Equipment Costing: The Devil is in the Details

By Bob Lucke

Logging companies invest literally millions of dollars in processors, skidders, and other types of heavy equipment to run their operations. But from an economic standpoint, making an investment in such capital equipment only makes sense if the revenue generated by the equipment exceeds the cost. All too often, loggers face the spectre of bankruptcy as a consequence of failing to measure their costs correctly. Just ask any of the auction companies that do so well selling used equipment.

While calculating your equipment costs might seem tedious, it really is vital because many mills "estimate" equipment costs in order to set logging rates. Specifically, they estimate the costs per productive machine hour that a contractor should be able to achieve for each machine involved in harvesting a cut block. They then convert the hourly cost to a cost per output (e.g., cubic metre), based on an estimated production per hour ratio. This rate-setting exercise theoretically ensures that the contractor earns enough to cover his equipment costs.

The question, of course, is how to arrive at this hourly cost figure, and what exactly it should include. There is no set formula for calculating the cost of a piece of equipment, but an accounting cost "build-up" approach is fairly common. All the relevant expenses are identified on an annual basis and then divided by annual productive (as opposed to available) hours in order to express the cost on a per-hour basis. The expenses generally include routine operating/service expenses, operator costs, capital expenses (depreciation and insurance), and a return on investment.
When performing this cost build-up exercise, there are a number of devilish subtleties buried in the details. These subtleties can have a not-so-subtle impact on the final costing figure.

Mechanic Expenses. If you use your own mechanics (employees) to perform your equipment maintenance and repair work, be sure to include their full costs, including direct payroll expense, a payroll load for EI, CPP, benefits, etc., plus an allocation for the use of any tools or shop that you employ. Essentially, your mechanics should be costed as if they were an outside repair shop.

Operator Expenses. Ensure that your operators keep time sheets accounting for all their time and indicating the equipment unit(s) they operate, as well as the activity performed. Be sure to include an employee payroll load. Also, make sure you account for the cost of all labor hours (both downtime and productive time).

Depreciation. The method of depreciation used in the equipment cost calculation can have a notable effect on the final output. While straight-line depreciation is simple and therefore commonly used, the declining balance method (used for tax purposes) is generally more representative of the true economic depreciation a machine experiences over its life.

Administrative Overhead. If you do not receive a separate rate for your administrative costs, you should include an allocation of these expenses to your equipment costs in order to ensure that they are taken into account.

Return on Investment. The expected income stream earned by any asset must cover the return the investor requires to make the investment. This amount is your profit. The challenge is to determine the appropriate rate of return on your capital investment.

The typical calculation of this return involves a "weighted cost of capital" approach: take the debt-financed share of the asset and assign a market interest rate to that share. Then add a return to the equity-financed share. Because debt is assumed to be less risky than equity, this approach results in a lower cost of capital (and thus a lower profit to you!) than if the entire purchase was assumed to be financed by equity.

Does this approach make sense? There is another competing (and, some would argue, more sound) view that says the cost of capital is independent of the method of financing. That is, the financing arrangements allocate the risk and return of the investment among different investors (you and the bank), but do not change the total risk inherent in the investment. Paying off an equipment loan early, for example, does not change the cost of operating your equipment.

The moral of the story is that the equipment owner must be compensated based on the riskiness of his overall investment. So, an overall cost of capital that is appropriate to the inherent riskiness of a logging business should be applied to the entire equipment investment (not just the equity-financed share).

Track and Document

It is essential to have hard data in your hands when you enter rate discussions with a mill. The mills are sharpening their costing pencils, so yours needs to be even sharper. As the old adage goes, information is power! To the extent that you track your cost and production data by machine, you have a fighting chance at the bargaining table.

Bob Lucke, Ph.D., is vice-president of Caribou Software of Hinton, Alberta. For a more information about Caribou and its software for logging contractors, visit Caribou Software's website at www.caribousoftware.com.