

# Increasing Forestry Investments by Means of Public Policy Programs

J. E. de Steiguer & J. P. Royer

In 1979, the Federal Reserve instituted a so-called "tight money" policy which led to a decrease in the demand for stumpage. The decrease in demand brought about lower stumpage prices and, consequently, a waning interest in policies to stimulate NIPF production. The authors report on five recent studies of NIPF behavior and raise concerns that recent increases in demand for housing may bring new pressure upon NIPFs as a source of wood.

Keywords: nonindustrial private forestry, supply, demand, prices.

## Introduction

For this presentation, we were asked to review recent studies concerning the influence of public policy programs on nonindustrial private (NIPF) reforestation in the United States. The discussion was to focus on both empirical and theoretical studies which used, primarily, econometric procedures. Our initial thought on preparing this paper was to provide a summary of NIPF research which has taken place since de Steiguer (1984) last reported on the subject to the 1984 IUFRO meeting in Greece.

As we searched the literature for new studies, a rather disturbing truth began to emerge: very few new investigations have been conducted in the past two years. After some reflection, we have concluded that, indeed, there seems to have been a waning interest in NIPF research due to changing economic and market conditions. In a few moments, we will briefly discuss some of the older NIPF public policy studies and review the newer work, but first let's spend some time exploring the causes behind what we perceive as a currently slack interest in research on incentives for private forest owners.

## Current interest in NIPF's

The alleged low productivity of NIPF lands has, over the years, probably generated more papers, more meetings and more discussion than any other single topic in American forestry. Early observers of the situation suggested that we might, indeed, experience a timber famine if something was not done to stimulate better management of these lands. Recent more sophisticated arguments maintain that, because of the nature of free markets, we will probably not run-out of wood, but it could get very expensive (LeMaster 1978).

During the decade of the 1970's, the dire predictions of timber supply shortages and rapidly escalating prices seemed to be, at least, coming true. You may recall that, during the 1970's, southern pine sawtimber stumpage prices were rising at an annual rate approaching 16 percent (Forest Farmer 1983). The primary reason was, of course, the tremendous demand for lumber which was triggered by the record demand for new housing.

The strong demand for new housing is easily understood if we examine the economic

conditions of the 1970's. At that time, conventional financial investment instruments were providing returns of about 5 to 8 percent (Federal Reserve System 1981). In contrast, real assets such as land and, especially, housing were increasing in value at nominal rates of 12 to 16 percent (de Steiguer 1982). With mortgage rates in the neighborhood of 6 to 9 percent, putting your capital into real assets such as housing was the intelligent thing to do.

The national response to rapidly increasing stumpage prices was a renewed interest in NIPFs as a source of wood supplies. This interest is evidenced by President Carter's environmental message to Congress in 1977 when he called NIPF's the greatest challenge remaining to American forestry (Arnold 1977). With this impetus, we began to see a great mobilization of new programs to stimulate private forest management. Some examples include the federal Forestry Incentives Program of 1974, the North Carolina Forestry Development Program of 1978, the Mississippi Forest Resource Development Program of 1976, and the federal Forestry Investment Tax Credit of 1981.

The new incentives programs, however, were not without their critics (Bailey 1982, Georgia-Pacific 1981). Even within the federal government, there was a call for closer scrutiny of the need for and the effectiveness of NIPF incentives (USGAO 1981). Consequently, the forestry research community became very active in their efforts to determine the impact of policy instruments on private reforestation investment behavior. Perhaps the high point of this new research thrust was a conference entitled, "Nonindustrial Private Forests: A Review of Economic and Policy Studies" which was held at Duke University in 1983 (Royer and Risbrudt 1983).

However, just prior to the Duke conference, the economic climate began to change rather rapidly. In the fall of 1979, the Federal Reserve System initiated its so-called "tight-money" policy. Under this policy, efforts were made to control the rate of inflation through a contraction of the growth of the money supply. The results were a substantial decrease in the rate of real asset appreciation, soaring mortgage rates, and very attractive rates of return on financial instruments.

With this momentous structural change in

the economy, the demand for housing plummeted. Stumpage prices also took an immediate steep dive and since have behaved erratically (Neal and Norris 1985). Thus, as the demand for stumpage declined so did the demand for research on the effectiveness of NIPF incentives. Many forest scientists and economists are now focusing their efforts on issues such as deficit timber sales and air pollution damage which, at this time, are enjoying great attention.

At the conclusion of this presentation, we will voice some concerns which we have regarding the current lack of interest in NIPF research. But for now, let's spend some time reviewing the findings of some recent research efforts.

## Recent NIPF research

As a point of departure, let us quickly summarize the NIPF studies which de Steiguer (1984) discussed in his paper to the IUFRO meeting in Greece. At that time, we looked at the econometric models of reforestation behaviour which had been developed by Cohen (1984), Brooks (1985), Boyd (1984), and de Steiguer (1984). While the theoretical bases and the variables which entered these models varied, they all shared a common purpose. That common purpose was to determine the impact of public programs on the reforestation decision. The results of all the models except Cohen's indicated that cost share programs did have a positive influence on investment. Also, Boyd's works further indicated that landowners may have been more responsive to technical assistance than they were to cost sharing. Now let's go to the more recent studies.

A study by Romm et al. (1985) used survey data from telephone interviews with approximately 500 nonindustrial private forest landowners in California to examine the effects of the California Forest Improvement Act, a 90 percent cost-share program for landowners holding less than 5000 acres of timberland, and the Williamson Act, legislation offering preferential property tax assessment to landowners who place their holdings under a Timberland Protection Zone (TPZ). A logit

analysis revealed the likelihood of forestry investment in California to be a function of income, age, and absentee ownership. The cost-share program and property tax incentives proved to be socially selective; landowners with high probabilities of investment tended to use the California program to intensify investments, a factor the authors attributed more to the management content of the program than to its subsidy, while landowners with low probabilities of investment tended to use the property tax incentives to initiate forestry investments. The analysis further explored differences in the administration of incentive programs under local versus state authorities and concluded that, rather than targeting programs to "the right groups" of landowners, the more fundamental need is "to diversify policy instruments so that owners and governments gain choices and more favorable contexts in which to make them."

Royer (1985) used survey data and a logit analysis to examine the prospect of inefficiencies stemming from the joint availability of cost-sharing and the federal reforestation tax credit. The likelihood of reforestation among North Carolina landowners is not increased significantly by knowledge of the reforestation tax credit and amortization, other factors being equal, but it is increased by knowledge of cost-sharing assistance. Royer concludes that when the two incentives are jointly available, cost-sharing functions as an inducement to invest while the tax credit functions as a reward for investing. Royer suggests better coordination of these incentives, with particular attention to precluding their simultaneous use, possible by discontinuing one of the programs.

Two recent dissertations have expanded on the theoretical works of Binkley (1981) and Boyd (1984) by empirically exploring the effects of non-market values on landowner decisions. Hyberg (1986) developed a utility maximization model (versus a profit maximization model) in which he posits relationships for exogenous income, stumpage prices, reforestation costs, and size of holdings on choices of both rotation length and reforestation. Using data from landowner surveys in

North Carolina and Georgia, Hyberg estimates the parameters of the utility model and concludes that utility maximization is indeed appropriate for describing landowner behaviour, even though a firm rejection of the profit maximization model is not possible. The utility model is shown to be especially applicable to non-farm landowners.

Provencher (1985) expanded on the Binkley and Boyd models by theoretically and empirically examining the price of non-timber forest land output as a determinant of harvesting behavior. Using survey data from Georgia and a logit analysis, Provencher showed that the probability of harvesting is affected by not only the value a landowner places on the non-timber outputs of his or her own timberland, but also the prices he or she encounters for similar non-timber outputs (e.g. scenery and wildlife) on adjacent landholdings. Provencher concludes that effective timber policy will depend on outdoor recreation policy directed at access to private timberlands. Greater access to private lands will prevent increases in the price of non-timber outputs, which, in turn, will reduce the tendency for landowners to forgo harvesting in the interest of securing those outputs from their own holdings.

In a final study, paired comparisons of 40 recently harvested tracts of Georgia timberland show professional assistance from state foresters to have a highly favorable impact on residual stand conditions and harvesting revenues (Cubbage et al. 1985). While not a multiple regression model like the above works, the study is a policy analysis and as such merits recognition in our review. The post-harvest analysis reveals that sites on which state foresters assist landowners have higher residual volumes of softwood, greater numbers of pine seedlings, and higher sale receipts. These returns produce favorable benefit/cost ratios when using measures of private efficiency, social efficiency, and program efficiency. The authors conclude that the Rural Forestry Assistance Program established under the Cooperative Forest Management Act of 1978 is both effective and cost-efficient in disseminating technical knowledge and increasing future timber supplies.

## Conclusions

We have attempted to briefly summarize some of the recent information on the effects of public forestry incentives and structural properties of landowner models. These studies have helped to refine our knowledge of market and policy interactions, while showing us that much remains to be investigated. The central question now seems to be: Will the forestry research community in the United States sustain theoretical and empirical studies of NIPF behavior?

At the beginning of this paper, we indicated the reasons behind what we perceive as a waning interest in this sort of research. However, recent economic trends may be heading us toward a new era of timber shortages and rising stumpage prices. In the first quarter of this year, home mortgage rates began to fall dramatically. This, in turn, has generated the biggest boom in new home construction since the 1970's. Economists are uncertain as to the duration of this expansion, but it is likely to continue through the end of the year. Thus it seems as though new pressure will be placed upon timber supplies and NIPF's will, once again, be in the spotlight. We are confident that the knowledge so far accumulated will serve as an intellectual springboard from which new landowner studies will emerge.

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