



Financial Analysis of Scale Versus Lump Sum Timber Sale Payment Methods



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ABSTRACT

A financial analysis of two methods commonly used by public land management agencies to collect payment for stumpage sold was carried out using data from the St. Louis County Minerals and Land Department (SLCMLD) in northern Minnesota. The two payment methods evaluated were scale (also called pay-as-cut and consumer scale) where the buyer only pays for timber harvested and lump sum (also called sold-on-appraised-volume or SOAV) where a buyer pays for the entire tract's estimated volume, regardless of the amount of timber actually harvested. The analysis found no significant difference in gross timber sale revenue collected by the SLCMLD under the two payment methods. Scaled timber sales incurred an additional \$323 in administrative costs per timber sale compared to lump sum timber sales. This increase in administrative costs represents less than 1% of the timber value contained in the average SLCMLD timber sale. Differences in the standards agencies use to estimate merchantable stand volume of a timber sale and the administrative time spent processing timber sales can impact the financial costs associated with each timber payment method.

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Introduction

Public agencies generally collect payment for timber sold in one of two ways: scale (also known as pay-as-cut and consumer scale) and lump sum estimate (also known as sold-on-appraised-volume or SOAV). Under both timber payment methods, the seller first estimates the amount of wood that will be harvested during a timber appraisal. For timber sales using the scale timber payment method, the buyer pays a predetermined amount for each unit of volume (e.g., cubic meter) scaled by a consuming mill or by the seller prior to transport to a market. In contrast, buyers using the lump sum timber payment method pay a specified amount for the entire tract of timber, regardless of the amount of timber actually harvested from the tract (Brown et al., 2010).

We investigated the financial impact the two timber payment methods have on the St. Louis County Mineral and Land Department's (SLCMLD) timber sale program. St. Louis County is the

largest county in Minnesota. Its minerals and land department employs 62 individuals to manage approximately 353,000 ha of tax-forfeited forest land (Blinn 2014; St. Louis County Minnesota 2016a). The department's core function is to administer Tax Forfeited Trust Lands for the benefit of the county, school districts and townships in accordance with state statute (St. Louis County Minnesota, 2016b). Each year, the SLCMLD normally conducts four timber auctions, selling the harvest rights to 80–120 timber tracts comprising approximately 4,047 ha or 725,000 m³ using both timber payment methods. In 2014, total timber sale revenue generated by the agency was approximately \$5.5 million (St. Louis County Minnesota, 2016a). SLCMLD's forest land base and timber sale program provided an opportunity to examine the financial tradeoffs associated with each timber payment method.

Background

A distinguishing feature of the scale timber payment method is the requirement that the timber sale purchaser use a ticketing (or similar) system to track the timber harvested from the harvest site to the consuming mill. With a ticket system, the purchaser is given sequentially numbered paper "scale tickets" for each load of harvested timber which must be filled out and deposited before a truck load leaves the harvest site with material that will be delivered to a market. Each ticket includes a variety of information about the hauled truck load of harvested timber such as the date and

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time hauled, species mix, approximate quantity of timber hauled, driver's name, and destination of the timber. Most scale tickets contain two stubs: a lockbox stub and a destination stub. When a load of harvested timber leaves the harvest site, the completed lockbox stub is deposited in a secured lockbox (usually placed at the site's entrance) and is later collected by the forester administering the timber sale. The destination stub is taken with the hauled load to the consuming mill. In most instances, the consuming mill determines the volume of wood delivered.

After the timber is scaled at the consuming mill, the load ticket number and information about the scaled specie(s) and volume of harvested timber on each truck load is sent to the seller. If the timber sale purchaser is not independent from the consuming mill(s) or is hauling timber to a mill that does not have a consumer scaling agreement with the seller, the forester who administers the timber sale will scale the timber at the logging site before it is hauled off-site. Once a load ticket is returned to the seller by a consuming mill or the forester who scaled the volume in-woods, it is processed to record information about the wood volume removed by species and product and the purchaser is invoiced for payment for the wood harvested. Missing tickets are tracked to ensure that all harvested wood is accounted for prior to closing a timber sale. These additional administrative processes associated with a scale timber sale distinguish it from a lump sum timber sale.

Previous Research on Timber Sale Payment Methods

Research on timber payment methods is limited. Past work has examined their use, timber sale buyer and seller preferences for them, and payment method impacts. The following summarizes research conducted in these areas.

A national survey of state timber sale programs found that states use the lump sum timber payment method (63%) more often than the scale method (37%) (Brown et al., 2010). They reported that state timber sale program use of these timber payment methods are selling tracts as 100% scale, 100% lump sum, or a blend of lump sum and scale (i.e., blended sales²). Several programs also give the buyer the option to choose the timber payment method. Brown et al. (2010) reported there is very little agreement among state timber sale programs about the preferred timber payment method. The managers of these programs indicated a variety of social, economic, political and ecological conditions unique to each timber sale can influence an agency's use of a particular timber payment method.

Leffler and Rucker (1991) found the scale method was preferred when the seller has high timber appraisal costs and low harvest oversight and monitoring costs. They also documented timber sale supervisor sentiment that timber sale buyers often prefer the scale method because they do not have to incur as much risk when bidding for a tract. Blinn and Kilgore (2005) found that stumpage buyers often do not have the time or resources to conduct their own presale estimates of merchantable timber volume on each tract to verify the accuracy of the timber appraisal. In such cases, bidders may attempt to minimize the risk of a volume underrun on a lump sum timber sale by discounting their stumpage bid prices. Additionally, a timber sale purchaser's knowledge of the forester who set up the timber sale might also influence the buyer's preference for paying for harvested wood. Blinn and Kilgore (2005) found that over time, buyers can become familiar with a forester's timber appraisal practices (e.g., tends to underestimate merchantable volume), which could influence the timber sale purchaser's preferred timber sale payment method.

² Blended sales have a portion of a tract's volume sold using the lump sum method and a portion sold using the consumer scale method. Thus the sale contains a blend of both timber payment methods.

With respect to timber payment method impacts, Beuter and Arney (1972) reported no significant difference among the two payment methods on federal lands in western Oregon with respect to the volume of logging residue associated with clearcutting operations and cost of sale preparation and administration. Brown et al. (2010) reported that many public timber sale program managers believe lump sum timber sales require additional timber appraisal costs but lower administrative costs due to the lack of a ticketing process. Blinn and Kilgore (2005) concluded that lump sum timber sales lead to more intensive presale measurement on the part of buyers and sellers in an effort to reduce the financial risk borne by both parties. We were not able to find published studies that examined the financial cost to public agencies attributed to lump sum and scaled timber sales in Minnesota.

To address this information need, we analyzed differences in timber sale revenue and administrative costs associated with scale and lump sum timber sales administered by the SLCLMD. We hypothesized that the lump sum timber payment method increases gross timber sale revenue due to the buyer's incentive to merchandize more volume compared to the scale payment method. We further hypothesized that scale timber sales create an additional administrative cost to the agency associated with scale ticket collection, processing and billing.

Data and Methods

Data

Data on timber sales were obtained from the SLCLMD. This consisted of 592 SLCLMD timber sales that were closed between January 1, 2004 and December 31, 2013. A closed timber sale is a tract that has been fully harvested, the harvested timber has been removed from the site, and the buyer has met all contractual obligations for that sale (i.e., complied with harvesting guidelines, silvicultural requirements, appropriate level of utilization, and all payments for hauled timber and fines have been received). The data associated with each timber sale included the permit number, total timber sale revenue, total winning bid value, total appraised volume by species, auction date, closing date, tract location, sale size, auction method, timber payment method, and number of harvesting blocks. Additional data on each timber sale (e.g., season of harvest) was compiled from the agency's timber sale auction booklets that were used to advertise tracts of timber offered for sale. Timber sales sold as noncompetitive timber tracts (i.e., informal timber sales which did not go through a public auction process), salvage sales (i.e., stands of timber damaged by fire, disease, or infestation), sales where the buyer selected the timber payment method, and sales with missing data were removed, resulting in a dataset containing information on 447 closed timber sales.

Data on sale administration costs also came from the SLCLMD. During 2014, the SLCLMD processed 11,810 scale tickets and closed 127 timber sales. Of those closed timber sales, blended sales were apportioned to the timber payment method that had the majority of the timber sale volume (i.e., at least 50% consumer scale volume was categorized as a consumer scale sale and at least 50% lump sum was classified as a lump sum sale). Thus, our data set contained 94 scale sales and 33 lump sum sales.

The SLCLMD requires scale tickets for wood sold as a scaled timber sale. To assess the total administrative cost of processing scale tickets for scale sales, SLCLMD administrative staff recorded the time spent on each step of the scale ticketing process. There are several tasks associated with administering a scale ticketing process. They include stamping and mailing out tickets to timber purchasers, opening envelopes and recording returned and completed tickets, entering ticket data into a timber sale database,

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