

Hardwood industry trends in Victoria since 1986

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Summary

Economic indicators of the Victorian hardwood sawmilling industry are traced annually since 1986, when the State's Timber Industry Strategy was announced. The Strategy was based on a long-term commitment by government to the industry, but required several reforms, including: reduced log allocations; more value-adding (i.e. processing beyond green sawnwood); higher log prices; longer licence terms; and increased utilisation of low-grade logs.

Historical data on these and related items are plotted and interpreted. They demonstrate that all of the Strategy's proposed reforms have been met, at least partially, with assistance from a sustained erosion of traditional hardwood markets by a rapidly-expanding softwood industry. The hardwood industry's resilience and ability to survive and succeed is evident in the data, allowing the conditional expectation that it will continue to evolve as a successful provider of high-grade sawnwood products for specialised domestic and export markets.

Two conditions relating to this expectation are (i) that the State maintains its commitment to the industry's long-term future, as its resource base is wholly State-owned; and (ii) if log prices are increased to meet National Competition Policy requirements, the industry can accommodate such increases.

Keywords: sawmilling; milling industry; structural change; wood products; sawnwood; markets; price policy; eucalypts; Victoria

Introduction

Hardwood logging in State-owned forests has excited the same heated passions and arguments for at least thirty years in Victoria, and elsewhere. The casual observer may have noted little change over that period, except perhaps a vague surprise that the hardwood sawmilling industry still survives, and logging still continues despite continued attacks on its resource base and markets. Yet much has changed, and this paper sets out to describe those changes as a case study in economic history.

Specifically, the paper assesses the Victorian hardwood sawmilling industry's past performance in the face of changing conditions, as a basis for judging its prospects and requirements for survival in the long term. Given the industry's natural seasonal volatility, it is important to track trends over time, rather than present a snapshot view, which may bias a current or any comparative perspective.

A convenient starting point for trend analysis is 1986, when the Timber Industry Strategy was announced (Victorian Government 1986). The Strategy expressed a clear and comprehensive change in government policy towards the relationship between the timber industry and the State-owned supplier of its feedstock. A summary of the Strategy is given in the following section, where it will be seen that, amongst many objectives, the Government confirmed its commitment to the industry, but wanted specified reforms. The degree to which those reforms were effected is assessed in the paper.

The present analysis takes no account of several recent events, including (i) the announcement in February 2002 that State hardwood log allocations in Victoria were to be reduced by a third to meet revised sustainability requirements, and (ii) the announcement in November 2002 of a government proposal to ban logging in the Otway forests from 2008. Moreover, the paper makes no reference to other reforms proposed in 1986, including logging practices, and occupational health and safety.

The Timber Industry Strategy

Following a major public inquiry (Ferguson 1985) and extensive public consultations on draft strategies arising therefrom, the Cain Government declared its Timber Industry Strategy (TIS) in 1986. In essence, TIS was designed to achieve:

long term sustainable development, long term employment growth, a more efficient use of wood, and more aggressive and innovative seeking out of new market opportunities for value added products (p. ii).

It was also to 'achieve balance between timber production and environmental protection' (p. ii).

To achieve these policy goals, TIS required:

- a reduction of 16% within 10 y of the level of native hardwood harvesting;
- introduction of a value-adding utilisation system (VAUS), to encourage better use of available timber;
- adjustment of royalties to provide full coverage of timber cost plus 4% return to the Government;
- 'residual' logs (i.e. below merchantable sawlog quality) to be offered by tender to sawmills before being offered as woodchip feedstock;

- increasing supply of softwood timber, new hardwood afforestation, and stimulation of private forestry developments; and
- a host of measures aimed at achieving environmental, employment and safety objectives.

Of particular relevance to the present report are measures adopted as part of the VAUS, specifically:

- increased sawlog licence terms from 3 to 15 y; and
- allocation of high-quality sawlog parcels to sawmillers who undertook to process logs beyond the green stage.

Also of relevance to this paper are observations in TIS that softwood sawlog supply would expand dramatically, and that the State would be encouraging and actually undertaking plantation development with native hardwoods.

At the time, TIS was a giant and positive step-jump in forest industry circles. It might reasonably have been expected, then, that in the hardwood sawmilling industry, by the year 2000:

- sawmill locations would shift to new sources of logs — especially the ash regrowth resources of Central Gippsland and the Central Highlands regions;
- sawmills would probably invest in value-adding equipment, given security of supply for 15 y, so an increase in the proportion of value-added outputs could be expected;
- residual log volumes would increase over time under the new arrangements;
- sawmill numbers would continue to decline over time, as technology advanced and log supply locations changed; and
- log prices would increase in relative terms.

The extent to which these changes eventuated — and others that were not so readily foreseeable at the time — is examined in this paper. The following section outlines the impact on the hardwood sawmilling industry of increasing softwood log supplies.

Hardwood markets lost — and gained

At the time, TIS was dominated by matters of environmental protection and the industrial competitiveness of hardwood sawmilling. To be sure, expansion of softwood log availability was plain for all to see (e.g. Greig 1981), but it was presumably destined for import replacement: after all, that had always been the rationale for plantation development (e.g. BAE 1977).

Expanding softwoods

With hindsight, it is now easy to see that the expansion of softwood production would inevitably be largely at the expense of traditional hardwood markets. Relative to hardwood log sawmilling; softwoods have a competitive edge in lower costs of harvesting, transport and conversion due to:

- proximity of log resources to mills;
- more uniform and less defective growing stock; and, as a consequence,
- greater mechanisation in processing (Greig 1979b).

Softwood mills developed which were large and furnished with state-of-the-art equipment, producing outputs with quality

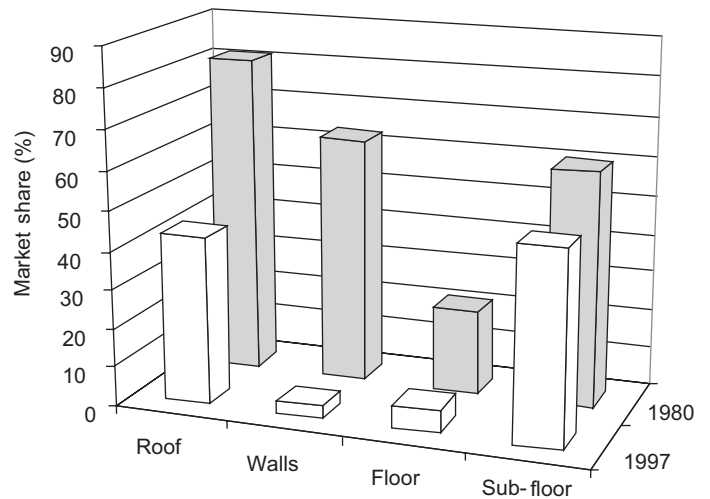


Figure 1. Sawn hardwood's market share of house-building, 1980 and 1997. (Sources: Crow and Kennedy (1984) and BIS Shrapnel in Kevin Wareing and Associates (2000).)

assurance at low cost, relative to comparable hardwood products (Ferguson 1985, Ch. 5). Moreover, the market eventually preferred the softwood product as a building material (once the initial conservative traditions were overcome).

Not surprisingly, therefore, hardwood's share of traditional housing market products has been rapidly eroded by radiata pine, locally produced or imported, mainly from New Zealand. Other products, including concrete and steel, have also made inroads. The point is amply illustrated by a comparison of hardwood's share of materials used in housebuilding over the period in question (Fig. 1). Clearly, wall framing has succumbed almost completely to other products, but all applications have suffered to some extent. Conversely, hardwood products have maintained a respectable market share in applications requiring strength, durability and appearance, including sub-floor structures, decking and fencing, and furniture. Even in those applications, however, the encroachment of concrete and steel has been considerable.

Moreover, despite the determined and successful competition in its traditional markets (or perhaps because of it), the Victorian hardwood timber industry has, in parts, done what the TIS intended — it has demonstrated a shift towards:

- a more efficient use of wood and a more aggressive and innovative seeking out of new market opportunities for value-added products (p. ii).

Value adding in ash regrowth

Some parts of the industry have found new markets which utilise native hardwood timber's natural advantages, particularly in furniture, and in applications where appearance and strength are required. A case study of eight sawmills utilising ash regrowth in the Central Highlands shows how investments in new processing facilities and new log resources have yielded returns in higher value-added production (Wareing K., undated). In summary, investment by these companies of over \$60 million since 1987/88 has resulted in a change in the proportion of kiln-dried products from below

25% to almost 70% in 1995/96. The eight companies are responsible for over half the log yield from the Central Highlands, and are showing what can be achieved with vision and determination, given the right log resources.

It must be said, however, that Central Highlands log supplies are from the newly available ash regrowth resource, so the results cannot be extrapolated readily to the hardwood industry as a whole, where logs are on average of lower quality and yield.

Exporting hardwoods

Another success story emerges from the development of export markets for Victorian hardwoods (Graeme Gooding¹, 2002 *pers. comm.*). Since 1993, a coalition of leading hardwood sawmillers assisted by industry associations has researched and created new products designed specifically for niche export markets. The new products depend on the natural qualities of Victorian hardwoods, particularly the ash-type eucalypts (*Eucalyptus regnans* and *E. delegatensis*) and the 'natural features' of messmate (*E. obliqua*). The characteristics that used to be called 'defect' in scantling timber are now 'decorative character', prized for furniture making, particularly in USA.

Industry coalition members harvest logs from all regions in Victoria, and their annual allocations (510 000 m³ in 2000) represent over half of the State's hardwood sawlog allocations. Their combined sawn output is about 45% of total sawn hardwood output in Victoria, and their seasoned product equates to about 69% of the industry's total. In short, these are the industry's leaders.

The export success of the industry coalition is significant but hard-won, and though of modest volume so far (15 000 m³ valued at about \$17 million in 2000), the outlook for growth seems promising, given the size of the niche markets, and the approach and tenacity of the people concerned. From a business perspective, the coalition has invested heavily and taken calculated risks in these markets, on the grounds that prices are rewarding (premiums of about 50% on domestic prices), and local markets are disappearing.

Sawing residual logs

One further case study of developments since the launch of the TIS is that of a company which pioneered the processing of residual logs; that is, logs previously regarded as too small, bent or defective to be sawn profitably into merchantable material. Dormit PL of Dandenong in 1995/96 processed over 80 000 t of residual logs into pallet components, using modern technology installed since the company began operating in 1989 (Wareing K., undated).

So, on the one hand, hardwood's traditional markets have been eroded and new markets have been found. On the other hand, log supplies for the hardwood sawmilling industry were expected to dwindle under the TIS provisions. This is examined in the following section.

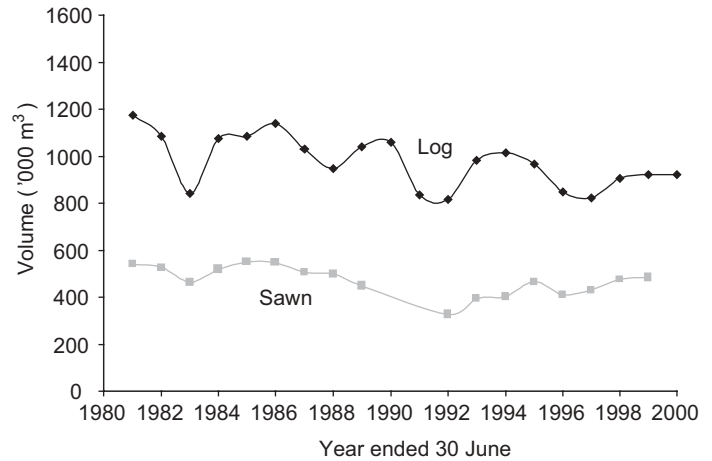


Figure 2. Hardwood log and sawn output, Victoria 1981–2000

Hardwood log inputs and sawn outputs

Victorian hardwood sawmills draw practically all of their logs from State forests, the annual volumes showing marked cycles, mainly in response to housing cycles (Fig. 2). The data are from ABARE (1999) and annual reports of the Department of Natural Resources and Environment (DNRE) and its predecessors.

The prominent downspikes in 1982/83 and 1991/92 correspond to sharp reductions in housing commencements in those years (Fig. 3). These data are derived from ABARE (1999) and Australian Bureau of Statistics (ABS) *Dwelling Unit Commencements Reported by Approving Authorities, Victoria*. Cat. No. 8741.2.

Declining hardwood harvests

The hardwood harvest not only is cyclical but also shows a clear downward trend, consistent with the TIS requirement that log yields decline to sustainable levels. The actual reduction is in the order of 16% since 1986, as foreshadowed by TIS. To be fair, however, it must be said that hardwood log intakes had been declining even before TIS: from around 1.3 million m³ in 1971 to

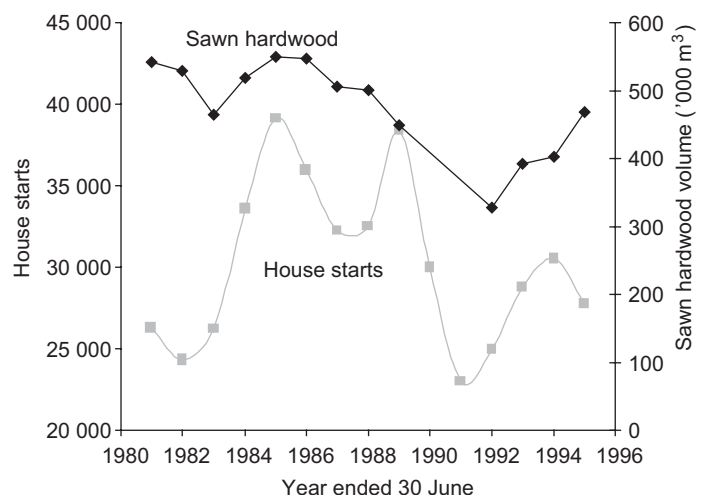


Figure 3. Sawn hardwood production versus house starts, Victoria 1981–1995

¹Executive Director, Victorian Association of Forest Industries, and Timber Promotion Council.

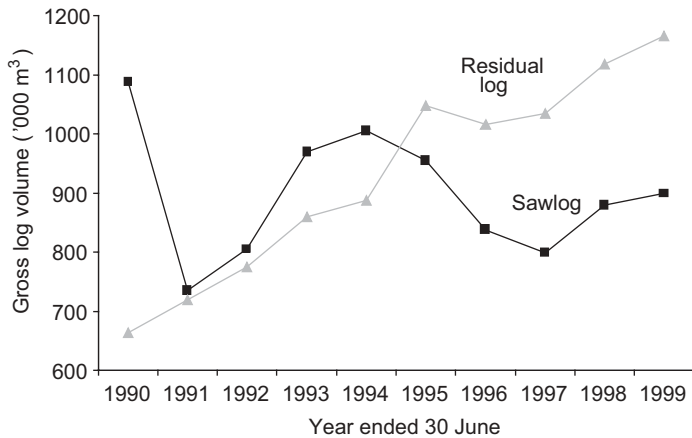


Figure 4. Hardwood sawlog and residual log production, Victoria 1990–1999

around 1.1 million m³ in 1981; that is, a trend fall of around 18% over 10 y (Crow and Kennedy 1984).

Meanwhile, residual log yields have increased dramatically since TIS (Fig. 4), to the point of matching merchantable sawlog yields. About 150 000 m³ of these logs are now sawn into pallet and other small-dimension material, the remainder being chipped for export from Geelong and Eden. The data are from annual reports of DNRE and its predecessors.

Sawn outputs diverted into new markets

Sawn hardwood outputs reflect the log input figures, though with less pronounced cycles (presumably indicating that seasonal weather conditions also contribute to annual fluctuations in log yields, which are smoothed out by inventory management).

The feature that stands out from the sawn output time series is that hardwood outputs have been quite robust, despite the attack on traditional markets. Granted, some decline is evident before the housing downturn in 1991–1993, but the substantial increases since that time are only partially explained by the contributions made by pallet mills sawing residual logs. Part of this growth must be due to the developments of new markets — probably in flooring and furniture.

Log qualities declining

As hardwood sawlog volumes were reduced to meet sustainability requirements and mills were relocated to utilise new log supplies, it might have been expected that log quality would change over the period. Figure 5 shows that the proportion of B-grade logs has declined over the last decade; D-grade logs have increased in the overall sawlog furnish; while C-grade logs have maintained their place. Grade A logs have held only a tiny proportion over the time, so are not shown in the chart. Overall, the picture is one of gradually declining log quality. These data are from unpublished DNRE reports.

These changes are probably explained by the shift into ash regrowth forests in the Central Highlands and Central Gippsland, where the proportion of defective material would probably be lower than in old-growth logs from East Gippsland and other regions, where yields

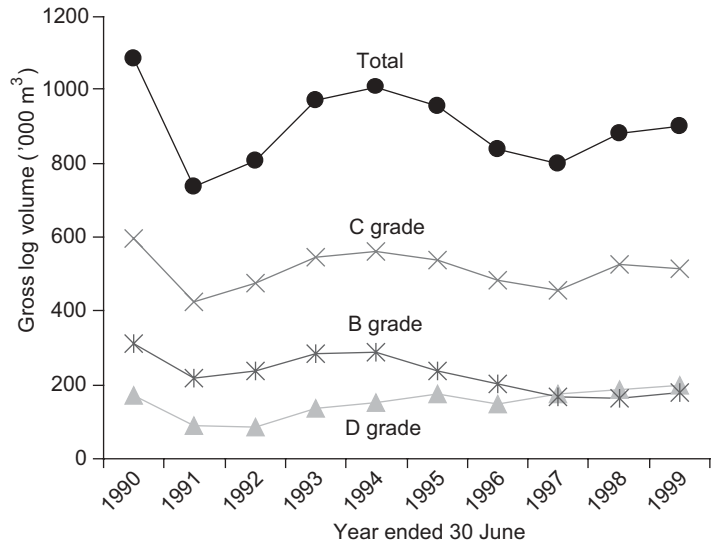


Figure 5. Hardwood sawlog production by quality grade, Victoria 1990–1999

have decreased. Lesser defect may have partially offset the probably smaller average diameter of logs from ash regrowth.

Value adding

Recent data indicate that, statewide, the proportion of seasoned sawnwood as a fraction of total sawn is 28% or less, based on regular surveys of licensed sawmills (DNRE unpublished). As the survey responses cover ≤70% of the licensed mills, and as it may be assumed that the non-respondents are biased towards the smaller mills, it may be deduced that the average proportion of value-added outputs is less than indicated by the surveys. The figure of 28% is lower than other recent estimates (e.g. Fortech 1999, at 33%).

The extent of value adding before TIS was about 10% of total sawn output (Crow and Kennedy 1984), so the current figure of around 28% is a marked step towards the policy aims of the TIS.

Meanwhile, in the softwood industry ...

To set the above observations in perspective, Figure 6 shows corresponding *softwood* log and sawn volume trends over the same period. They show the same cyclical responses to house-building activity, but here the underlying linear trend inclines upwards, reflecting increased log availabilities and market penetration. The underlying linear trend increase in softwood’s sawn volume over the period is about 270 000 m³, compared with hardwood’s sawnwood trend loss of about 114 000 m³. The data are from ABARE (1999) and annual reports of DNRE and its predecessors.

In summary, then, it is clear that:

- hardwood log yields statewide have declined in line with sustainability requirements;
- average hardwood log quality as indicated by log grade has declined;
- sawn outputs in total have been held generally in proportion to log volumes;

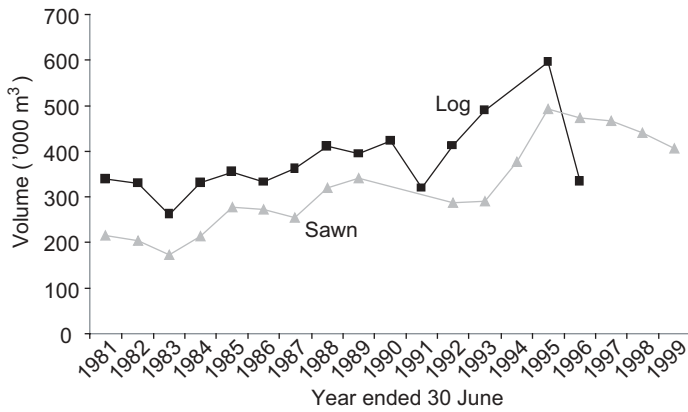


Figure 6. Softwood sawlog and sawnwood production, Victoria 1981–1999

- the proportion of value-added sawn outputs (i.e. seasoned timber) is currently about 28% or less of total output (but it has significantly increased since the TIS was introduced);
- softwood log and sawn volumes have increased over the period in line with log availability and market penetration, at a rate more than double the decline in hardwood volumes over the same period.

As if market competition and reductions in log supplies were not enough to challenge the hardwood sawmilling industry, other changes have been occurring simultaneously, particularly in costs and prices, as will be seen in the following section.

Hardwood industry costs and prices

Given the TIS requirement that royalties be adjusted to provide full coverage of production cost plus a 4% return to Government, it might have been expected that log royalties would have increased in real terms since 1986. To test this expectation, and to give it a historical perspective, data were extracted from various sources to build a time series of average hardwood sawlog royalties from 1970 to 1999 (Fig. 7).

To gauge whether royalties have changed in relative terms, Figure 7 also includes two time-series on relevant price indices:

- CPI: Melbourne's All Groups Consumer Price Index, and
- structural timber price index (for timber and joinery used in other than house building).

These data are derived from ABS publications (*Consumer Price Index Australia*, Cat. No. 6401.0; *Monthly Summary of Statistics, Victoria*, Cat. No. 1303.2; and *Victorian Year Book*).

The latter index was used because it was available over the whole period (like the CPI), whereas other relevant measures (such as the price index for timber used in house building) were not so available. There is a good measure of compatibility between the two timber price indices, so the one adopted can be used to give a useful relative comparison with log price measures.

The 'royalty' time series is made up from three data sources:

- 1970–1983: average hardwood sawlog royalties given by Crow and Kennedy (1984);

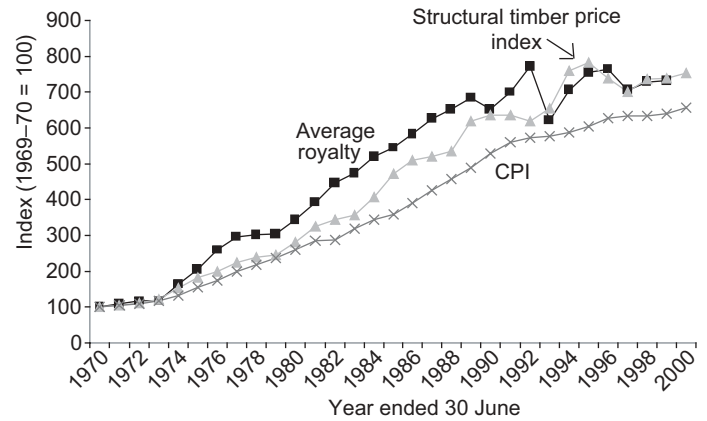


Figure 7. Average royalty for hardwood sawlogs and comparable price indices, Victoria 1970–2000

- 1983–1989: average royalty percentage increases as reported by DNRE and its predecessors in annual reports; and
- 1989–1999: average royalty rates calculated from detailed (but unpublished) log sales and revenue figures provided by Forestry Victoria.

Of the three sources, the last is probably the most reliable. Each 'average royalty' estimate includes components for royalty, roading and the TPC levy (Timber Promotion Council). Although not all components move in concert, all components are included to maintain compatibility with earlier time series.

Figure 7 shows that:

- average royalties over the period have kept ahead of general inflation (CPI) and, until recently, have exceeded increases in structural timber prices
- average royalties in the last period (1989–1999) appear to fluctuate more than previously, but this is an illusion caused by data inadequacies in the prior period — particularly 1983–1989;
- fluctuations around the underlying trend line are caused almost entirely by variations in average roading revenues, no doubt related to differences in seasonal conditions and logging terrain.

Whether increases in log royalties have been sufficient to achieve the TIS aim of a 4% real rate of return cannot be estimated from the data (though an earlier study by Auditor General of Victoria (1993) concluded that the target was not being met at that time). Another relevant question — also unanswered here — is whether current royalties meet the requirements of competitive neutrality as stipulated by National Competition Policy.

In summary, prices paid by hardwood sawmillers for logs appear to have outpaced the prices received by them for sawnwood, at least until the last decade. That, taken together with the attack on its markets, would suggest some structural changes should have occurred in the industry. This question is examined in the following section.

Hardwood industry structure

As the TIS foresaw it, the hardwood sawmilling industry would become more efficient and internationally competitive by

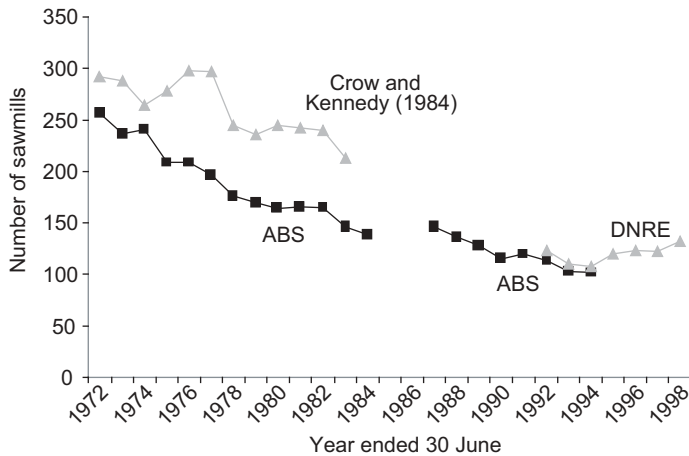


Figure 8. Number of sawmills, Victoria 1972–1998

restructuring over time into fewer, larger enterprises, with sufficient capital to invest in new technology and procedures. Most of the enterprises at the time were small family-owned businesses, many of them not operating full time.

Those mills which hold licences to extract logs from State forests are obliged to complete quarterly a ‘sawmill owner’s return’, to reveal relevant details of production. Because of the fragmented and part-time nature of much of the hardwood industry, the returns are not always comprehensive or complete.

Sawmill numbers declining

The official returns, however, do give a reasonable time-series on the number of mills actually operating over the years (Fig. 8).

Figure 8 shows two trend lines, one derived from the official survey of licencees (including that reported by Crow and Kennedy (1984) from 1972 to 1983; and DNRE (unpublished) from 1992 to 1998). The other trend line is that from the ABS (*Manufacturing Industry, Victoria*, Cat. No. 8221.2; and *Manufacturing, Victoria*, Cat. No. 8207.2). Note that these series are for *all* mills (both hardwood and softwood), as ABS data do not provide a separation.

From Figure 8, it is apparent that:

- the number of mills revealed by the official survey of licencees is noticeably larger than the ABS estimates, presumably indicating a degree of non-compliance with ABS survey procedures, especially in the earlier part of the series;
- there is considerable annual fluctuation in the number of mills, particularly in the licencees’ time-series, presumably reflecting the start–stop nature of smaller establishments in response to demand;
- there is a steady downward trend through both time-series, although they appear to be converging, perhaps suggesting the licencees are now complying more with ABS survey requirements;
- there are gaps in both time-series, partly because the data are unobtainable, but also because ABS discontinued its series in 1994.

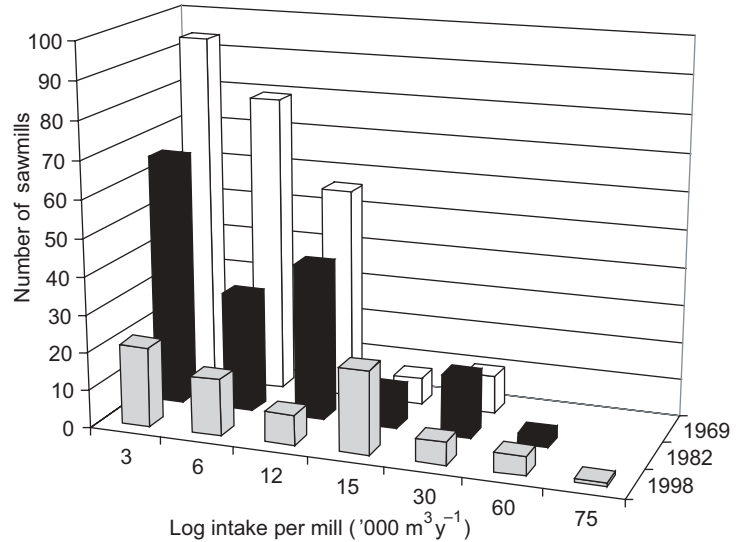


Figure 9. Hardwood sawmill industry structure, Victoria: 1969, 1982 and 1998

Average log intake and industry concentration increasing

Despite these data problems, it can be concluded that there has been a steady reduction in the number of sawmills, and practically all of these can be attributed to the hardwood sector. The rate of decline in mill numbers over the period has been faster than the decline in log intake (see Fig. 2), so average log intake per mill is now about twice what it was before the introduction of the TIS.

A second way of illustrating the change in structure of the hardwood industry over the period is shown in Figure 9. This shows a classification of mill numbers by log intake volume, for 1969, 1982 and 1998 (Crow and Kennedy 1984; Kennedy and Hourigan 1985; Fortech 1999). The comparison clearly indicates that during the 30-y period the expected reduction in mill numbers has been concentrated in the smaller mills, and there has been a small increase in the number of larger mills. The results indicate that mills with less than 12 000 m³ of log intake have been more vulnerable than larger mills.

In summary, this section reveals that the TIS goal of reducing the number of small hardwood sawmills has been achieved, and they have increased their average log intake, and become restructured into a less fragmented industry.

It is difficult to be sure, however, whether the changes have been caused, or even enhanced, by TIS, for the time trends appear to continue patterns in evidence since well before the TIS was put in place. Certainly it can be said that TIS has not hindered the process. Also, it can be said that there appears to be room for further concentration and restructuring.

Hardwood sawmill employment and productivity

The TIS identified employment as an important policy consideration. This section investigates the relationship between employment and production in hardwood sawmills. The topic of

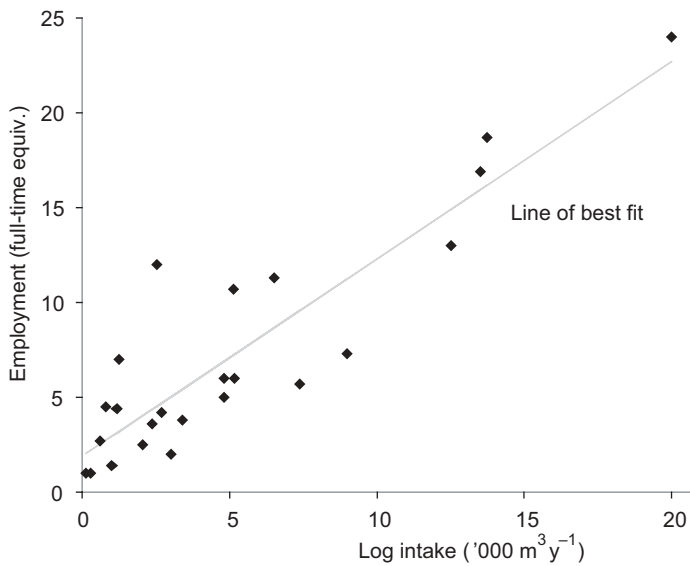


Figure 10. Green hardwood sawmill employment vs log intake, Victoria 1999

economies of scale in sawmilling is also considered, since it may have a bearing on job creation in the long run.

Green chain labour productivity is unchanged, apparently

Victorian hardwood sawmills cover a range of sizes as measured by log intake. The number of small mills has been declining more rapidly than the number of larger mills, which might imply that the larger ones are more efficient, or at least more cost-effective. If that were so, it might be hypothesised also that the larger mills have greater labour productivity. One way test that hypothesis is to plot employment levels against log intake (Fig. 10).

The data for this figure are derived from an unpublished survey of 23 green hardwood sawmills in Victoria by the Australian Bureau of Agricultural Economics (ABARE). The employment figures are full time equivalent (FTE) jobs. The picture shows that:

- all green hardwood mills require an average of at least 1.9 FTE jobs before production can begin; and
- beyond that, processing requires an average of 1.04 FTE jobs per 1000 m³ of log intake, whatever the scale of the mill.

Thus, *average* employment per unit volume declines slightly with scale (because the start-up employment level of 1.9 jobs is spread over a larger volume). But apart from that, there appear to be few technical economies of scale; that is, no greater substitution of technology for labour in larger mills.

It is interesting that the pattern was virtually identical in 1979 when a similar analysis was conducted (Greig 1979a). After the data have been adjusted to allow fair comparison, the so-called 'employment co-efficient' of 1.04 in the present study is practically the same as the estimate of 1.1 derived earlier by Greig.

The analyses taken together suggest that:

- a hardwood sawmill that gains or loses 1000 m³ of log intake will, in the long run, employ about 1 more or less person as a consequence; and

- this ratio has remained apparently unchanged over the last 20 years.

It is stressed that these observations apply only to the *green chain* in sawmills that have log intakes of <20 000 m³ y⁻¹. Also, the sawmills in the survey were located in Gippsland, and it is not clear whether they included many or any newer mills utilising ash regrowth. Therefore, the above results cannot be extrapolated to draw conclusions about newer, larger mills with drying, planing and further manufacturing plant.

Economies of scale?

Unfortunately, there are no available data permitting analyses of economies of scale in sawmilling, but it is useful to refer to an earlier detailed study of the subject (Kennedy and Hourigan 1985). After comprehensively reviewing the world literature, and the available empirical evidence both locally and internationally, the authors concluded that economies of scale and optimal scale in sawmilling were difficult to demonstrate empirically, yet many sawmilling executives remained firmly convinced that such economies existed.

The difficulty apparently arises because the industry's costs are affected heavily by the upstream costs of forest harvesting and log transport, which in turn depend on the location and quality of source forests. A second major consideration is that profitability seems to depend as much on managerial and marketing skills as on the technical efficiency of processing, equipment and scale.

Kennedy and Hourigan's paper also dealt with other aspects of scale, such as occupational health and safety, quality control, recovery rates and waste utilisation, all of which were thought likely to improve as mill size increased.

In summary, the available evidence suggests that the green hardwood sawmilling industry in Victoria has not altered its processing technology much in the last 20 y, and there still appear to be no real labour economies of scale.

Whether economies of scale exist in the value-adding part of the hardwood industry, and the softwood industry, seems to be a matter of opinion, and may remain so, given the difficulties encountered by many analysts in trying to resolve the question. Notwithstanding, there appear to be good *a priori* reasons for continuing to promote larger scale, in that it allows more value-adding, better safety, quality control, log recovery and waste utilisation. There are also good business reasons for adopting larger scale, such as cheaper finance, and better marketing and pricing strength.

Conclusions

The requirements of the 1986 Timber Industry Strategy appear to have been achieved, most wholly and some partially: reduced log allocations; longer licence terms; more value-adding; increased log prices; and increased utilisation of residual logs for sawnwood. Other requirements (such as stricter harvesting conditions and workplace safety) appear also to have been met, but have not been analysed or discussed here. These changes have been reinforced by loss of traditional hardwood markets to the softwood industry, which has better log resources and equipment opportunities.

Leading firms in the hardwood industry, comprising about half of the industry by log volume, have responded to the challenge by investing heavily in scale increases and in value-adding technology, and by breaking into new markets, using the distinctive features of Victorian hardwoods. Not unexpectedly, the other half of the industry either has just survived or has succumbed to the combined effects of TIS requirements and market erosion by selling licences and equipment to industry leaders.

Given secure and long-term access to a sustainable resource base, it would seem reasonable to conclude, on the basis of its recent history, that the hardwood industry will hold its structural grade markets, and will continue to penetrate niche markets for high-value products such as furniture and manufactured decorative components, both domestically and offshore.

One cloud on that scenario relates to the vexed question of log pricing, which has been raised many times (e.g. Byron and Douglas 1981) but not really resolved over the years. If higher prices were deemed necessary by the enforcement of competitive neutrality principles, or because the State demanded a higher rate of return on its forest assets, would the industry's future survival be viewed as confidently? Doubtless, the industry would find price increases unwelcome as it struggles to re-invent itself. But in principle, if its future lies in high-value, low-volume niche markets, it would seem reasonable to conclude that higher log prices may not be fatal, if clearly justified, and if introduced sympathetically.

It is very clear that the industry's future depends — as it always has — on government policies with regard to resource security and pricing, because its resource base is controlled by a state-owned monopoly. It has to be concluded, therefore, that as the industry has shown it has the capacity to survive and succeed, it should continue to do so, provided it has secure access to hardwood timber resources.

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