4 Log pricing issues

4.1 Log pricing

Over the last twenty years, there has been considerable evidence to suggest that forest agencies have frequently sold logs at less than their full market value. Empirical studies of log pricing are sensitive to the assumptions used, but the bulk of evidence suggests that, in the past, royalties for sawlogs from State forests have often been some 20 to 70 per cent below their market value (box 4.1).

Box 4.1 **Evidence of log underpricing**

There is longstanding evidence that wood from State forests may have been priced below its market value. For instance:

- During the 1970s, it was estimated that sawlog royalties were in many cases less than half of what could have been charged by State forest services, as indicated by residual log values (that is, the market value of processed wood minus harvesting, transport and processing costs) (Byron and Douglas 1981);
- The Industry Commission (1991) estimated that, throughout the 1980s, royalties captured as little as 25 per cent of the residual value of logs;
- The Australian Bureau of Agriculture and Resource Economics (ABARE 1991) published estimates (based on harvesting rights premiums) indicating that royalties were underpriced by 27 to 40 per cent for high grade logs, 34 to 48 per cent for medium grade logs and 49 to 74 per cent for low grade logs;
- A study by Dann et al (1997) indicated that the residual value of Tasmania's native forests was some 20 per cent higher than the value reported by Forestry Tasmania — the implication being that royalties were 20 per cent below the 'true' value of the logs sold; and
- A recent review of Victoria's *Forests Act 1958* found that sawmillers could afford to pay between 30 and 60 per cent more than the average prices charged for logs by the Department of Natural Resources and Energy (DNRE 1999a, p. 66).

There are few recent studies available to gauge whether underpricing is still prevalent. However, as noted below, it is likely that reforms implemented over the last decade or so have reduced the frequency of log sales at less than their potential

market value. For example, in comments on a draft of this paper, the NSW Treasury said that, in the case of SFNSW, '…hardwood and softwood logs have been priced according to market values since 1997'. Table 4.1 summarises recent changes in log pricing practices.

Table 4.1 **Log pricing mechanisms**

Jurisdiction	1997 pricing practices		Current pricing guidelines
	Price setting mechanisms	*Prices were…*	
New South Wales			
State Forests of NSW	Long term agreements at negotiated prices. New sales by tender.	Confidential.	Hardwood royalties charged at the residual value of wood. Softwood royalties set at world price less production costs, often 'take or pay' contracts.
Victoria			
Forestry Victoria	na	na	na
Victorian Plantations Corporation	Long term contracts at administered prices. Short term sales by closed bid.	Confidential.	na
Queensland			
Department of Primary Industries Forest Service	Final harvest by closed bidding. Thinnings by public auction. Plantation sawlogs sold via competitive tendering process.	Confidential. Published prices used as base.	Pricing 'competitive'.
Western Australia			
Forest Products Commission	Softwood sold by long-term agreement or open tender. Hardwood royalties based on growing costs plus 5%	Stumpage and royalty schedules published six monthly.	See column 2 (but currently under review).
South Australia			
Primary Industries Forestry	Most covered by supply agreements. Others under long term agreements at administered prices, or by competitive tender.	Published. Confidential.	'Market based', through expressions of interest.
Tasmania			
Forestry Tasmania	60% at administered prices (10 year contracts), 40% by open market bids (5 year contracts).	Average prices published.	na
ACT			
ACT Forests	Prices negotiated.	'Not confidential'.	Determined by 'supply and demand'.

na not available

Sources: Ministerial Council on Forestry, Fisheries and Aquaculture, et al (1997, p. 47) and information supplied by State and Territory CN offices.

Studies of underpricing have been typically based on a comparison of realised log prices with the 'full' market value of logs — a value derived by subtracting harvesting, transport and processing costs from the market price of sawntimber.

This derivation of the 'residual' value of logs assumes that the market is competitive. In forestry, however, markets are not always competitive. This chapter initially examines the role of market structure in determining 'market' values for logs. Subsequent sections consider the effects of log underpricing and other factors on private growers and touch on the likely effect of CN on the pricing practices of forestry agencies. Throughout this chapter, the discussion focuses on sawlogs and sawmills. However, much of the discussion applies also to other logs (ie pulplogs) and other wood processors, such as producers of wood panels.

4.2 Market structure and log prices

Log pricing in a competitive market

In a fully competitive market environment, a sawmill will compete against other processors for log supplies from growers. It will also face competition in its output markets from other domestic sawntimber producers and from imported sawntimber. In these circumstances, the domestic price of logs will be determined implicitly by the 'world' price of sawntimber (box 4.2). In principle, the domestic price should approximate the residual value of logs as defined above.

Log pricing in an uncompetitive market

In practice, the market for sawlogs sourced from State forests cannot always be regarded as fully competitive:

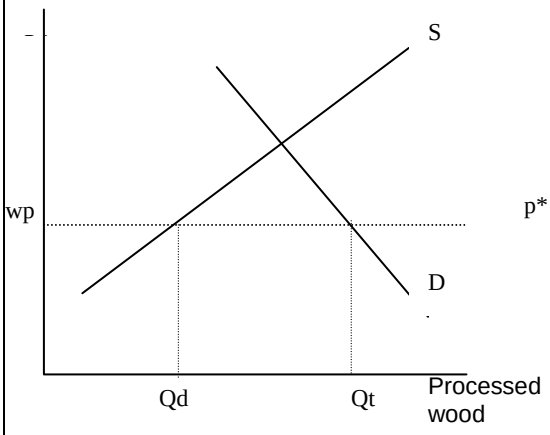
- in some regions there is only one log supplier, the State forest agency, and one (or very few) buyers, such as a large sawmill; and
- the high cost of transporting sawlogs puts a natural limit on the distance over which it is economic for sawmills to source logs from alternative growers, or for forest agencies to supply logs to alternative users.

Thus, in some regions, the market structure may be closer to a so-called 'bilateral' monopoly market structure than to a competitive market. This has implications for the determination of the market price of logs. As illustrated in box 4.3, the volume of logs harvested and processed under a bilateral monopoly may be similar to that in a competitive market. However, log prices could differ considerably from the prices that would be achieved in a competitive market. The actual price outcome will depend on two factors — first, the level of competition faced by the sawmiller in selling sawntimber and, second, the relative negotiating or bargaining strength of the sawmill and forest agency.

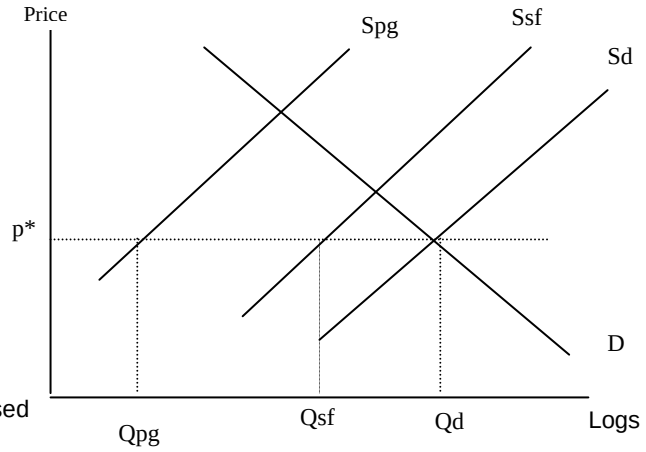
Box 4.2 **Competitive markets and domestic log prices**

Processed wood products — sawntimber, panels, pulp and paper, etc — are extensively traded on world markets. Thus, in principle, the domestic prices of most processed wood products will be determined by the world price of each product, shown as *wp* in panel 1. *Qd* is produced domestically, while *Qt* is total domestic consumption. The difference *Qt-Qd* is the amount of processed wood products that are imported, currently around 40 per cent of the domestic market.

1. Market for wood products



2. Domestic market for logs



The world price for wood products, in turn, implicitly determines the domestic price of logs. This price, which is shown in panel 2 as *p*,* is, in essence, the maximum price that a processor can pay for logs and still remain competitive. At log prices higher than *p**, processed wood prices would need to exceed international prices (*wp* in panel 1) if the processor is to make a 'normal' return on investment. In the face of competition from imported products, this price would not be sustainable.

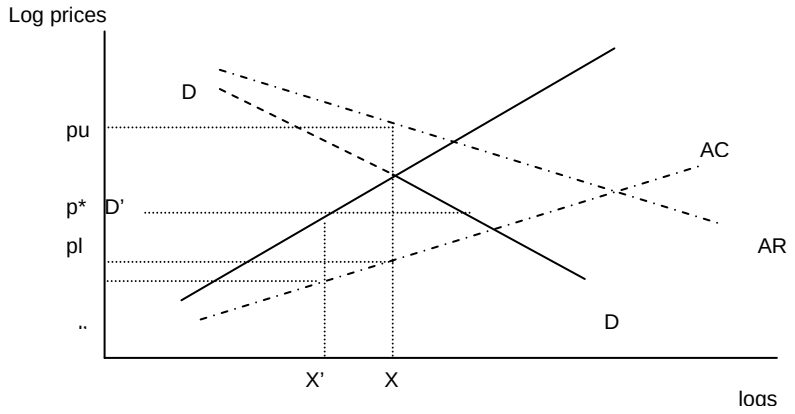
Panel 2 shows that at a log price of *p**, the domestic supply of logs is *Qd*. In a situation where a forestry agency is the major supplier, but is unable to meet total domestic demand, *Qsf* is supplied by State forests, with the difference *Qpg* (equal to *Qd-Qsf*) supplied by private growers.

If the market structure resembles a bilateral monopoly, with a large processor in a region being virtually the only potential buyer of logs, the processor may be able to use its monopsony power to drive log prices down below the price implicitly determined by international prices for processed wood products. On the other hand, if the forestry agency has the greater bargaining power, log prices could be forced above this level (see box 4.3). However, this outcome could only arise if the processor did not face competition for its outputs and could, therefore, pay a higher price without losing market share to competitors. Thus, even if a regional market can be characterised as a bilateral monopoly between the forest agency and a processor, log prices cannot be higher than the competitive price wherever the processor faces competitive output markets.

Box 4.3 **Log pricing under a bilateral monopoly**

In a bilateral monopoly, prices and quantities are agreed by negotiation between the sawmill and the forest agency. As illustrated, the level of output that maximises the joint profit of both parties is x. However, while both parties have an incentive to agree to this volume of logs to be harvested and processed, the prices will depend, to some extent, on which party is the better negotiator.

Determination of log prices in a bilateral monopoly



Notes: The sawmill's demand for logs is given by *DD*. Its average revenue (*AR*) is determined by the demand for the final product minus the costs of processing logs into sawntimber. This is its 'all or nothing' demand curve — the maximum price it can pay for any level of input and still stay in business. The forest agency's competitive supply curve is its marginal cost *MC*. Its average cost is *AC*. This is its 'all or nothing' supply curve, the minimum price it can receive for logs and still stay in business (this, of course, assumes that it must cover its costs).

Sources: Layard and Walters 1978; Gravelle and Rees 1981; Henderson and Quandt 1980; Blair, Kaserman and Romano 1989.

The forest agency must (it is assumed) at least cover its average cost — hence, the sawmill will try and negotiate a low price, such as p*l*. Conversely, a profit maximising forest agency will try to charge a high price, such as p*u*, which just leaves the sawmill with enough revenue to cover its costs. Hence, in principle, the market price of logs could be anywhere between p*u* and p*l*, depending on the relative negotiating strength of the forest agency and the sawmill.

However, processed wood products are widely traded on world markets. Indeed, as shown in chapter 2, Australian imports of these products are significant. Imports thus put a ceiling on the price which sawmills can pay for logs, since higher prices would make them uncompetitive with imported sawntimber. Hence, the domestic demand curve becomes *D'D* rather than *DD*. Under this scenario, the maximum price that forest agencies will be able to charge is p*, which is determined by reference to the world price for sawntimber, and its maximum profit at that price level would be from reducing output to x'. Trade in sawntimber products thus limits the range within which log prices can be negotiated.

As there is significant international trade in most processed forest products (see chapter 2), this 'no competition' scenario is likely to be a relatively rare occurrence.

Thus, in practice, the maximum price attainable by a forest agency for logs will normally be the competitive price, which will be determined implicitly by the world price of processed wood products. However, if the processor has monopsony power, it *may* be able to drive log prices down below the competitive price.

4.3 How will underpricing affect private growers?

The major concern expressed about the price of logs sold by forestry agencies has related to underpricing. As noted previously (box 4.1), several studies have pointed to underpricing by State forest agencies in past years. This could reflect the market power of some large processors. However, the fact that forest agencies were not required, or expected, to act commercially, and often had regional development objectives and other social obligations, seems a more plausible reason for underpricing. Whatever the underlying reason, allegations of underpricing have frequently been cited as a factor impeding the development of private wood growing enterprises.

The implications for private growers of log underpricing by forestry agencies depend on the interaction of a range of factors that influence the supply of, and demand for, logs and processed wood products. The following examples of the consequences of underpricing do not encompass all possible circumstances. Rather, they are indicative of the sorts of outcomes that can occur under various market conditions.

- Where private growers and the forest agency are essentially operating in separate markets, the prices charged in one market may have little impact on the other. For example, if private growers produce low quality logs for milling into low value sawntimber products, while the forest agency produces high quality logs for use in construction and other higher valued products, the forest agency's pricing policy may have little impact on private growers. This factor could underlie comments made by private growers in the Southern NSW RFA Region during discussions with the CCNCO that they would not be affected if SFNSW charged larger mills higher log prices.
- In a regional market where a forestry agency has the capacity to entirely satisfy local demand for logs, underpricing by the agency will depress prices received by any private grower that chooses to compete with the agency and discourage investment by private growers.
- In a regional market where a forestry agency cannot meet all local log requirements, the opportunity will exist for private growers to supply the shortfall in demand. The effect of underpricing by the agency on their returns will depend on the circumstances:

– if, as will usually be the case, local processors face competition from 'external' suppliers (eg importers of processed wood products), the maximum prices received by private growers should broadly correspond to the competitive price (the highest price processors can pay for logs and still be competitive — see previous discussion). However, processors may be able to use the price of logs sold by the forestry agency as a 'lever' to reduce prices below this level.

– if local processors do not face competition from 'external' suppliers (eg importers of processed wood products), the prices received by private growers will be determined by local competitive pressures — in essence, the potential supply of local logs relative to demand for those logs.

In all circumstances, processors that purchase underpriced logs sold by a forestry agency benefit from a windfall gain (or a 'rent'). This rent is reflected in the value attached to processors' entitlements for such logs.

In summary, underpricing of logs from State forests can have adverse effects on the establishment and ongoing operations of private wood producing enterprises. However, the impact of underpricing can only be determined on a case by case basis.

Recent reforms have created incentives for forest agencies to price logs on a more commercial basis. Consequently, it is possible that other factors may now have a greater impact on private growers than underpricing by forest agencies. Some of these issues are discussed below.

4.4 Non-price impediments to private growers

A major impediment faced by private growers may well be limited competition in the wood processing sector in some parts of Australia.

Relatively weak competitive pressures in the processing sector could provide large processors with market power and enable them to drive down prices paid to local growers. This is most likely to occur in a region where log purchases are dominated by a single processor that is able to buy logs from a number of different sources. However, in a region where a forestry agency is a key supplier, the capacity of a large sawmiller to exercise monopsony power in this manner may be limited for two reasons:

- the use of long-term take-or-pay contracts — where a forest agency has a take-or-pay contract with the sawmill that requires payment for wood volumes at the

upper end of the likely range of the sawmill's usage, the scope for the sawmill to source timber from private plantations may be limited; and,

- related to this, the requirement for sawmills, as a condition of their contract with the forest agency, to provide the agency with information on logs acquired from private growers, may place the forest agency in a position to 'fine tune' its log supply to that processor to the point where there may be little scope to purchase logs from other sources.[1]

Limited competition could also reduce the incentives for processors to operate as efficiently as possible. In turn, this can reduce their capacity to pay the full market value for logs.

Entry barriers are one factor which can contribute to a lack of competition. In sawmilling, these may be due to natural factors. More specifically, modern sawmills represent large, capital intensive investments. In some instances, a single mill can most efficiently process all, or most, of the logs in a given forest region. Where this is the case, it may be unprofitable for new mills to enter the market. The incumbent mill in this case enjoys a 'natural' barrier to entry.

Entry to sawmilling may also be restricted by regulations. Examples include:

- Restrictions on secondary markets in harvesting agreements that prevent the transfer of harvesting rights to other processors or new entrants. A secondary market for harvesting rights would provide a financial inducement for less efficient processors to exit the industry by selling their licences to more efficient operators who value the harvesting rights more highly.
- Regulations requiring harvesting rights and sawmills to be purchased together. Such 'bundling' makes it difficult for efficient processors to obtain additional harvest allocations without also purchasing additional processing capacity.
- The long-term nature of harvesting rights, in conjunction with the ability, in many instances, for holders to automatic rollover, can make it difficult for potential new entrants to acquire licences.

By impeding access to licences, such restrictions have almost certainly contributed to the domestic processing sector being less efficient than it might otherwise be. A number of recent studies have inferred that local processors' costs exceed world 'best practice' costs based on calculations of residual log values (see for example, BRS et al 1998; Wareing and Baker 1998; Burns et al 1999). As noted above, such

[1] For example, it is a licence requirement of SFNSW that sawmills provide information on the quantity of logs received from private property (AFFA 1999). However, according to NSW Treasury, SFNSW only uses this information as a 'theft protection measure'.

inefficiencies in processing constrain the capacity of sawmillers to pay 'competitive' prices for logs, which in turn can inhibit private plantation development.

While not raising any regulatory issues, other non-price 'impediments' to private growers may include market access problems that reflect private growers' inability to supply the volumes or quality of wood required by larger mills and the location of private plantations in areas where, because of topography or distance from the mill, wood cannot be harvested cost-effectively.

4.5 CN implications

Underpricing by State forestry agencies can affect the balance between public and private sector wood production. Underpricing also affects the return the community achieves on its forest assets and may adversely influence agency investment and harvesting decisions.

A priori, the application of CN would be expected to reduce the incidence of log underpricing, because it requires forest agencies to act more commercially by charging prices that cover all the costs of growing and managing the forest, including a commercially acceptable return to the land and timber assets. This should help ensure that the full market value is realised for logs sold by State forestry agencies. However, in some circumstances, it is possible that the cost of growing and managing the forest will be lower than the full market value (ie the realisable price) of logs. In other words, CN encompasses a 'floor price' concept and will not identify situations when the potential price achievable by forestry agencies exceeds that realised in practice.

The likelihood of CN monitoring detecting underpricing is also reduced by the degree of circularity that exists between log prices and asset values. This reflects two factors. First, if 'underpriced' logs are used to determine forest asset values, the cost base will be understated, as will be the price required to cover all relevant forestry costs. Second, any understatement of asset values will, in turn, result in reported rates of return being overstated. The effectiveness of rate of return monitoring is also inhibited by a number of other factors, such as year-on-year variability in log sales volumes and fluctuations in market conditions.

These difficulties in monitoring the performance of forestry agencies suggest that, in assessing compliance with CN, greater reliance should be placed on using residual values to determine the market value of logs, rather than prices actually realised by forestry agencies. Such values should also be used to estimate asset

values. Where available, prices paid for harvesting rights could also be used to ascertain whether logs are being sold for their full market value.