Logging Cost Components of US Timber Producing Regions and Their Use in a Regional Logging Cost Index

Shawn A. Baker¹, W. Dale Greene²

Abstract

Data on logging cost components were reported with some frequency through the mid-1980’s, but the expansion of contract logging and elimination of company logging crews reduced the ease with which large datasets on logging costs could be readily collected. A timely, accurate indicator of changes in logging costs would establish a baseline against which logging contractors could compare their own costs and would offer buyers and sellers of timber a reference for shifts in cut and haul rates.

To determine the variation in logging costs across the country, we interviewed contractors in each of the four major timber producing regions. We conducted 48 face-to-face interviews across eleven states, and 27 of the interviewed contractors shared information related to their 2011 operating costs. Using the cost information provided by the 19 participants in the South, we developed percentage breakdowns of the key factors driving logging costs.

We developed a logging cost index for the South, where we had the most data on the percentage breakdown of logging costs. Publicly available data on costs of diesel, equipment, maintenance, labor, interest, and other factors were used to drive the changes in the cost index over time. The methodology used to develop the southern logging cost index could be extended to other regions if more region-specific cost data were available.

Introduction

The Bureau of Labor Statistics listed 8,300 logging businesses employing 46,300 people across the U.S. as of the 2nd quarter of 2012 (Bureau of Labor Statistics 2012). In employee wages alone, the logging industry generates $430 million. It is also a vital component of the U.S. forest products supply chain. Despite the importance of the logging industry, information on the condition of the logging workforce has historically been limited. The business is dominated by small independent contractors, and

¹ Research Professional, Center for Forest Business, Warnell School of Forestry & Natural Resources, University of Georgia, Athens, GA 30602-2152
² Professor, Center for Forest Business, Warnell School of Forestry & Natural Resources, University of Georgia, Athens, GA 30602-2152
substantial effort is required to gather sufficient information to make generalizations about the industry as a whole.

Many approaches have been designed to estimate the cost of logging operations. Some of these were based on specific detailed historic cost records, while others used simplifying assumptions and reasonable estimates of cost components. All cost estimates need to be based on real data as much as possible to improve their validity. While sources of data on cost components were reported with some frequency through the mid-1980’s, the elimination of company logging crews reduced the ease with which large datasets on logging costs could be readily collected.

One previous effort to index logging costs used accounting records collected annually from a group of contractors (Stuart and Grace 1999). The information in reports generated by Stuart et al. (2008) has been one of the most widely available indicators of logging cost changes over the past 20 years. One disadvantage of Stuart’s reporting was the 1-2 year delay between the recording of the cost information by a contractor and the availability of reports to potential users.

Our objective was to generate a timely, accurate indicator of changes in logging costs to provide value to everyone in the industry. It would establish a baseline against which logging contractors could compare their own costs and would offer buyers and sellers of timber a reference for shifts in cut and haul rates.

Methods

We contacted 95 logging contractors around the country to gauge their interest in participating in the study. Potential participants were selected based on their reputation as reliable record-keepers and above average performers. The goal of the study was not to estimate an average cost for the industry, but to collect accurate cost data from a collection of efficient operators. Contractors who agreed to participate were visited for a face-to-face interview during which data on the structure of their business were collected. In addition, detailed breakdowns on the distribution of costs incurred in 2011 were requested. Follow-up phone calls were made in an attempt to collect data not shared during the interviews.

We used the accounting records of participants as the starting point to calculate a logging cost index by separating the costs into major cost categories: labor, petroleum-based consumables, depreciation, repair & maintenance, interest, insurance, and administrative. We found publicly available cost data tied to most of the major logging cost components. Average wages paid to logging employees, costs for heavy equipment and equipment repairs are all reported by the Bureau of Labor Statistics, retail diesel prices are reported by the Energy Information Administration, and the
Federal Reserve reports interest rates. Combined, these data represented over 90% of the cut and load cost of southern logging operations. Indicators in changes of administrative and insurance costs were not readily apparent. As a result, the core Consumer Price Index (CPI) minus food and fuel was used to modify these portions of the cut and load cost.

Weekly wage data are reported quarterly by the Bureau of Labor Statistics. We weighted the average weekly wage reported in each of the states in a region by the total number of logging employees in each state. This weighted average wage was then used to modify the labor portion of the cut and load rate.

Using the percentage breakdown reported by participants, we weighted each of the public data sources to adjust the cost per ton of that component of the cut and load cost. The initial value of the index was set at $12.50 per ton in the fourth quarter of 2011 to coincide with the data shared by participants.

Haul costs were not included in the index due to the separate and unique distribution of costs associated with operating heavy trucks. Many of the participants in the study did not maintain separate cost records for hauling, making calculation of a detailed cost breakdown problematic.

Results

Of the 95 contractors contacted, 47 agreed to interviews, and 28 ultimately shared cost data (Table 1). Nineteen of the 28 contractors who shared cost data were located in the southern US. As a result, our sample size of contributors was only large enough to allow for development of a cost index for the South.

Table 1. Breakdown of participating contractors by region of the country, including those who provided cost data.

<table>
<thead>
<tr>
<th></th>
<th>South</th>
<th>West</th>
<th>Lake States</th>
<th>Northeast</th>
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</thead>
<tbody>
<tr>
<td>Contractors Contacted</td>
<td>40</td>
<td>19</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td>Participants</td>
<td>23</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>No. Providing Cost Data</td>
<td>19</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total Participating Logging Crews</td>
<td>63</td>
<td>34</td>
<td>35</td>
<td>22</td>
</tr>
<tr>
<td>Average Contractor Weekly Production (Tons)</td>
<td>4200</td>
<td>4050</td>
<td>1800</td>
<td>3650</td>
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<tr>
<td>Weeks Worked per Year</td>
<td>50</td>
<td>48</td>
<td>49</td>
<td>40</td>
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</tbody>
</table>
The distribution of cut and load costs from southern logging contractors was similar to previously reported cost distributions (Figure 1). A major difference between the index developed here and the previous logging cost index reported by Stuart et al. (2008) is the exclusion of haul costs in the index methodology we use. While contractor records usually included detailed information on the cost associated with contract hauling, contract hauling only comprised roughly 45% of the total loads delivered for participating contractors. Detailed breakdowns of the cost to operate their own heavy trucks were not available from the majority of respondents, hindering our ability to accurately link the major cost components to cost indicators. Our index therefore only reports cut and load costs.

![Figure 1: Percent breakdown of major cut and haul cost categories reported by Stuart, et al. (2008) for 2006 and for Southern contractors from this study.](image)

Excluding the haul costs (the majority of the “contracted services” referenced by Stuart and Grace (1999)), labor was the largest cost component, followed by fuel, depreciation and repair and maintenance (Figure 2). The initial index value was set to $12.50 per ton, which was the average cut and load cost for participating contractors in 2011, rounded to the nearest $0.50. The proportion of the cost in each of the major cost categories was linked to the fourth quarter 2011 value of the public data source tied to that category. For example, depreciation represented 19% of the cut and load cost ($2.375 per ton). The value of the PPI for heavy equipment (NAICS 333120) over the last three months of 2011 was 231.6. The contribution of equipment depreciation to the index in any quarter is the initial depreciation cost ($2.375) multiplied times the PPI for heavy equipment in that quarter divided by the initial PPI for heavy equipment (231.6).
Using this methodology, we were able to track the logging cost index moving forward past 2011 as well as compare the index value backward to the values reported by Stuart et al. (2008). To compare index values back to 1995, we had to replace the PPI for heavy machinery repairs (NAICS 811310), which was created in 2007, with the CPI as no comparable data were available. The trend of the quarterly index we generated compared favorably with the annual trend of Stuart et al. (Figure 3).

Figure 3. The UGA Logging Cost Index shown quarterly and Stuart’s Logging Cost Index reported annually, from 1995-2006.
Historic performance of the index methodology is not a guarantee of future accuracy. We intend to evaluate the trends in logging cost reported by the index in the future using data provided by logging contractors. The approach appears to provide a simple, rapid measure of changes in logging costs which can aid the industry in identifying large shifts in logging cost. The structure of the index should also indicate the scale of changes in volatile cost components, such as diesel fuel.

References

