Changes in Logging Firm Demographics and Logging Capacity in the US South

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Abstract

Timber harvesting operations in the US South are predominately operated by small businesses that run mechanized tree-length systems. They are highly productive and are an essential component in a wood supply system that is competitive on a global scale. We review these businesses and operations based upon 25 years of mailed surveys conducted on a 5-year interval and recent in-depth interviews with dozens of southern contractors to assess the cost factors in their businesses.

Despite dramatic shifts away from clearcuts and toward more frequent thinnings, average weekly production more than doubled over the past 20 years due to greater reliance on mechanization and planted stands. There is today little difference between the average weekly production of thinning crews and clearcut crews. The age of logging firm owners has increased nearly 10 years over the past two decades, although this reflects to some degree the aging of the US population generally. Capital investment per crew or firm is high and steadily increasing, but returns to capital are flat reflecting the economic reality that our industry is largely fully mechanized in the South and additional capital no longer buys significant additional productivity.

However, since the economic recession began in 2007, the average age of logging machines in the woods has increased substantially reflecting the decision by owners to delay replacement or new investment. Logging capacity by our estimates is down 15-20\% since 2007 and we also see that the surplus of logging capacity versus harvest levels has decreased. While this is worrisome to wood-using industries that prefer to keep some “surge capacity” available, this tightening gap should improve the ability of logging contractors to negotiate higher logging rates for their services.

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Introduction

Loggers across the eastern United States face challenging economic impacts following the recent housing market collapse and economic recession. U.S. logger survey data from *Timber Harvesting* outlined general demographic changes since 2001: an aging and economically challenged workforce, increasing mechanization and associated financial strains, and increasing logger training, testing, and continuing education (Knight 2006a, 2006b, 2011). In the most recent survey from *Timber Harvesting* (Knight 2011), half the respondents stated that they made no profit in 2009. Labor issues were a concern as highly qualified workers sought other employment following business shutdowns. Loggers reported that market factors were keeping increases in efficiency from translating into higher profit margins. Slow market improvements, aging owner demographics and firm succession concerns remained, alongside efforts to improve efficiency in trucking and associated challenges to reduced tract size.

Results from the last survey of Georgia logging contractors in 2007 revealed increases in thinnings and partial cuts with fewer clearcuts, decreased volume harvested per tract, and higher moving costs per ton (Baker and Greene 2008). Highly mechanized tree length operations showed increased productivity per labor and capital input. A large cohort of owners was approaching retirement and a paucity in recruitment raised concerns about the sustainability of the industry without new owners entering the business. A recent survey of South Carolina logging contractors revealed very similar industry characteristics (Moldenhauer and Bolding 2009).

We report findings of the 2012 survey of logging businesses in Georgia with responses gathered simultaneously from South Carolina logging contractors.

Methods

During the spring of 2012, 1251 logging contractors in Georgia and South Carolina were mailed a two-page survey covering timber harvesting operations and practices, production levels, contract specifications, equipment fleet, and demographics. A similar survey has been distributed by mail to Georgia loggers every 5 years since 1987. South Carolina loggers were also included to expand the dataset and allow for comparisons. A follow-up mailing was sent two weeks after the initial mailing. Responses were entered into an Excel spreadsheet and the response data were evaluated using SAS. Data from the US Forest Service on annual timber harvest volumes and wood use were combined with data on employment and businesses from the Bureau of Labor Statistics to estimate the change in logging capacity in the state over time.
Results

Surveys were completed and returned by 27% of Georgia and South Carolina logging firms who were mailed the survey. Approximately 70% were members of one or more state professional forestry or logging association. The average age of business owners continued to increase as was noted in previous surveys (Figure 1). The median age among respondents was 53 years with a median ownership length of 23 years.

![Bar chart showing age distribution of business owners from 1992 to 2012.]

*Figure 1. Georgia logging business ownership distribution by age, 1992-2012.*

Business owners in 2012 indicated a typical (median) investment of approximately $783,000 in Georgia and $863,400 in South Carolina while employing between 7 and 8 people on average. Roughly 60% operated through a wood dealer or supplier, 40% operated directly through a mill, and 2 to 3% operated through a TIMO or REIT. Written contracts (70%) and harvest plans (60%) were used at the same rates in both states and at the same rate as they were among Georgia businesses in 2007.

Contract trucking is used by 78% of Georgia firms and 71% of South Carolina firms. Standing timber is bought directly by 43% of Georgia logging companies and 29% of South Carolina companies. A wood dealer purchases the timber cut by 43% of Georgia contractors and 51% of South Carolina contractors, and mill companies purchase the timber for 10% of contractors while 5% cut on company land.

Respondents were asked the acreage of the tract currently being harvested by their largest crew. Georgia contractors reported a median tract size of 117 acres while South Carolina contractors were harvesting smaller tracts of 75 acres. Tree lengths (93% in GA and 94% in SC) and log lengths (74% and 80%) were the major products hauled to mills. This year, we also saw both clean and dirty chips reflected in survey data. Just
over 10% of all firms were hauling fuel chips. In addition, respondents reported the following biomass markets were available in their area: one-third of contractors had access to whole-tree chip markets, 33% and 42% to markets for chips from logging residues, 13% and 19% could sell grindings from residues, and 21% and 14% could sell tree-length stems to biomass markets in Georgia and South Carolina, respectively. About a third of all respondents reported that they had no access to any fuelwood or biomass markets. Loggers most commonly sorted 4 to 6 products in an operation. Just 14% of Georgia respondents and 7% of South Carolina respondents sort more than 7 products in a typical week.

Clearcut operations have decreased from 82% in 1987 to 28% in 2012 in Georgia (Figure 2), but over the same time period, average weekly production has doubled to 1615 tons. This has increased average worker productivity from 3.4 tons per man-hour to 5.5 tons per man-hour. Productivity per $1000 invested has fluctuated, from almost 200 tons in 1987 to 125 tons in 2002 and is now hovering around 140 tons per $1000 (Figure 3). Over the last 20 to 25 years, labor increased in efficiency with increased capital investment as firms shifted towards mechanization. However, as expected as full mechanization is nearly achieved, firms no longer appear to be realizing increasing marginal rates of return from additional investment in equipment.

Logging businesses have also increased payloads substantially by investing in lighter-weight tractor-trailers and to a lesser extent in truck scales. Median empty tare weights reported for their lightest truck and trailer combinations were 27,500 lbs in Georgia and 28,000 lbs in South Carolina. Only 7% of Georgia businesses and 20% of South Carolina businesses cited tare weights at or above 30,000 lbs. Still, the majority of

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*Figure 2. Average weekly production in tons and percent clearcut operations in Georgia from 1987 to 2012.*
contractors have not invested in either platform or on-board scales. In Georgia and South Carolina, respectively, 11% and 6% use platform scales, 8% and 4% use on-board scales in some of their trucks, and 3% and 2% use on-board scales in all trucks.

Figure 3. Average productivity in tons per $1000 and tons per man-hour invested by Georgia logging contractors from 1987 to 2012.

Over the years, contractors have been asked to report the biggest problem facing their business. Logging rates and general finances have always been a major struggle in this business, and this year was no exception. Unsurprisingly, the biggest problem faced in 2012 was fuel prices, cited by half of both Georgia and South Carolina loggers. Equipment, quotas, timber prices, labor, insurance and mill practices were also listed as problems contractors faced.

Since 2007, some loggers have received rate adjustments from some mill companies or landowners in response to increasing fuel prices. In 2012, adjustments based on fuel cost were reported being received by 24% of Georgia contractors and 18% of South Carolina contractors. Interestingly, off-road fuel consumption was reported as being tracked by only about 40% of logging firms from each state, with half of those tracking usage on a per-machine basis and the other half on a per-crew basis.

Discussion

In 1987, 73% of Georgia logging firms delivered 1000 tons per week or less compared to only 35% today. By contrast, firms that deliver 2500 tons per week or more have increased from less than 1% to 19% and those that produce 1000-2500 tons weekly have increased from 27 to 49% of the population. As a result, today the largest firms
(2500 tons per week or more) represent just 19% of the contractor force but deliver 51% of the wood each week. The effects of the recent economic recession have probably further accelerated these changes.

Since 1999, Georgia has experienced a 28% decline in the number of logging employees and the number of logging firms – much of this experienced after 2007. However, given the steady and significant productivity increases over this period the production capacity of the logging sector continued to increase up until the recession in 2008. While employment and firm counts are down nearly 30% compared to 1999, we estimate that logging capacity is only down about 15-20% (Figure 4). This clearly indicates that firms with higher production capacity were better able to survive the recession.

Figure 4. Estimated logging capacity and actual timber harvest reported by USFS for Georgia since 2000.

It appears that a greater number of the survivors also field multiple crews. These financially stronger, better managed firms will be able to quickly staff additional crews and be more likely to obtain financing for the equipment needed. In addition, by mixing experienced labor with new hires, they will likely be able to ramp up production on new crews much more quickly than newly created firms. As markets for timber continue to strengthen, we expect most of the logging capacity that will be added to handle this demand will be associated with these survivors from the recent recession.

One issue across the logging force is the age of the equipment fleet. While many people feel that today’s equipment is capable of serving a longer operating life, we observed a sustainable increase in the age of equipment reported in the 2012 survey (Figure 5). Some of this is likely due to firms delaying replacement due to soft markets and financing challenges. It may also reflect the purchases of used equipment from
crews that left the industry during the recession. To some degree, it also represents decisions to delay replacement until newer engine designs mandated to meet lower emission standards are proven in actual service and experience is available about them. In any case, we found feller-bunchers to be twice as old and haul trucks to be 40% older in 2012 than in 2007. At some point, significant re-investment in rolling stock will be required to sustain the industry especially as demand recovers.

![Mean age by machine type of equipment owned by Georgia logging contractors in 2007 compared with 2012.](image)

**Figure 5.** Mean age by machine type of equipment owned by Georgia logging contractors in 2007 compared with 2012.

We also expect logging rates to increase in order to attract additional investment in new capacity by these firms and for them to be able to obtain financing in today’s more challenging lending environment. However, adding capacity to these larger firms will likely create less upward price pressure since these firms enjoy significant economies of scale over their competition in the sector with much lower weekly production.

**References**


