

Impact of Forestry-Related Ordinances on Timber Harvesting in St. Tammany Parish, Louisiana

James E. Henderson, Tina Willson, Michael Dunn,
Richard Kazmierczak, and Huizhen Niu
Department of Agricultural Economics
and Agribusiness
Louisiana State University



Background

Forestry-related ordinances are used to regulate harvesting activity, minimize damage to public roads, and to preserve environmental and aesthetic quality. The proliferation of forestry-related ordinances is a growing trend in the Southern United States, with the greatest expansion of regulations in regions with growing populations in close proximity to urban areas.

Ordinances passed at the local government level are of particular concern since these are often developed independently and without a full understanding of possible economic consequences (Green and Hains, 1994; Jackson et al., 2003). Additionally, such forestry-related ordinances often have unpredictable impacts on local forestry operations and the unintended consequence of reducing long term timber supply when landowners accelerate harvest to avoid new regulation they consider burdensome (Cubbage, 1991; Greene and Siegel, 1994).

St. Tammany Parish, located just north of New Orleans, Louisiana is a prime example of an increasingly exurbanized area that has passed ordinances deemed by many in the forestry community as being excessive both in terms of cost and regulatory rigor.

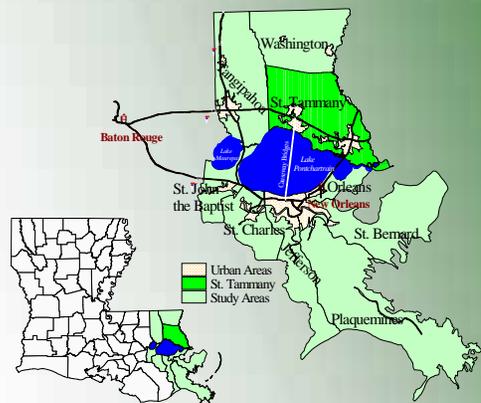


Figure 1. Southeast Louisiana with inset showing the location of St. Tammany Parish relative to New Orleans.

St. Tammany Parish has two main routes into the greater New Orleans urban area. These include the Lake Pontchartrain Causeway Bridge and Interstate Highway 10. These two access paths combined with the relative location of St. Tammany Parish to the New Orleans metropolitan area have made it an ideal location for commuters desiring to live outside the city.

A major factor in ordinance growth is a shift in population from urban to rural areas. Growth of local government ordinances may be linked to social conflicts resulting not only from the growth of urban areas, urbanization, but also to exurbanization, the migration of urban residents to rural areas (Granskog et al., 2002). Exurbanized residents unfamiliar with the historical importance of forestry to the local economy may react adversely to the appearance of harvested areas by organizing community movements and lobbying local government to pass ordinances restrictive to forestry practices, often without considering the effectiveness of the ordinance or the economic impact on the local economy.

From 1970 to 2003, the population of St. Tammany Parish has nearly tripled. This growing exurbanized population coupled with the historic role that forestry plays in the local economy, along with the proliferation of forestry related ordinances, presents an interesting opportunity for empirical analysis.

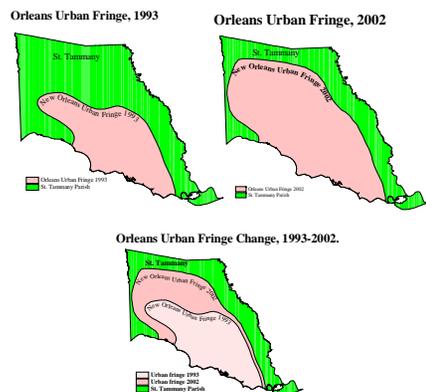


Figure 2. New Orleans urban fringe growth into St. Tammany Parish from 1993 to 2002. (Source: Lonnie Vandevier, Patricia Soto, Steven Henning and Huizhen Niu, LSU AgCenter.)

Methodology

The Code of Ordinances for St. Tammany Parish was examined to determine adoption dates of forestry-related ordinances. The land clearing permit, defined in Section 12, requires a natural uncut buffer zone of at least fifty feet in width surrounding a harvest area with only one access opening which can not exceed one hundred linear feet. The permit costs \$150 with an additional \$100 inspection fee. The ordinances that comprise the requirements of Section 12 were adopted in 1984, 1985, 1986, and three adopted in 1987. Land Use Ordinance No. 523 (Section 5.17) requires the posting of a road bond in the amount of \$10,000 by anyone who obtains a land clearing permit. This provision became effective on October 1, 1990.

A time series model was used to investigate the relationship between forestry-related ordinances and sawtimber harvest levels in St. Tammany Parish. Harvest levels were modeled as a function of stumpage prices, population, time, and forestry-related ordinances. The ordinances were incorporated into the model through the use of dummy variables. After testing for various data coherence and model specification issues the following model was chosen:

$$STHarvest_t = \beta_0 + \beta_1 Time_t + \beta_2 Population_{t-3} + \beta_3 Bond + \beta_4 Ordinance1984 + \beta_5 Ordinance1985 + \beta_6 Ordinance1986 + \beta_7 Ordinance1987 + \beta_8 STStumpage_t + \beta_9 STHarvest_{t-1} + \beta_{10} Population_{t-3}$$

where $STHarvest_t$ is St. Tammany pine sawtimber harvest in year t expressed as a ratio of total Louisiana pine sawtimber harvest in year t , $Time_t$ is the year, $Population_t$ is St. Tammany Parish population in year t , $Bond$ is a dummy variable indicating years that the \$10,000 road bond is in place, $Ordinance1984$, $Ordinance1985$, $Ordinance1986$, and $Ordinance1987$ are dummy variables representing the implementation of forestry-related ordinances in those respective years and the subsequent years the ordinances are in place, $STStumpage_t$ is the real Louisiana stumpage price for pine sawtimber in year t , $STHarvest_{t-1}$ is the ratio of St. Tammany pine sawtimber harvest to total Louisiana pine sawtimber harvest in year $t-1$, and $Population_{t-3}$ is St. Tammany Parish population in year $t-3$.

Results

All variables have the expected signs, but only time, bond, and the lagged harvest variable are significant at the 5% level, stumpage is significant at the 10% level, and the 3-year lagged population variable is significant at the 15% level (Table 1).

Variable	Coefficient	Std. Err	t	P> t
time	.0049505	.0022191	2.23	0.037 [†]
population	-4.17e-07	3.43e-07	-1.21	0.239
bond	-.0250197	.0060423	-4.14	0.001 ^{††}
ordinance1984	.0088232	.006416	1.38	0.184
ordinance1985	.0064636	.0078158	0.83	0.418
ordinance1986	.0067809	.0074985	0.90	0.377
ordinance1987	-.0051651	.0077699	-0.66	0.514
stumpage	.0001204	.0000668	1.80	0.087 [‡]
harvest_lag	.4899198	.1418349	3.45	0.003 ^{†††}
population_lag3	-7.16e-07	4.56e-07	-1.57	0.132 ^{†††}
intercept	-9.700696	4.348196	-2.23	0.037 ^{††}

[†] significant at 5% level
[‡] significant at 10% level
^{††} significant at 15% level
 $R^2 = 0.7766$
 $adj R^2 = 0.6649$
 $F(10,20) = 6.95$
 $Prob > F = 0.0001$

Table 1. Regression Results

The effects of the ordinances passed in 1984, 1985, 1986, and 1987 are inconclusive, but the road bond ordinance had a negative impact of 2.5 % on St. Tammany's percent of state sawtimber harvest levels.

Discussion

The decrease in saw timber harvest can be attributed to the fact that non-industrial private land owners often do not maintain forest land for timber production as a primary source of income (Adams et al., 1982). Therefore, non-industrial private forestland owners may be inclined to hold timber rather than harvest. The road bond ordinance indicates that the \$10,000 security could be posted by either party involved in the timber sale. In the case of non-industrial private forestland owners this security is typically bonded by the logging firm. The \$10,000 road bond increases fixed costs for logging firms and may have the effect of reducing the number of firms that are willing to operate in St. Tammany Parish. Thus, it is not surprising to find a significant negative relationship between the 1990 road bond ordinance and timber harvesting in St. Tammany Parish (Figure 3).

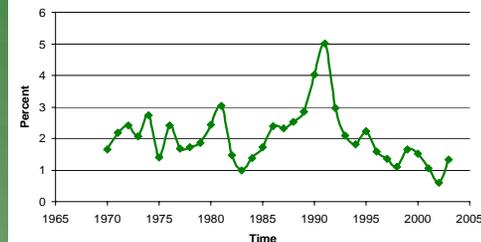


Figure 3. Sawtimber Harvest in St. Tammany as Percentage of State Harvest over time (1970 – 2003).

Based on our model no conclusions can be made regarding the effect of the other ordinances pertaining to the land clearing permit on harvest levels. It is assumed that any kind of additional regulation is typically not preferred by those who are regulated, but the degree of financial burden resulting from the provisions of the land clearing permit may not be burdensome enough to have a significant impact on harvest levels.

Conclusions

The impact of the road bond ordinance on harvest levels provides possible indication of diminished property values for forest land. Our model indicates that the passage of the \$10,000 road bond has a significant negative relationship with timber harvesting, and it is reasonable to assume that this may have a negative impact on timberland value. This result should be of interest to local governments in Louisiana, since the State Legislature passed amendments in 1995 to the Louisiana Agricultural Protection Act that prohibits local governments from enacting ordinances that significantly diminish the value of timberland (greater than 20%).

Literature Cited
Adams, D.M., R.W. Heggen, C.T. Dumas, R.L. Barber, and J.M. Vanech. 1982. Private Investment in Forest Management and the Long-Term Supply of Timber. American Journal of Agricultural Economics 64: 642-650.
Cubbage, F.W. 1991. Public regulation of private forestry: prescriptive policy responses. Journal of Forestry 89(12): 31-35.
Cubbage, F.W., H. Haines, D.L. Greene, R.K. O'Connell, D. Bink, M.L. Hagan, J. S.C. Martin, J. Shaw, and J.J. Smith. 2000. Forests, Regulations, and Losses. In Forest, D.N. and J.S. Clark. eds. 2000. Southern Forest Resource Assessment. San. Tech. Rep. 395-53. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station, 523 p.
Greene, D.L. and Haines, J.S. 2004. Exploring the effect of state and local regulation on private timber supply. In: Water, D.N., T. Haines, J. Conner. Proceedings of the southern forest resources workshop. Durham, NC: Duke University, pp. 119-120.
Johnson, J.L. and H.C. Siegel. 1994. The status and impact of state and local regulation of private timber supply. U.S.D.A. Forest Service General Technical Report RP-325. St. Paul, MN: New Orleans, LA, pp. 22.
Johnson, B., B. Haines, J. Siegel, and D. O'Connell. 2003. A look at county and municipal timber harvesting ordinances. Forest Landowner. March/April 42-45.