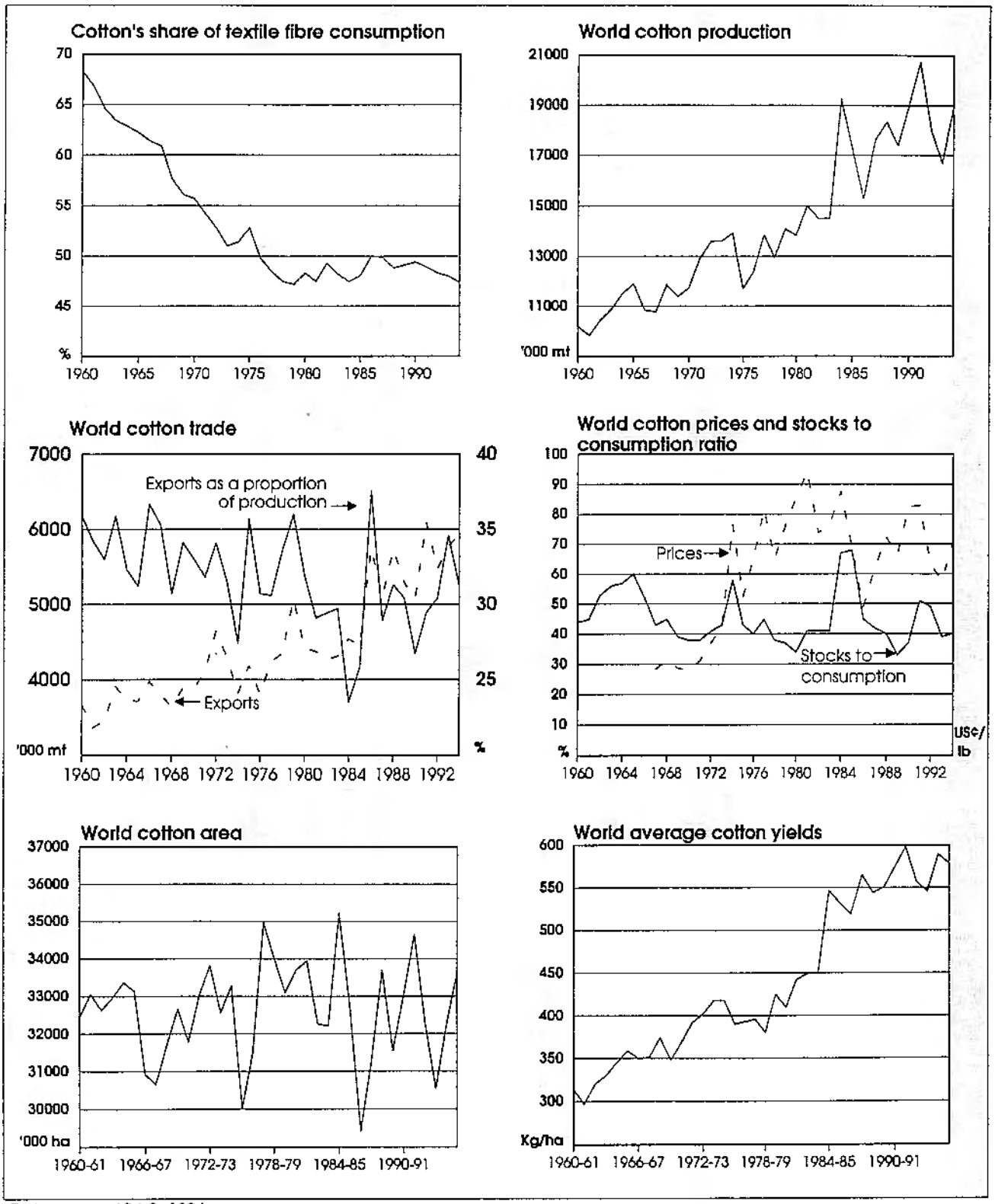
Uruguay Round outcome favourable for cotton

As noted in chapter 3, the implications of the Uruguay Round for cotton are threefold. First, the overall effects of the Round outcome on stimulating the world economy will increase consumer incomes and enhance demand for cotton textiles and apparel. Second, the Multi Fibre Arrangement (MFA) will be phased out over ten years and quotas on textiles and apparel imports will be eliminated. Third, the agreement on agriculture means reductions in production and export subsidies and some increases in market access. These are discussed in more detail below.

The benefits of the Round to world income growth could be substantial. Estimates by the US Council of Economic Advisers indicate that by 2005 world economic growth could be between 2 per cent and 5 per cent higher than in the absence of an agreement. The WTO Secretariat estimates the Round will result in higher world incomes of $235 billion by 2002, about half the United State's estimates of gains in world income growth. Translating these estimates into additional demand growth for cotton means that the Uruguay Round could add an additional boost to world cotton demand of between 1 and 5 per cent or between 200 kt to one million tonnes over the next ten years (ICAC, September 1994).

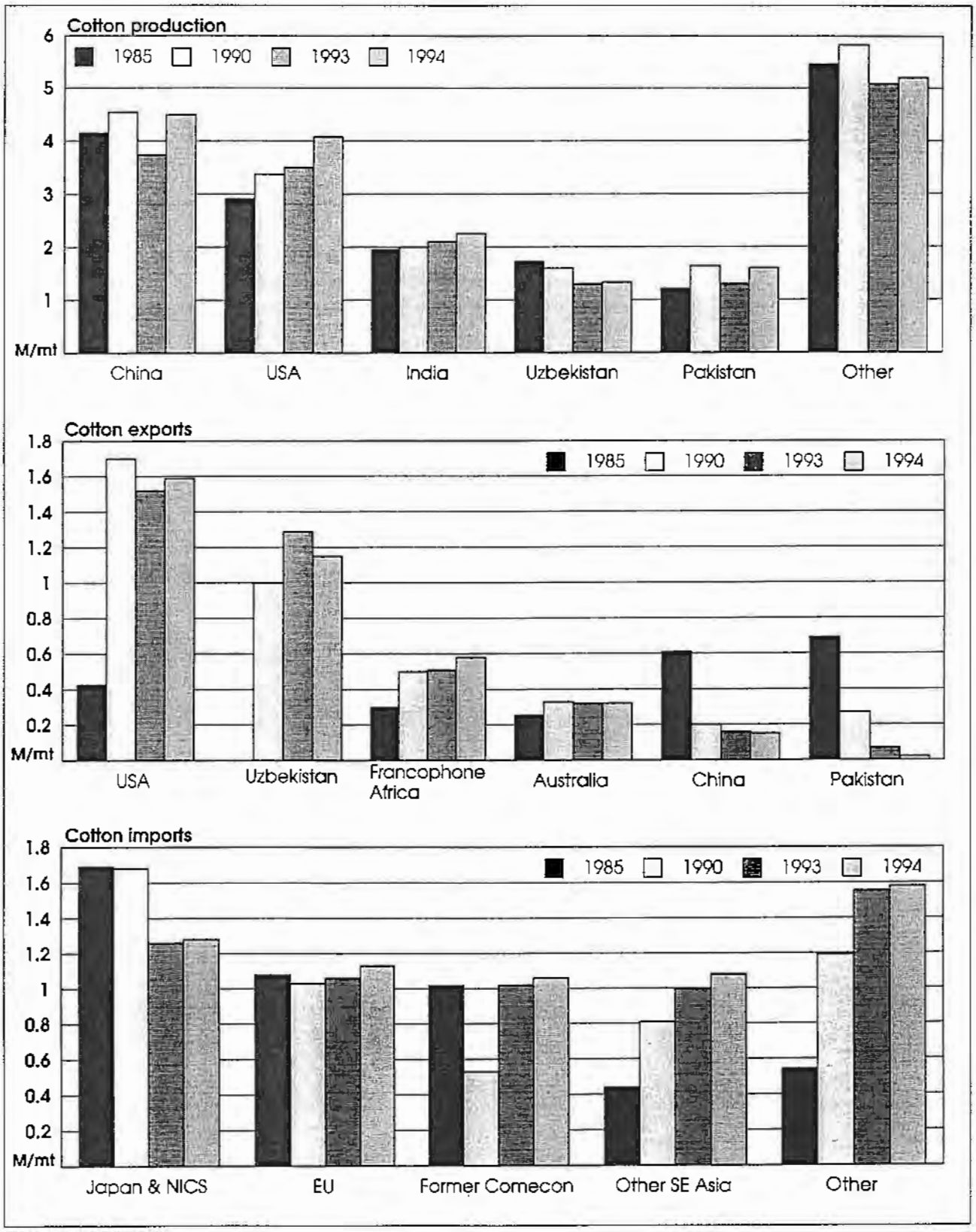
The MFA lets developed countries impose quotas on textile and apparel products in addition to tariffs. The MFA is now subject to a ten year phase out which will proceed in three stages. During stage one, to be completed by 1997, quotas will be eliminated on textile and apparel categories which made up 16 per cent of import volumes in 1990. In addition, quotas on the remaining 84 per cent of imports will be expanded by 16 per cent, and tariffs established under bilateral agreements will be reduced. The United States, for example, is to reduce tariffs on textiles and apparel by 11 per cent over the ten year implementation period of the Uruguay Round.

Chart B1 **Characteristics of the world cotton market**



Data source: ICAC, 1994.

Chart B2 **Major world producers, exporters and importers of cotton**



Data source: ICAC 1994.

In the second stage, to 2001, quotas will be eliminated on a further 17 per cent of 1990 import categories and quotas on remaining categories must expand by 25 per cent. During the subsequent third stage, quotas must be eliminated on a further 18 per cent of 1990 imports and quotas on the remaining 49 per cent of 1990 import categories must expand by an additional 27 per cent. Finally, at the start of the eleventh year, all import quotas must have been eliminated.

Countries are likely to first choose the least sensitive categories on which to eliminate quotas so that the impact of the new agreement will mean little in the early years but become progressively greater over the ten year implementation period. Estimates by the US International Trade Commission indicate that US retail prices of textiles and apparel could be reduced by between 1 per cent and 11 per cent after the elimination of quotas, depending on the category. This could mean increases in US cotton consumption of 1 to 2 per cent. Similar estimates could apply in other developed countries (which account for about one-third of final cotton consumption).

The Uruguay Round agreement on agriculture is likely to have little impact on reducing the subsidies paid to cotton growers in competing countries. Such subsidies include:

- deficiency payments, the main form of income support to cotton growers in the US, are exempt from the 20 per cent internal subsidy reduction commitments;
- in the US, total support to agriculture must be reduced from $23 billion (the level of support in the base period 1986–88) to $18.5 billion by 2000, but the current level of aggregate support is around $13 billion; and
- the requirement for countries to cut export subsidies by 36 per cent over six years from the 1986–90 base, and export volumes receiving subsidies by 21 per cent, will not affect US cotton as no component of the US cotton program is defined as an export subsidy — there is no spending on cotton under the Export Enhancement Program.

In summary, the impact of the Uruguay Round on the world cotton market is likely to be confined to increases in world demand for cotton and not through any significant reductions in subsidies affecting supplies.

Shifting pattern of mill consumption

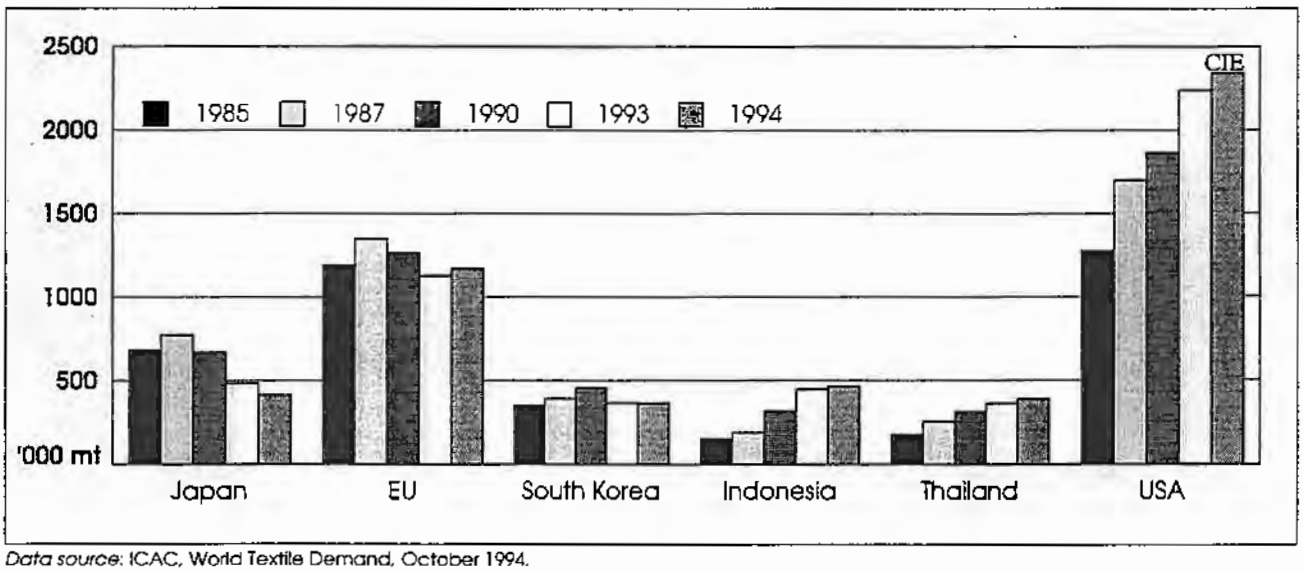
In recent years there has been a trend toward decreasing mill consumption of cotton in some industrialised countries but a strong upward trend in mill consumption in the main NIC countries of East Asia (chart B3). Since 1987 mill consumption in the EU has declined by 13 per cent, in Japan by 46 per cent and in Korea by 8 per cent, whereas mill consumption in Indonesia and Thailand has increased by 145 per cent and 52 per cent respectively. This may be associated with lower labour costs and higher economic growth rates in Indonesia and Thailand. An exception, however, is the US where mill consumption of cotton has increased by 21 per cent since 1987.

In the medium term this trend toward relocation of mill consumption away from industrialised countries is likely to continue. It will be enhanced by the effects of the MFA wind-down discussed earlier. Mill consumption should continue to grow strongly in low labour cost countries such as Thailand and Indonesia, and also Vietnam, the Philippines and China.

1995 US Farm Bill

In recent years payments to cotton producers under US farm programs have exceeded $ 1.4 billion per year. Further substantial payments have been made to keep cotton land under the Conservation Reserve Program whereby land at environmental risk is taken out of production. This program will come under pressure as the US attempts to reduce its budget

Chart B3 **Shifting pattern of mill consumption of cotton**



Data source: ICAC, World Textile Demand, October 1994.

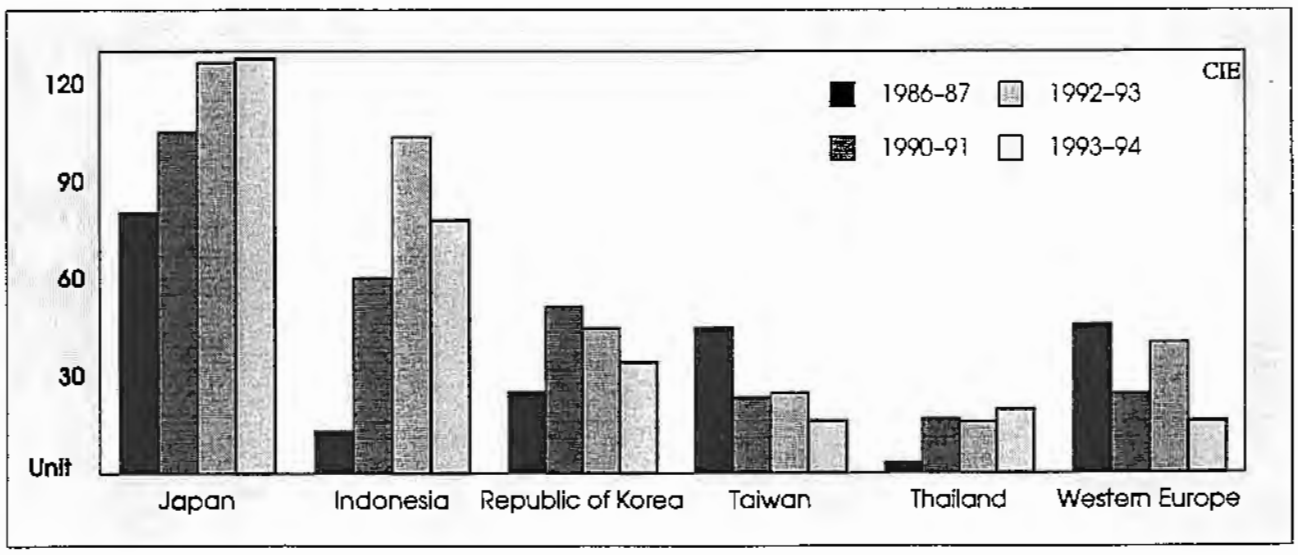
deficit. Less generous supports to cotton may limit any expansion in US cotton production in response to a release of land from the CRP. But there is uncertainty about the amount of cotton land which may be released from the Conservation Reserve Program. Much of the 600 000 acres currently tied up in the program are due for release around 1997 or 1998, although growers will be given the option of extending.

In the United States a more important factor, which is likely to limit payment of subsidies to farmers in the longer term, is the increasing pressure on the US budget. Recently, the US House of Representatives and Senate passed budget resolutions which set down broad strategies to bring the budget into balance by 2002 (Economist, 1995). This may mean increased internal pressures to reduce spending on agricultural subsidies.

Australia's cotton markets

Australia exports cotton lint to around 35 countries but the bulk of exports are shipped to Asian markets, particularly Japan, Indonesia, Korea, Taiwan, Thailand and mainland China (chart B4 and table B1). Western Europe is still an important market but our exports to that region have declined while markets in Asia have expanded rapidly. Markets in Asia accounted for 86 per cent of Australian cotton exports in 1993-94, and the top five markets, all in the Asian region, accounted for 78 per cent of total exports.

Chart B4 **Asian markets are the main destinations for Australian cotton**



Data source: ABARE, Commodities Statistical Bulletin 1994.

Australia's dependence on the Japanese market has declined substantially since the early-1980s (table B1) even though the volume of cotton shipped to Japan has increased. Indonesia is now Australia's second most important market. Volumes shipped to Indonesia rose substantially to 1992-93 but have since fallen back largely because of drought induced falls in Australian output. Korea and Thailand are other markets where export volumes and the proportion of total exports has increased while the Taiwan market declined in importance.

The Japanese market

Japan is Australia's most important cotton market accounting for nearly 36 per cent of total exports in 1993-94 (chart B5). After a shaky performance in the second half of the 1980s when the US captured 50 per cent of the Japanese market, Australia has slowly increased market share and in 1992-93 held a 25 per cent share. This increased share was largely recaptured from the US.

Australia has a good reputation as a supplier of cotton of the type required by Japanese mills. But the Japanese textile activity is declining. As indicated earlier some Japanese companies are relocating to other countries where production costs are cheaper.

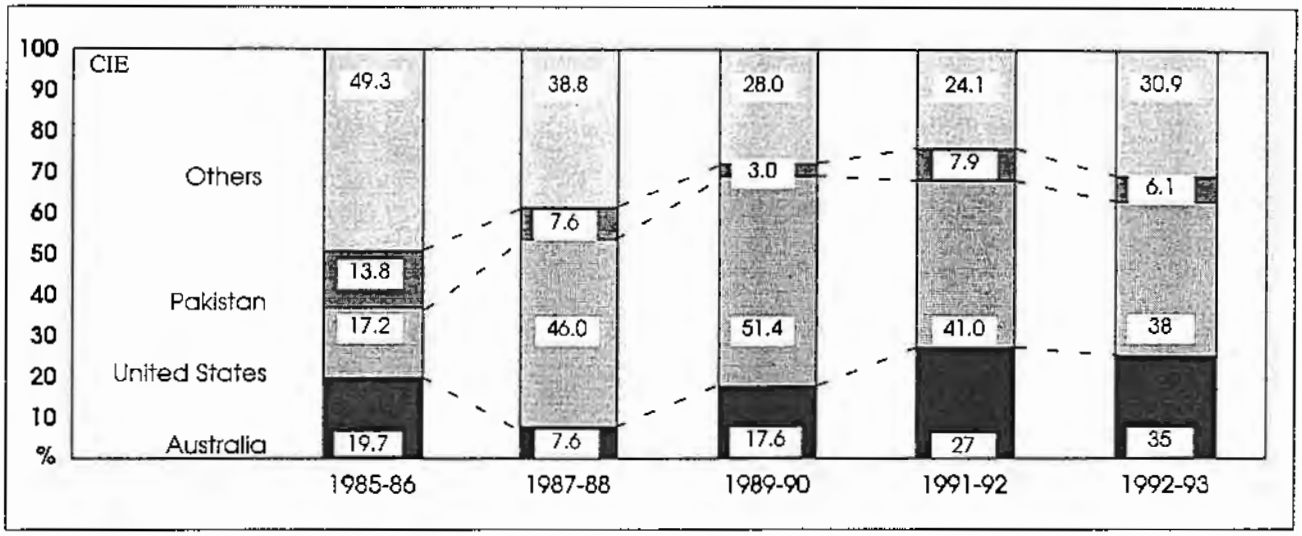
Some Japanese textile mills, for example, have interests in Indonesia, Malaysia and Thailand. Cheaper, low count fabric production is being phased out in favour of quality, high count fabric production with the former being relocated to developing countries (Macquarie Agribusiness, 1992).

Table B1 **Proportion of Australia's total cotton exports shipped to key markets**

Destination	*1980-81*	*1984-85*	*1990-91*	*1992-93*	*1993-94*
	%	%	%	%	%
Japan	68.0	47.8	27.6	32.0	35.5
Indonesia	4.8	3.6	15.7	26.2	21.6
Korea	1.5	2.1	13.4	11.2	9.4
Taiwan	1.0	22.7	6.1	6.2	4.3
Thailand	–	–	4.3	3.9	5.3
China	21.3	–	4.8	–	6.4
Western Europe	–	11.9	6.3	10.0	4.2
Other	3.4	11.9	21.8	10.1	13.3
	100.0	100.0	100.0	100.0	100.0

Source: ABARE, Commodity Statistical Bulletin, 1994.

Chart B5 **Australia's market share in Japan**



Data source: ICAC, World Cotton Trade, October 1994.

Overall, Australia has performed well in the Japanese market, supplying the type of high quality cotton demanded by Japanese mills and increasing market share since the late 1980s. Australia also has a reputation for supplying cotton with reasonable strength and free of contamination, with shipping and packaging reliability and being able to supply out-of-season compared to northern hemisphere suppliers.

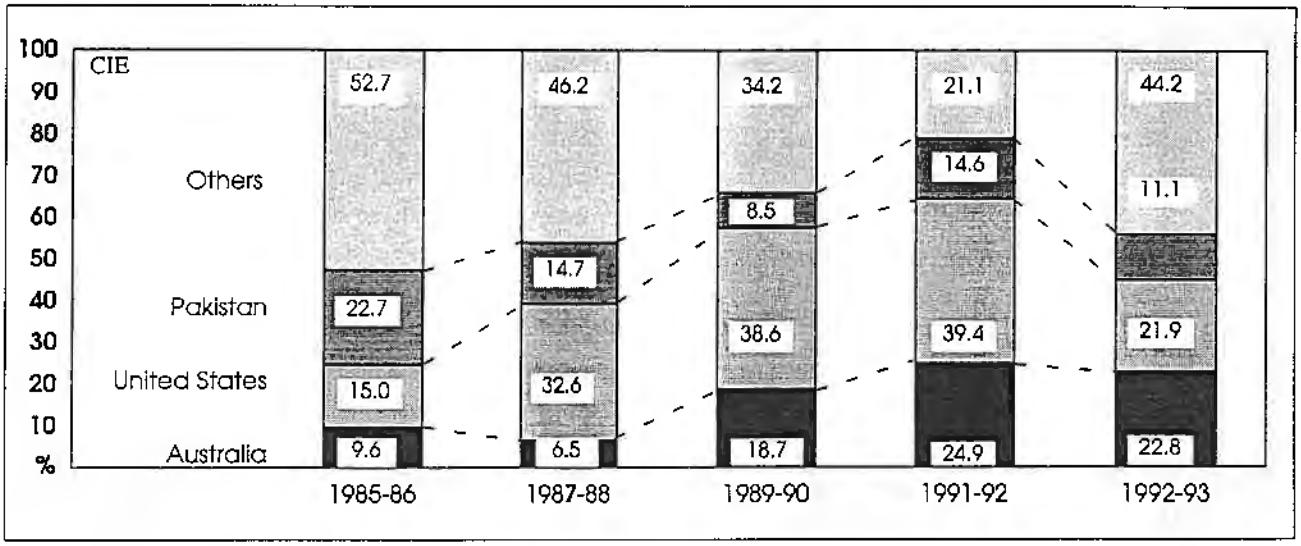
Indonesian market

Since the late 1980s Australia has steadily increased market share in Indonesia and is now the dominant supplier to the market (chart B6).

The Indonesian textile sector has grown rapidly in recent years and spinning mills have developed, increasingly based on modern, high speed equipment. Like many other developing industries in Indonesia, the yarn and textile sector has been developed through joint ventures with foreign investors. While further investment in modern milling capacity is likely, some labour intensive processes are likely to persist given local employment policies and relative costs of labour in Indonesia. Mill consumption of cotton in Indonesia in 1995 is likely to be 490 kt, 18 per cent higher than in 1992.

Australia has a number of advantages in supplying the Indonesian market. Indonesia is a close neighbour. Quality and reliability are perceived to be good and Australian supplies are delivered in the US off-season. Australia receives prices similar to San Jaoquin Valley (SJV) prices but has the

Chart B6 **Australia's market share in Indonesia**



Data source: ICAC, World Cotton Trade, October 1994.

advantage of reduced freight and storage costs compared with the US. SJV cotton is generally regarded as among the best quality cottons.

Some people in the Australian industry suggest that it is only limited Australian supplies that are stopping Australia increasing share in this market.

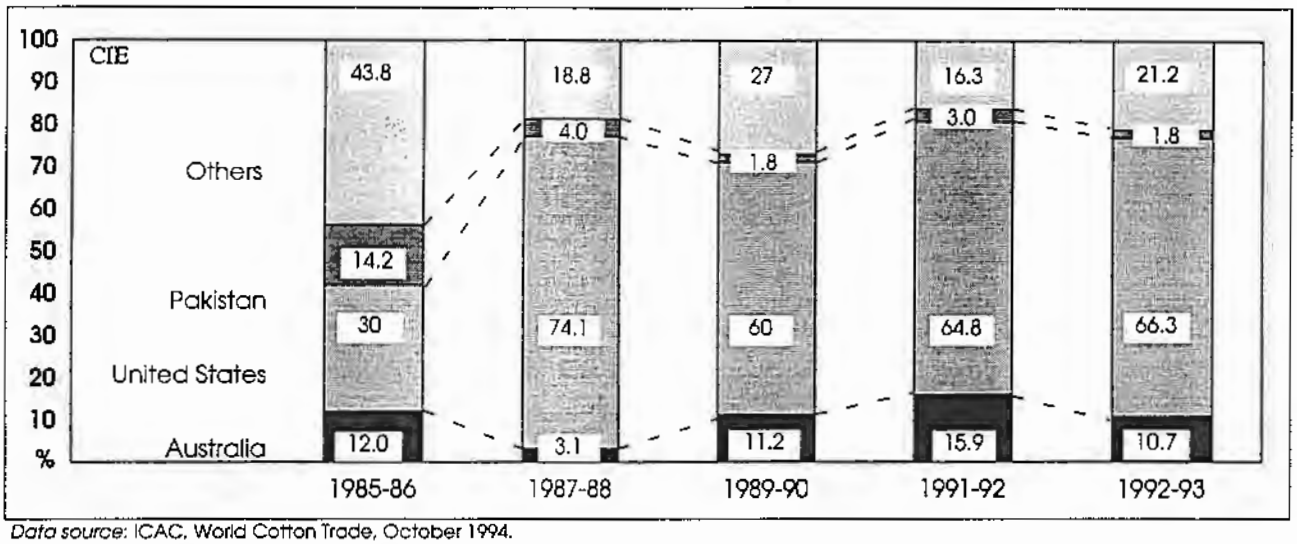
South Korean market

Mill consumption of cotton in Korea has declined by 100 kt since 1990 (chart B7). Like Japan, Korea has relatively high labour costs and some Korean mills are also relocating while those remaining in Korea are increasingly concentrating on quality.

Korea's preference has been for SJV cotton from USA which tends to be regarded by Korean buyers as stronger and with a better nep (Macquarie Agribusiness 1992). But in recent years Australia's cotton quality has been equal to that of SJV.

The US has dominated the South Korean market and in 1992-93 held a two-thirds market share. Australia's performance in Korea has been mixed since the mid-1980s. Its market share in 1992-93 was 11 per cent, a little different from 1990 and 1985. Australia is perceived as having good quality cotton, particularly in dry years, being a reliable supplier and being able to supply 'out-of-season'.

Chart B7 **Australia's market share in South Korea**



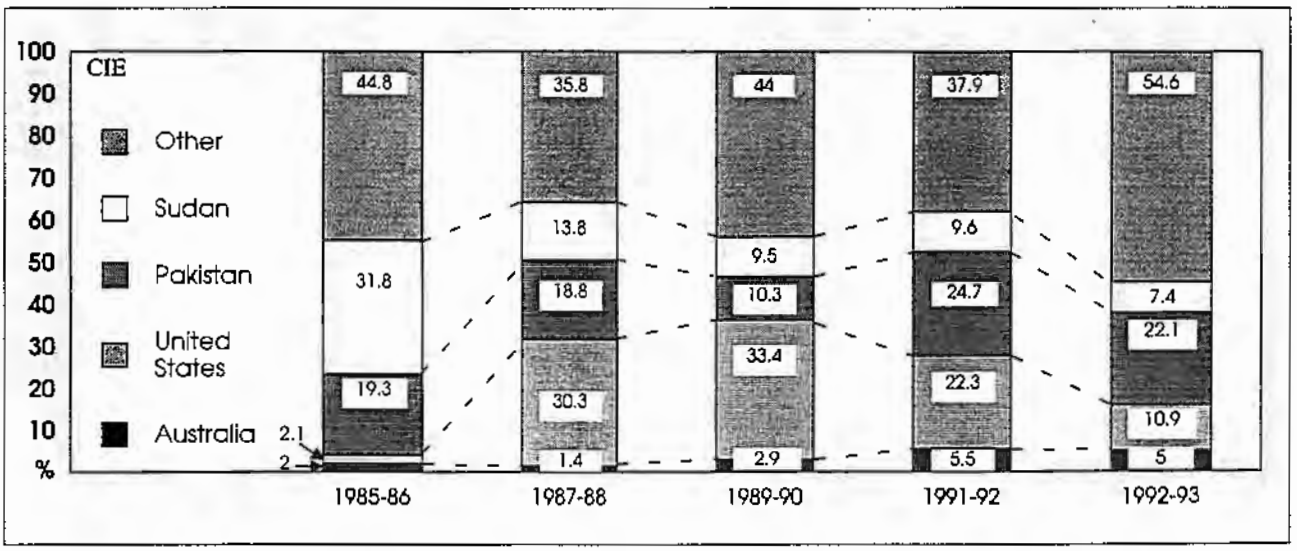
Data source: ICAC, World Cotton Trade, October 1994.

Other markets

Charts B8 and B9 show changes in Australia's market share in Thailand and China. Pakistan is now the main supplier to Thailand. Australia has only 5 per cent of the market but it's share has increased, albeit from a low base. Thailand imports cotton from a large number of sources.

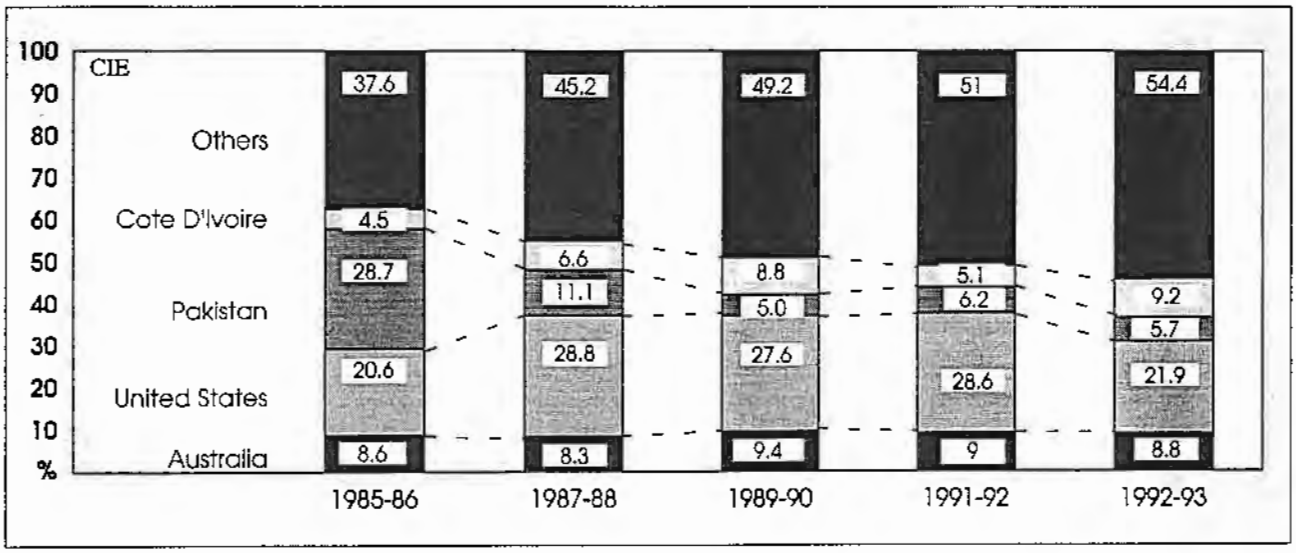
Thailand's yarn and textile section has grown rapidly in the past ten years and the trend has been toward medium count higher quality cotton. Australia is generally well placed to meet this demand trend.

Chart B8 **Australia's market share in Thailand**



Data source: ICAC, World Cotton Trade, October 1994.

Chart B9 **Australia's market share in China**



Data source: ICAC, World Cotton Trade, October 1994.

Australia has performed consistently in China maintaining an 8-9 per cent share of the market. China is slowly upgrading machinery used in yarn and textile production and, given that high economic growth rates in China are likely to continue, China should continue to be an important market for Australian cotton.

Marketing in Australia

It was not until the 1980s that growers began involving themselves in sophisticated risk management and marketing. Up to that time, they largely relied on their ginner/marketer (that is, Namoi Co-op, Auscott and Queensland Cotton Board) to market their cotton in limited pools.

By the early 1990s, many ginning and marketing alternatives had become available and growers had gained experience in these alternatives. The increasing capacity to sell forward had provided growers and spinners a wide range of different ways to buy and sell cotton over a long time frame.

The Australian cotton grower has the option of delivering seed cotton direct to a an operator contracted to the grower to gin and sell the raw cotton on the grower's behalf. Alternatively, the grower may elect to have the cotton marketed by an independent merchant, who would contract out the ginning of the seed cotton purchased direct from the grower.

Merchants who market internationally employ agents in cotton buying countries who sell to the mills. These agents establish relationships with the mills and actively search for opportunities in potential markets. Traders are sometimes used instead of agents. These traders sell cotton 'forwards' and 'futures' to the cotton buying countries (table B2).

Australian raw cotton is marketed under a free market system with no government intervention. Several major international cotton merchants operate in the Australian market.

There is strong competition among purchasers in both domestic and international markets. A large number of Australian sellers, (approximately 900 cotton growers) supply a relatively small number of purchasers (13 marketers/merchants), currently operating in Australia. When combined, the companies which operate large, vertically integrated operations comprising growing, ginning and marketing, account for some 50 per cent of total raw cotton production.

Several large companies offer ginning and marketing services. A trend over the past few years has been the emergence of a number of independent merchants who buy cotton direct from growers and have it ginned or contracted and then market the cotton themselves. These merchants/marketers have increased competition within the industry and have introduced a number of benefits including cash offer sales and faster payment for purchased cotton. They also supply a benchmark for growers when comparing daily prices.

Risk management and exchange of ownership

Historically, cotton has seen large fluctuations in its price and compared with other Australian agricultural industries individual growers follow a number of sophisticated risk management techniques. This may be explained by such things as the need to manage large production fluctuations and cover for large price variations in a single crop, the absence of any government standard marketing scheme crowding out private actions and the independent culture existing in the industry.

Table B2 **Percentage of cotton traded on futures market**

Growers	Around 10 per cent to 20 per cent (sales to merchants/marketers)
Marketing pools	Around 50 per cent hedged
Merchants/marketers	Around 90 per cent to 95 per cent (sales to mills)

Source: Macquarie Report (1992).
Note: (These percentages sum to over 100 per cent because the growers, marketing pools and merchants/marketers may have been double counted as they are in some cases the same firm.)

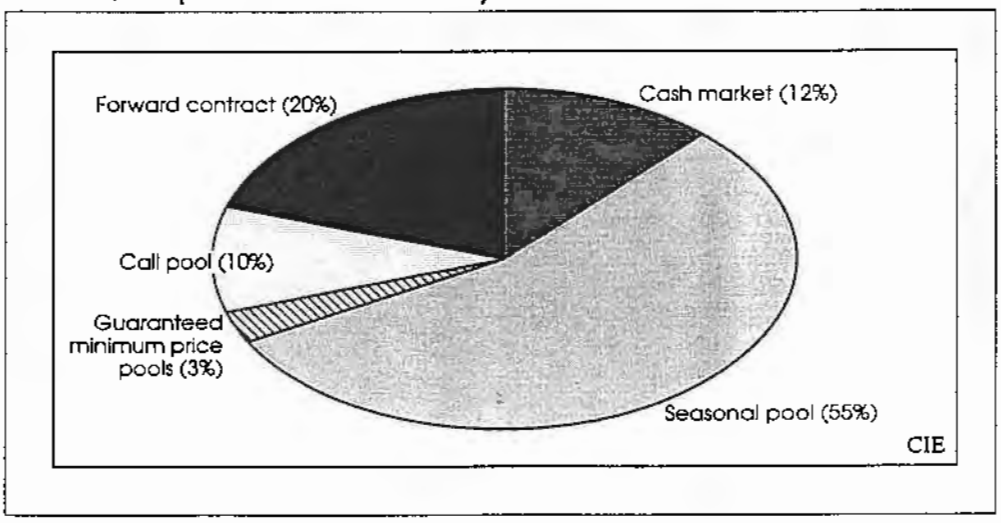
Cotton growers in Australia have five basic alternatives for exchanging cotton ownership. Estimated proportions of the 1991 Australian cotton crop delivered under the various marketing alternatives (ABARE 1992) are shown in chart B10.

Growers who choose to deliver to seasonal or minimum price pools leave the selling and trading of futures and options to the discretion of professional marketers. The other alternatives give the growers scope to trade futures and options on their own account. Effectively these pools transfer the responsibility of managing the risk associated with establishing adequate hedge cover from the grower to the marketing organisation while still allowing the grower the benefit of being able to forward sell.

Marketing efficiency and risk management

Each of these marketing alternatives has different risks which can be minimised by diversification. Apart from cash sales, all the above options require commitment prior to harvest, with different risk characteristics associated with each alternative. The objective is to structure a marketing mix that depends on factors that can differ between growers and between seasons, such as availability of time, risk preferences, expectations of future movements in prices, indebtedness and uncertainty about yields.

Chart B10 **Proportion of cotton sold by various methods**



Data source: Macquarie Agribusiness 1992.

When comparing the risk and return characteristics of the different marketing alternatives, on average the net returns for these alternatives are not significantly different (ABARE 1992). However, the price risk at harvest time is smaller with hedging strategies than without. Hedging is a process of reducing risk by arranging transactions with counterbalancing risks in a number of different markets.

Marketing requirements

There are differences among mill buyers about how to decide on the price they offer for cotton, especially as it relates to micronaire, maturity and freedom from trash.

The style now grown in Australia is of a quality that accounts for 85 per cent of all spun yarns. The longer, stronger, finer fibres which can produce finer yarns for more expensive fabrics can command a premium over shorter, coarser, weaker fibres whose use is restricted to coarser fabrics. Most Australian cotton that is converted to yarn in Australia is converted into coarse and medium yarns even though the fibre lends itself to combing and spinning into finer yarns.

With fibre costs accounting for approximately half of the total costs of spinners in Australia, users emphasise consistency — a low incidence of weakness, stickiness (causing the rollers to stick in the spinning process) coarseness, neppiness (masses of entangled fibres) excessive short fibre, poor colour and excessive trash in the purchased fibre.

Box B1 **Pooling**

A *seasonal pool* is a delivery alternative for Australian cotton growers whereby they commit either a specified quantity of cotton or the production from a specified area to a particular marketing organisation. Each grower who delivers to this pool subsequently receives the average price the organisation obtains for all the cotton delivered to the pool during the same season (with adjustments to reflect quality differences).

A *minimum price pool* is a seasonal price pool whose operator, using options, guarantees growers some minimum price but still permits them to benefit from improvements in prices.

A *call pool* is used when cotton growers commit a quantity of cotton to a particular marketing organisation while retaining the freedom to hedge using futures and options. Each grower can choose when to 'lock in' (in effect, ensure receipt of) the then quoted May or July US futures price, and likewise when to 'lock in' the Australian basis and the rate of exchange of US dollars into Australian dollars.

A *forward contract* is made when the sale price is set at a fixed margin with respect to a particular futures price.

Source: ABARE (1992).

Nevertheless, there is not strong evidence of willingness to pay high premiums for quality within the broad type. One estimate (Shaw 1994) places a premium of only US$24 per hectare on super colour strength and fineness.

Heavier fabrics can be made from cheaper cotton, with a proportion of reprocessed waste. Lighter fabrics call for high labour and machinery input and a fine raw material. At present the very fine Pima variety suitable for this latter purpose is grown domestically by only two growers.

Australian cottons are versatile. They may be used in the production of quality 'all cotton' goods and in cotton polyester blends in shirtings and sheetings and in the heavier fabrics such as poplin and drill. They can also be combed (having the trash removed and the short fibres removed) for manufacture into such fabrics as fine shirtings and sheetings and women's dress goods.

Cotton promotion

The Australian Cotton Foundation (ACF) is constantly working to increase consumer awareness in Australia of cotton fibre's comfort and natural qualities. It provides domestic promotional activities including the sponsorship of fashion shows promoting cotton garments sometimes jointly arranged with the wool industry.

Two manufacturers, Bonds and Johnson & Johnson, have recently begun high profile cotton promotion with the introduction of the first range of 100 per cent cotton skincare products. Johnson and Johnson have incorporated the Cottonmark, a logo used to promote Australian cotton, in packaging and an accompanying $2 million promotion campaign aimed at women aged 18-39 (ACF).

Currently, Cotton International, based in the US, provides generic cotton promotion internationally. The Australian cotton industry is able to take advantage of this promotion because of the similarities between cotton from the San Jaoquin Valley (SJV) and Australian cotton. With the further development of Australian cotton, it may be necessary to differentiate Australian cotton from competing cotton producing countries to command premium prices and buyer preference. Whether this is either feasible or cost effective is also an issue for the industry.

Cottonmark

Designers and manufacturers who meet the quality standards of design and manufacture required by the ACF are being actively supported by the cotton industry to display the 'Cottonmark'. The 'Cottonmark' means consumers can now recognise products wholly made of cotton. As with wool promotion, a cotton blend mark is also used. The mark is available for use by all sectors of the cotton industry: growers, spinners, weavers, designers, manufacturers and exporters. No licence fee is required to gain use of the 'Cottonmark'.

This mark was developed in 1991 and was initially used for end products designed and made in Australia from Australian cotton spun and woven in Australia. But this applied to only a small proportion of cotton garments sold in Australia. Most cotton garments sold in Australia are imported. The licence was then widened to include several categories of products. Basically, two marks were developed, one designating pure cotton products and another designating mostly cotton products blended with other fibres.

The wording underneath the marks further indicated the origins and make up of the products. The cotton mark with 'Cotton Australia' underneath indicated a purely Australian product — one made in Australia from Australian cotton spun and woven in Australia. 'Pure Cotton' designates a product made out of pure cotton but it may include some cotton from another country — spinners overseas frequently blend cottons from various countries.

Several large textile manufacturers in Australia have criticised the current system on the grounds that it is confusing to the consumer. They are seeking exclusive use of a mark which clearly identifies Australian made goods using Australian cotton. This issue is complex and needs to be resolved by all sectors of the industry having an input.

New technology affecting marketing prospects

The latest generation of spinning machinery is putting new evaluation criteria into the textile industry. High Volume Instrument (HVI) systems have been developed into a highly reliable and economical method for testing important properties of cotton fibres. They measure:

- fibre length — measured precisely as the price of cotton is roughly proportional to staple length;

- micronaire — a measure of fibre fineness and maturity. It forecasts the finest count to which a yarn can be spun, the highest speed lint can be carded, dyeability , and problems such as nep formation;
- colour — determined by the degree of reflectance and yellowness;
- trash and dust — measure of the amount of non-lint materials in the cotton. HVI lines tell whether discolouration is in the lint itself, due to large pieces of trash, or to microdust, which may have been trash that was shattered in lint cleaning;
- tenacity and elongation — increasingly tenacity is being used in negotiating prices, because a stronger cotton can often be used in smaller quantities; and
- yarn tenacity — HVI input the fibre results into a regression equation that predicts yarn tenacity.

The reason for measuring the fibre properties is so that cotton may be purchased, warehoused, assembled into mixes, and processed efficiently by the textile manufacturer. Textile manufacturers use the HVI data to:

- pre-approve bales before they are shipped to the manufacturer;
- categorise their cotton inventory and warehouse control; and
- control their mixes for uniform operation of the mill from day-to-day and for maintaining constant and high product quality.

These operations are made possible by computer programs designed to process the HVI data.

Most merchants use HVI testing themselves to determine the fair value of cotton in their sales to overseas agents and spinners. These lines provide a print-out of the sample results. Further developments in this technology are needed in the industry based on objectively measured, market driven, fibre characteristics. This will allow spinners to quickly and accurately evaluate fibre qualities necessary to produce yarns to their customers.

The US now requires mandatory HVI testing to qualify for participation in the Loan Program. The Macquarie Report recommended imposing mandatory HVI testing in the Australian cotton industry. This has been strongly challenged, however, because it is already widely used by most ginners and there is general resistance to government intervention in the existing free market environment.

The Cotton Classers' Association of Australia runs comparative analysis programs to establish consistent HVI results. In the 1994 season the check test program produced results of higher repeatability of Australian cotton than the similar United States Department of Agriculture program. This result illustrates the leading qualities present in Australian cotton.

In addition to the current uses of HVI, it could also be used as the tool to carry communication back to the growers in the form of premiums and discounts. Some mills now utilise HVI data to formulate lay downs in order to produce yarns of a certain quality. As this practice develops, spinners will encourage growers and ginners to produce bales with certain HVI characteristics.

The future of marketing Australian cotton

Currently the Australian cotton industry is one of the few major agricultural industries with virtually no government involvement in the marketing of its crop. This unregulated or self-regulated environment has provided strong incentives for growers to adopt new technology and allowed strong competition to develop in the provision of marketing services.

Australia is generally known to provide good quality cotton with reliable shipping. Other favourable factors include political stability and western style of business. Geographical location provides the advantage of alternate growing seasons with Australia's northern hemisphere counterparts.

The speed of technological changes in the cotton industry will depend on the signals sent by the spinner to the ginner and grower. Very sophisticated ginning techniques may be applied only to cottons for certain niche markets. However, today's sophisticated consumer will demand even higher quality cotton goods which will ultimately drive demand for consistently higher qualities of raw cotton.

An important issue that must be addressed for the future is the extent of international promotion Australia should undertake as production increases. Does Australia need to promote internationally, or will the world market increase its purchases of Australian cotton with the increased supply? Can Australian cotton be differentiated from other cotton growing countries to enable Australian cotton promotion? If Australian cotton is promoted internationally, should a centralised body coordinate the activity

or should it be a collective industry effort? These issues will be of great importance as the cotton industry seeks to expand exports into the future.

Ginning

Prior to the 1987-88 ginning season there were only two commercial ginners in NSW (Namoi Co-op and Auscott) and one in Queensland (Queensland Cotton). In addition, Darling River Cotton at Bourke owned and operated a gin for its own crop. This was before module technology was developed to handle cotton between the picker and the gin. Then the ginning season was necessarily short because storage and handling processes were not weatherproof. Module technology made it possible to extend the ginning season because seed cotton could be stored in the field. Three new ginners entered the market in the late 1980s: Colly Farms established a gin at Collarenebri while Dunavant Enterprises and Twynam Cotton built gins at Moree and Warren respectively.

During the late 1980s and early 1990s gins worked for five months or more per year as seasons were good and there was no excess capacity. This meant that the large fixed costs associated with owning and operating a gin were spread across a big volume of product. In early years, the 60s and 70s, there was little competition among ginners. Firms such as Auscott provided assistance on all aspects of production to growers interested in growing cotton and there was a great deal of loyalty in the industry particularly between small growers and their ginner. However, the continued construction of more gins by existing and new ginners has led to spare capacity which in recent years has become more apparent with the droughts accruing in those years.

Ginning capacity

Today there are many gins in operation. The gins built in Australia are generally large scale operations designed to process the owners' crop and the crops of other growers. A significant proportion of Australia's ginning equipment is imported from the USA. Generally, a four stand gin in a regular shed might cost in the order of $10 million.

Table B3 gives ginning capacity by cotton growing region based on a 100 and a 150 day ginning season. It is estimated that the industry has a total saw gin capacity of about 2.3 million bales per year over a 100 day ginning season. If ginning operations are extended to say 150 days, the total capacity in Australia would be about 3.5 million bales. In 1991-92,

Table B3 **Summary of regional ginning capacity and cotton production**

Region/area	*Number of gin operators*	*100 day ginning* Bales	*150 day ginning* Bales	*1991-92 production* Bales
New South Wales				
Macquarie	2	282 000	423 000	221 000
Bourke	1	56 000	84 000	62 000
Namoi	3	541 000	811 000	380 000
Gwydir	5	577 000	865 000	599 000
Macintyre	3	358 000	537000	293 000
Others	1	38 000	57 000	34 000
Sub total New South Wales		1 852 000	2 777 000	1 589 000
Queensland				
St George	1	59 000	88 000	82 000
Darling Downs	1	145 000	218 000	199 000
Biloela/Theodore	1	37 000	56 000	39 000
Emerald	2	168 000	252 000	111 000
Sub total Queensland		409 000	614 000	431 000
Total Australia	20	**2 261 000**	**3 391 000**	**2 020 000**

Data source: Cameron Agriculture.

Australia's biggest production year, 2.2 million bales were produced Australia wide. In 1993-94, 1.4 million bales were produced.

Because of price incentives offered by some ginners, some farmers deliver cotton to gins outside their immediate geographic area but, nevertheless, the table provides some indication of regional capacity. Excess capacity is widespread at present.

In percentage terms and based on a 100 day ginning season, the Emerald area had the greatest excess capacity in 1991-92 (51 per cent) followed by the Namoi Valley (42 per cent), the Macquarie (28 per cent), and the Macintyre Valley (22 per cent). The Gwydir had the most balanced capacity but, because of drought conditions in 1992-93 and 1993-94, the gins there had excess capacity of 240 per cent and 350 per cent respectively in those years. The data for the 1994-95 year will probably show similar excess capacity.

Even if production were to return to the levels of 1991-92 most areas would continue to have excess capacity. Further production expansion from these levels could push the capacity of the industry based on gins operating 100 days but the ginning season could be extended.

Ginning efficiency

Ginning efficiency and the portion of lint produced to seed cotton ginned has improved dramatically over the last decade. This is a result of improved varieties and also of improved ginning efficiency. The Australian

industry is at the forefront of the world in its capacity to produce varieties with excellent ginning characteristics and in its capacity to gin the product efficiently. Table B4 gives estimates of the impact that improved turnout (percentage of lint produced to seed cotton ginned) from improved varieties and ginning has had on the industry in Australia.

Based on cotton prices as of May 1995, the ex-gin value of products from one tonne of seed cotton has increased by $108 per tonne of seed cotton as a direct result of improved varieties and ginning. On a turnover of one million tonnes (200 000 hectares at five tonnes of seed cotton per hectare) the total annual benefit is of the order of $100 million.

Table B4 **Estimates of improvements in ginning efficiency**

Description	*Unit*	*Ginning 1980s*	*Ginning 1990s*	*Difference*
Turnout	%	35.0	39.0	+4
Motes	%	0.6	0.6	-
Fuzzy seed	%	56.0	53.0	-3
Trash	%	8.4	7.4	-1
Financial impact				
Value of lint per tonne	$	2,850	2,850	
Value of motes per tonne	$	800	800	
Value of seed per tonne	$	200	200	
Value of lint/tonne seed cotton	$	997.50	1,111.50	+114.00
Value of motes/tonne of S.cotton	$	4.80	4.80	-
Value of seed/tonne of S.cotton	$	112.00	106.00	-6.00
Total benefit/tonne of S.cotton	$	**1,114.30**	**1,222.30**	**108.00**

Source: Industry sources.

Appendix C Economics of cotton growing

This appendix provides detail on the economic aspects of cotton growing as a supplement to chapter 4.

Cotton prices

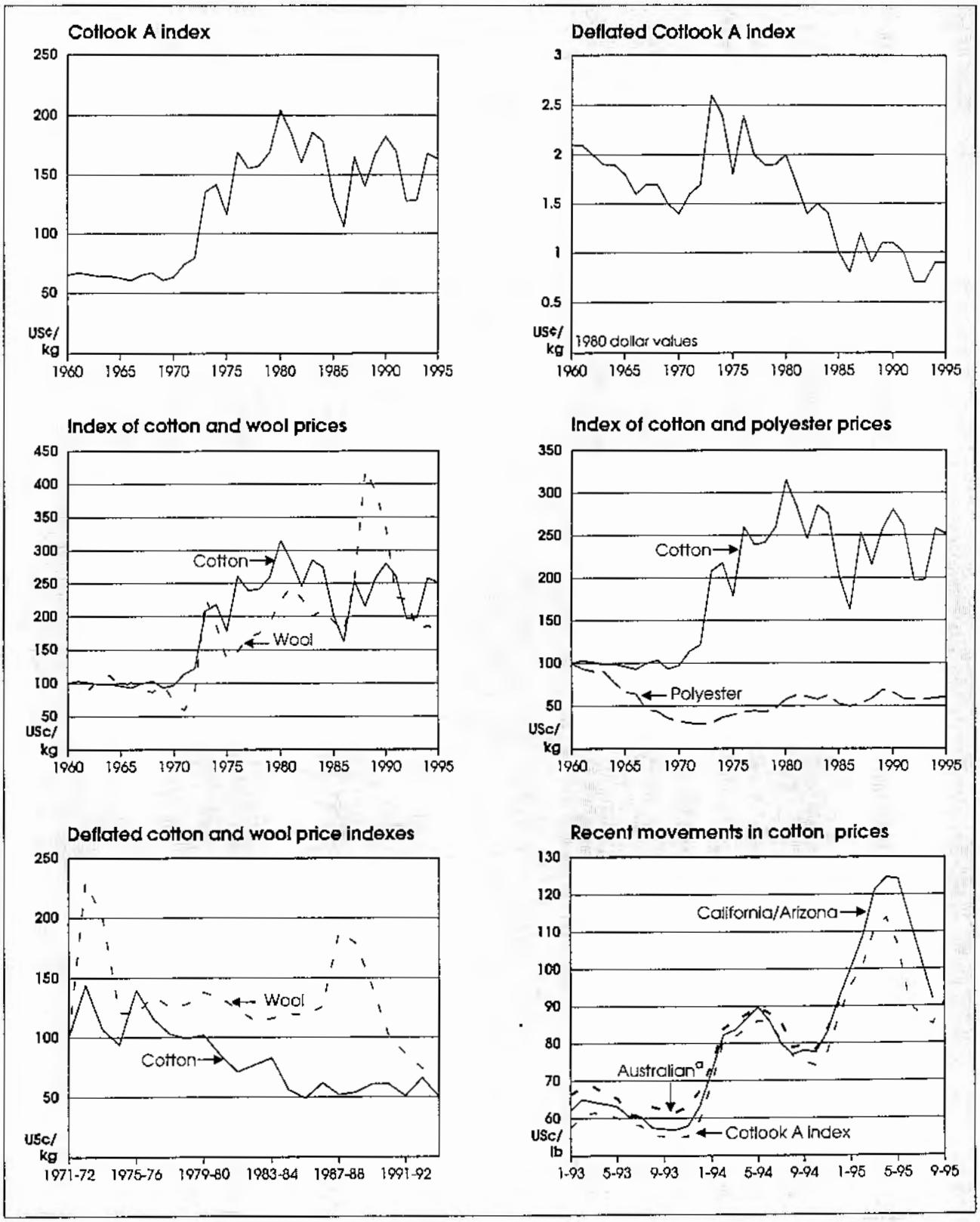
Cotton prices have varied considerably over the years and in real terms have shown a marked downward trend. Since the early-1970s, this downward trend has been a little steeper than for wool but polyester prices have declined substantially relative to cotton since 1960 (chart C1).

While the variability in cotton prices is not generally as high as several other commodities including wool (chart C2) it has recently been quite high. In the early months of 1995 cotton prices increased dramatically because of the tight world supply situation. In April 1995 the Cotlook A index touched a record 262 US cents per kg, 56 per cent above the average price for 1994. Many Australian cotton growers, however, were unable to benefit from these high prices either because they had forward sold or had very limited supplies because of the drought affecting water supplies in the main cotton growing areas. By August 1995 prices had declined to about 195 US cents per kg.

From 1963 to 1971 a bounty on cotton provided a price raising effect to the Australian industry. Since then, the marketing of Australian cotton has been free of government policies. The protection for Australia's textile and garment industries is not passed on to the cotton industry which in any event exports 90 per cent of output. Indeed these exports must compete on markets where opportunities are reduced by other countries import controls or export subsidies.

As a relatively small player on the world market it is not practical for Australia to influence overall price levels. However the size of the quality premium reflects such things as improved varieties and management at the farm and processing levels and as such is within Australian producers' control to some degree.

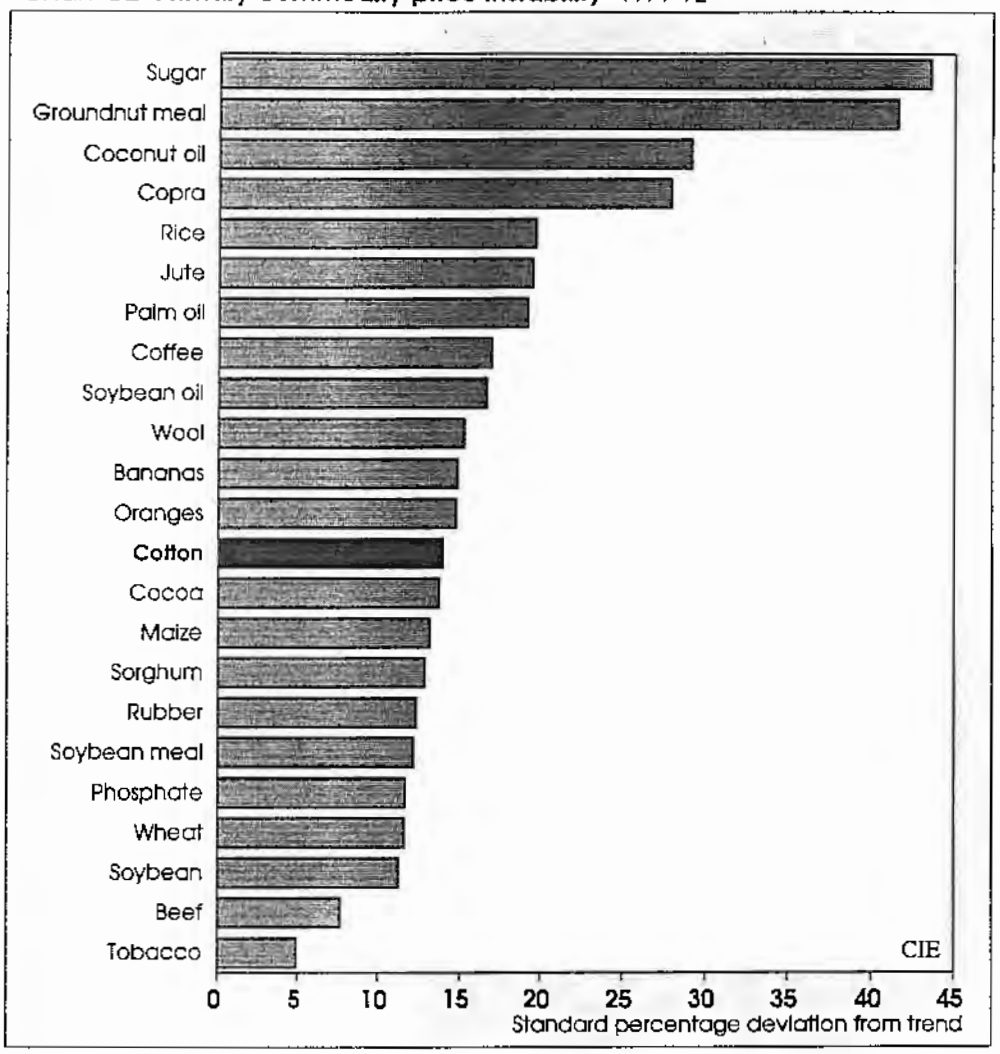
Chart C1 **Prices of textile fibres**



[a] No quotes after December 1994.

Data source: ICAC, 1994

Chart C2 **Primary commodity price instability** 1979-92



Prices of inputs

With the exception of interest rates, which have varied considerably since 1976 and which reached very high levels in the late 1980s, prices for most farm inputs have moved more or less in line with inflation. Given the decline in real cotton prices, farmers have been subject to at least the same cost price squeeze as other rural industries.

Operating costs

The biggest cost items for both types of production are labour, ginning and chemicals. Depending on the season, approximately 67 per cent of the cost of chemicals is spent on insecticides, 18 per cent on defoliants, and 15 per cent on herbicides. Water (and power to run the pumps) makes 5 per cent of irrigated cotton costs.

Capital requirements

Land development costs

The cost of developing land for cotton production varies between farms depending on numerous factors including:

- whether it is raingrown, flood irrigated or drip irrigated;
- soil type and slope of the land;
- clearing required and farm layout (especially in relation to flood plains);
- distance from source of irrigation water;
- size of on-farm water storages required;
- size of total development; and
- degree of sophistication of development.

Based on these and other factors a furrow irrigated farm would cost between $1800 and $2500 per hectare to develop. This does not include the cost of a water licence, but includes water to the farm gate in the case of an irrigation scheme member and an appropriate amount of water storage.

Machinery

Farm machinery requirements vary depending upon farm size, farm position in relation to infrastructure and availability of contractors and of capital. Based on a 1000 ha irrigation farm, a 'consensus' estimate of approximately $1250 per irrigated hectare gives a reasonable indication of equipment capital requirements. This figure includes an allowance for a cotton picker.

Raingrown production equipment costs will depend upon the type of layout chosen and what existing raingrown farming equipment is available on the farm. For example, row-cropped raingrown production depends on similar equipment to irrigated cotton, while broadacre cotton can, for instance, be harvested by a modified grain harvester.

Water licences

Irrigated cotton growers require a licence to extract water from regulated and unregulated water sources. The licences are normally issued for a period of five years and in the past have been renewed as a matter of course. The licences are transferable and have been transferred for as much

as $400 000 for a 972 megalitre entitlement in the Gwydir Valley despite the insecurity of both tenure and water availability.

While most growers do not actually pay $400 000 for water allocations (the licences were originally granted for a small fee and attract a nominal renewal fee), the market value of the licence represents an opportunity cost to a grower who chooses to exercise the water rights.

Overhead costs

The overhead costs of operating a cotton farm are greater than on most other farms. There is considerable time involved in management. Additionally, coordination of labour and contractors requires considerable administrative time. Financial and communication costs are often large overhead costs.

In the case of irrigated cotton, the cost of some other overhead items such as council rates are higher than for the raingrown cotton grower.

Policy impacts on input prices/costs

On the input side duties on chemicals are generally low — except for antidumping duties which frequently apply in the chemical industry. While the price raising effects are small — in the order of 5 to 10 per cent — even that much of an impost for a major input is not trivial. To take a typical share of costs (as calculated later in this appendix) a 10 per cent price increase for chemicals would be equivalent to a 5 per cent reduction in gross margin. Similarly, machinery costs are raised by duties in the order of 10 per cent. Fertiliser costs are raised by a small amount — 1 per cent according to Industry Commission estimates for 1993.

As noted in chapter 3, ginning services seem to be very competitive and not overly affected by government policy — except to the extent that machinery inputs are raised by tariffs.

Whether or not the costs of capital have been raised by macroeconomic management policies is a complex question — to the extent that the costs have been raised so that cotton, as a capital intensive industry, may have been disadvantaged relative to other industries.

This leaves one other input, water which for irrigated cotton is a small but vital input. In the case of water, policy can affect conditions of supply in several dimensions — reliability of supply in any one period, security of supply over time and of course price. These issues are complex and are

tackled in chapter 8. For now the main points to conclude are that cotton production:

- receives no benefit from policy on the output side; and
- is hurt by a small but significant amount by duties and imports of machinery, chemicals and fertiliser.

Economic performance

Productivity

Even though the deflated price of cotton has halved since 1971-72, cotton producers have been able to sustain their businesses because of significant improvements in productivity. In particular, yields of seed cotton have increased through better varieties and management systems, and ginning efficiency and turnout have improved.

The cost price squeeze has also meant that farms have had to be managed intensively. A major impact has been with crop rotations. To maintain cash flows, land developed for irrigation has been sown to cotton more frequently than perhaps the ideal long term rotation would allow.

Table C1 shows average farm business estimates for turnover, cash operating surplus, gross indebtedness and net worth for the main agricultural industries. Per farm estimates of cash operating surplus are also shown graphically in chart C4.

The cotton industry clearly stands out above all other rural industries in terms of these variables. They have a turnover, and show a cash operating surplus several times that of average broadacre properties. But cotton farms also have debts of over $1 million on average, nearly eight times the level of debt for the average agricultural property.

Financial performance measures for 1992-93 for agricultural industries, including cotton, are presented in table C2. For these performance measures cotton compares favourably with other rural industries but in terms of profit margin or return on capital the dairy, sugar and grains industries do better, at least in the year 1992-93. The cotton industry is nevertheless an efficient user of capital as shown by the measures assets to turnover ratio, and assets to value added ratio. These show that cotton requires $3.2 and $7.9 of assets to generate one dollar of turnover and value added respectively, far lower than any other rural industry. Equity ratios are lower in cotton than in other industries but the interest cover ratio is similar to agriculture as a whole.

Table C1 **Financial performance of agricultural industries**

	Average estimates per farm business			
	1990-91	*1991-92*	*1992-93*	*1993-94*
	$000	$000	$000	$000
Turnover				
Cotton	na	1429	1240	1284
Poultry	460	461	519	545
Pigs	337	376	370	417
Vegetables	na	na	260	301
Grain	237	192	237	256
Dairy	135	153	189	192
Sugar	176	150	184	217
Grain sheep beef	184	173	183	179
Beef	147	154	173	176
Fruit	163	154	153	147
Sheep beef	167	135	145	151
Sheep	141	101	114	124
All agriculture	177	169	189	197
Cash operating surplus				
Cotton	na	301	234	241
Poultry	70	73	66	42
Pigs	55	40	33	62
Vegetables	na	na	41	66
Grain	44	42	64	63
Dairy	31	39	57	55
Sugar	52	43	59	57
Grain sheep beef	30	32	39	38
Beef	30	16	30	36
Fruit	32	35	30	35
Sheep beef	24	9	15	26
Sheep	18	2	13	25
All agriculture	32	28	39	42
Gross indebtedness				
Cotton	na	952	1019	1091
Poultry	240	268	292	347
Pigs	125	175	143	181
Vegetables	na	na	184	175
Grain	174	141	158	180
Dairy	83	100	116	118
Sugar	95	127	117	118
Grain sheep beef	162	139	147	144
Beef	133	144	152	141
Fruit	102	83	86	78
Sheep beef	125	143	148	114
Sheep	119	129	140	100
All agriculture	131	135	145	139
Net worth				
Cotton	na	2858	2920	na
Poultry	1088	1172	959	na
Pigs	786	691	761	na
Vegetables	na	na	756	na
Grain	956	716	772	na
Dairy	743	744	815	na
Sugar	664	682	847	na
Grain sheep beef	797	848	872	na
Beef	1274	1263	1344	na
Fruit	497	406	498	na
Sheep beef	1134	1143	1164	na
Sheep	779	766	845	na
All agriculture	857	854	903	na

Source: ABS, 1994.

Table C2 **Financial performance measures for key agricultural industries 1992-93**

		Cotton	*Grain*	*Sheep*	*Beef*	*Sugar*	*Dairy*	*All agriculture*
Profit margin	%	18.9	27.1	11.1	17.4	32.0	30.3	20.4
Return on capital	%	6.0	6.9	1.3	2.0	6.1	6.2	3.7
Return on net worth	%	8.0	8.3	1.5	2.2	6.9	7.0	4.0
Assets to turnover	$	3.2	3.9	8.6	8.6	5.2	4.9	5.5
Assets to value added	$	7.9	8.9	18.5	20.0	10.7	9.8	12.2
Asset to debt ratio	$	3.9	5.9	7.0	9.9	8.3	8.1	7.2
Equity ratio	%	74.4	83.1	85.7	90.0	88.0	87.7	86.2
Interest cover ratio		3.9	5.2	1.9	3.2	6.5	6.1	3.7

Source: ABS 1994.

Notes: **Profit margin (%)**: Cash operating surplus/turnover; for every dollar of turnover 18.9 cent of cash operating surplus is generated on the average cotton farm. **Return on capital (%)**: Cash operating surplus/total assets; the percentage return on assets employed. **Return on net worth (%)**: Cash operating surplus/net worth; this represents the percentage return on unencumbered farm assets. **Assets to turnover ratio ($)**: Total farm assets/turnover; indicates the assets required to generate one dollar of turnover. **Assets to value added ratio ($)**: Total farm assets/value added; indicates the assets required to generate one dollar of value added. **Assets to debt ratio ($)**: Total farm assets/total farm debt; indicates the level of asset backing in dollars for each dollar of debt. **Equity ratio (%)**: (Farm assets-debts)/farm assets; indicates the percentage equity the farmer has in his farm business. **Interest cover ratio**: (Cash operating surplus + interest)/interest; indicates how many times the farm interest bill could be paid out of cash operating surplus before the deduction of interest.

The lower equity levels and much higher absolute levels of debt on cotton farms compared with the rest of agriculture mean that cotton farm businesses can be vulnerable to market downturns or reduced water supplies. The cotton industry's debt servicing capacity is examined further in the next section.

Cotton farms in Australia are capital intensive. In 1992-93 the average total asset value of cotton farms was $3.9 million, over three times the average of $1.05 million for all agricultural businesses.

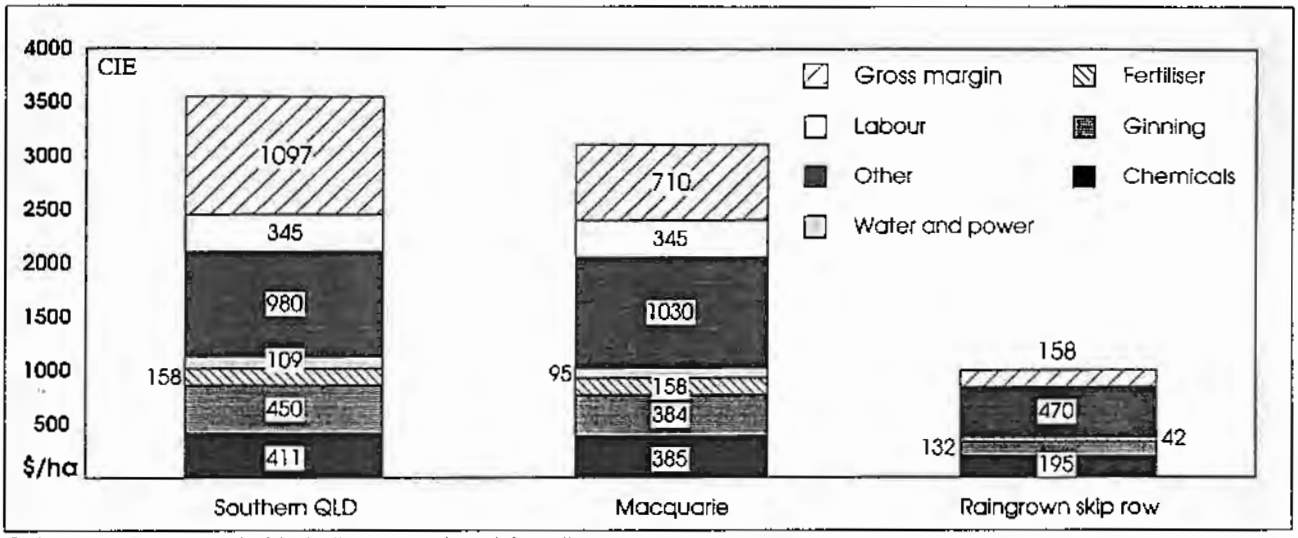
Gross margins in cotton

Gross margins for 'average' irrigated cotton growing enterprises in southern Queensland and northern New South Wales, the Macquarie Valley and for raingrown skip row cotton are shown in chart C3.

The gross margins shown in chart C3 are for a year in which there are no irrigation water shortages in any location. The long term gross margin may show a totally different result. For example, cotton farmers in the Macquarie Valley may have slightly lower yields than growers in northern NSW (resulting in the gross margin in chart C3). But increased water reliability may push the long term gross margin for the Macquarie Valley way ahead of the Gwydir Valley for example.

Another important consideration when comparing cotton producing areas or farms is capital requirements. Gross margin analysis does not take this into consideration. One objective of any investment is usually to maximise return on capital. This may best be achieved on land which costs less to develop and operate but produces a lower yield and gross margin.

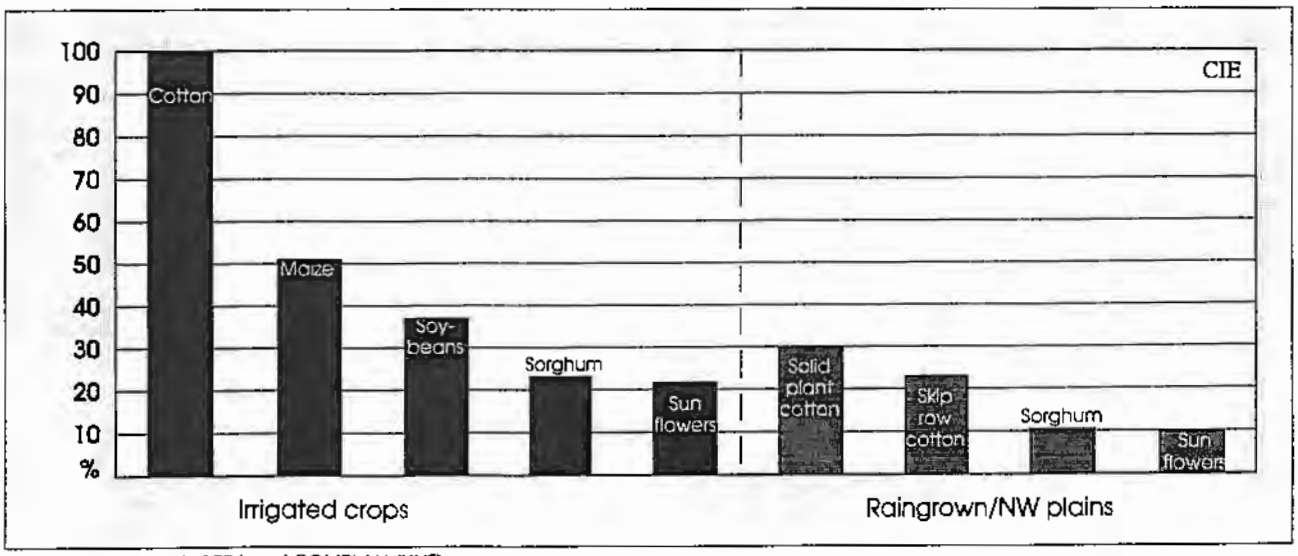
Chart C3 **Indicative gross margins for cotton growing**



Data source: Department of Agriculture and Industry information.

In comparison with other irrigated summer crops on the north-west slopes and plains, gross margins for cotton are much higher than for other crops which could be grown in place of cotton (chart C4). This further highlights the dominance of cotton in the irrigated areas of northern NSW and the growth in raingrown cotton. Chart C4 is presented in stylised form to represent a typical outcome for a typical year. Thus the gross margin for cotton has been set at 100 and all other gross margins are reported as a resistance of that.

Chart C4 **Gross margins for irrigated cotton north-west New South Wales expressed as a percentage of cotton's gross margin**



Data source: Patrick, 1994 and COMPLAN (UNE).

Farm debts

Cotton farms carry much higher debts than other farms in agriculture because of their higher earning capacity. How well farms can service debts depends on existing equity levels and ability to meet interest payments from profits. Table C3 cross-classifies cotton farms according to two variables — interest cover and asset to debt ratio. ABS defines these as follows:

- interest cover = $\frac{\text{(farm cash operating surplus + interest paid)}}{\text{interest paid}}$
- asset to debt (A/D) ratio = $\frac{\text{total value of assets}}{\text{gross indebtedness}}$

A property with an interest cover of less than 1.0 means that that property would be generating insufficient cash flow to cover interest commitments. An A/D ratio of, say, 2.0 means that for every dollar of debt the farm business carried, it would have $2 of asset backing. This is equivalent to the normally quoted equity position of the farm of 50 per cent.

Key features of table C3 are:

- in 1992-93 an estimated 20 per cent of farms had a farm cash operating surplus insufficient to cover interest payments;
- only 8 per cent of farms had an equity of less than 50 per cent (A/D less than 2.0);
- very few cotton farms (5 per cent) carry no debt — in contrast to the

Table C3 **Security/interest cover matrix for cotton 1992-93**

Assets/ debt			*Interest cover*		
			< 1	> 1	Total
< 2	Proportion of farms	%	4	3.5	7.5
	Amount of debt	$m	34.7	49.9	84.6
	Proportion of debt	%	3.4	4.9	8.3
2 to 5	Proportion of farms	%	7.8	7.3	15.1
	Amount of debt	$m	122.8	60.7	306.3
	Proportion of debt	%	12.1	6.0	30.1
> 5	Proportion of farms	%	na	66.0	72.3
	Amount of debt	$m	320.2	307.4	627.6
	Proportion of debt	%	31.4	30.2	61.6
No debt	Proportion of farms	%	3.2	1.9	5.1
Total	Proportion of farms	%	19.7	78.6	100
	Total amount of debt	$m	477.7	418.0	1018.5
	Proportion of debt	%	46.9	41.0	100

position for other broadacre farms where one-quarter of farms carry no debt;

- a very small proportion of cotton farms (4 per cent) are in serious financial difficulty, with equity levels less than 50 per cent, and cash incomes insufficient to cover interest commitments (at least in 1992-93); and
- on the other hand, two-thirds of cotton farms have high asset backing (A/D greater than 5) and can readily cover interest payments — these farms account for nearly one-third of total debt to the industry.

The cotton industry in this respect shows a profile which contrasts with that of broadacre agriculture. For the latter, a high proportion of total industry debt is held by farms with very low levels of equity — characteristics of farms struggling to survive.

The profile for cotton indicates an industry borrowing substantially to invest and move ahead, rather than borrowing to survive as appears to be the case with broadacre agriculture.

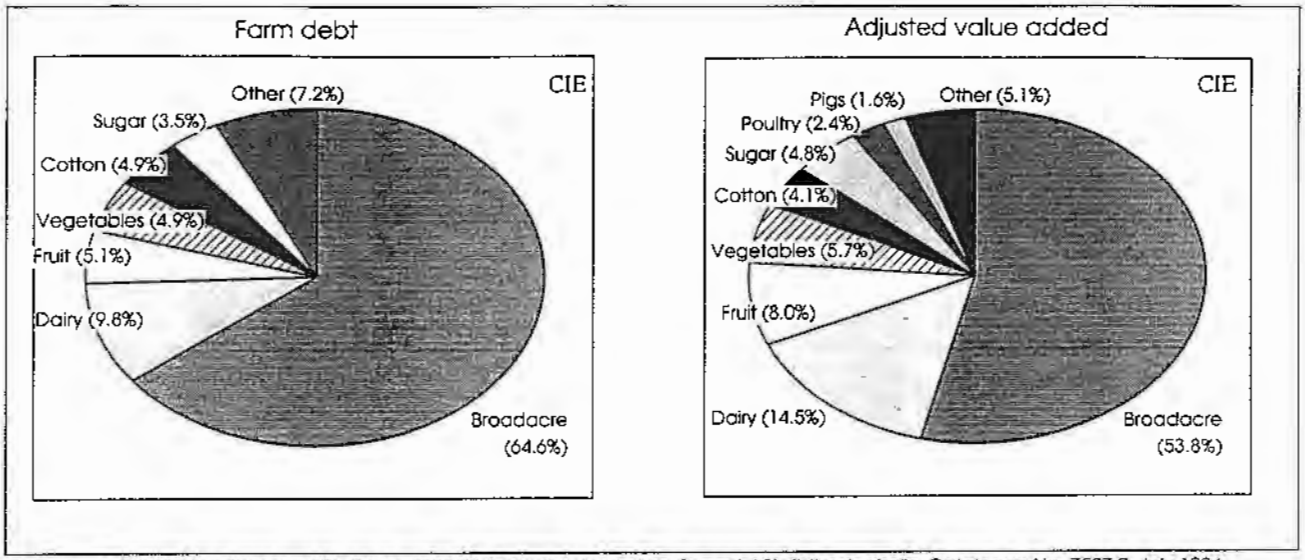
At an aggregate level the cotton industry accounts for about only 5 per cent of total farm debt in Australia (chart C5). The indebtedness by industry and lending institution is shown in table C4. The cotton industry as a whole had debts totalling $757 million in 1992-93 with 58 per cent of this owing to banks.

Table C4 **Indebtedness by industry and lending institutions 1992-93**

	– Amounts owing to –					
	Banks	*Pastoral and insurance companies*	*Finance leasing*	*Hire purchase*	*Other*	*Total*
	$m	$m	$m	$m	$m	$m
Grain sheep beef	2005.4	208.2	91.0	78.7	382.7	2766.0
Beef	1261.5	251.6	54.9	23.9	573.8	2165.7
Sheep	1646.2	166.3	15.0	41.3	176.0	2044.8
Grains	1128.8	129.9	49.4	56.8	271.3	1636.3
Dairy	873.1	282.1	20.9	58.2	277.3	1511.7
Sheep beef	876.1	162.6	14.4	11.2	256.5	1320.8
Fruit	551.6	61.3	35.6	16.6	120.1	785.2
Vegetables	436.5	88.0	22.2	24.4	191.3	762.4
Cotton	440.1	42.5	39.8	16.0	218.5	756.7
Sugar	295.2	115.3	18.9	6.5	109.0	544.8
Poultry	216.2	9.9	9.1	8.2	94.4	337.9
Pigs	138.6	14.1	4.1	2.4	41.5	200.7
Other	353.5	54.1	17.0	14.4	105.9	544.8
Total	10 222.8	1586.0	392.3	358.6	2818.3	15377.8

Source: ABS, 1994.

Chart C5 **Most of the debt is held by broadacre industries**



Data source: Australian Bureau of Statistics, *1992-93 Agricultural Industries Financial Statistics Australia*, Catalogue No. 7507.0, July 1994.