

EQUITY AS A FOCUS OF PUBLIC FORESTRY PROGRAMS:  
A REVIEW OF THE FORESTRY INCENTIVES PROGRAM<sup>1</sup>

by

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## INTRODUCTION

Administration of natural resource programs invariably leads to the perplexing question of who is to receive the benefits of public investments and who is to bear the cost of their production. To many, the equity consequences of program implementation are equal to economic efficiency as a factor in the development of public policy (Clawson 1975). To be sure the benefits and costs of government programs are substantial, though seldom uniformly spread across affected populations. Lack of information about such distributions can curtail wise judgements about policy options and further aggravate existing inequitable situations. The Forestry Incentives Program (FIP) has equity consequences that are similar to those of many other government programs. Unfortunately, the nature of these consequences has never been fully explored. Although the Program does not have income redistribution as a primary goal, distributional consequences are likely to play an important role in determining its future direction.

The objective of this review are threefold. The first is to assess income distribution and equity considerations in a general context. Involved is an examination of equity theory and its development. The second is to evaluate available evidence concerning equity and income distribution effects of subsidy programs with special emphasis on the Forestry Incentives Program. And the third objective is to define changes in Program direction which will lead to more equitable Program consequences.

## EQUITY AS A PUBLIC POLICY ISSUE

Equity Theory and Criteria

Equity as an issue involves the theoretical question of how limited resources are to be distributed so that each person within society is the recipient of a "fair share." Although simple at first blush, the issue is most complex. Kenneth Boulding (1972) has written that income distribution problems are the most difficult to effectively address, yet are perhaps the most important of all the nation's social and economic problems.

Developing an acceptable theory of equity or distributive justice has been a topic of thought since ancient times. Aristotle described a sense of justice as: The just is lawful and the just is fair. Justice is action in consonance with the proper interests of one's fellow citizens, paying due regard to their honor, property and safety (Rescher 1966). Distributive justice embraces the whole economic dimension of social justice, the entire question of goods and services within society (Rescher 1966). Aristotle's distributive justice requires the state to act equitably in its distribution of goods among its members (Rescher 1966). However, the problem arises at this point in defining what is fair or equitable.

Individual societies, and the individuals within them, may have vastly different concepts of "fairness." Distributional preferences are formed by social values which determine equitable consequences. What criteria should be used to evaluate the fairness of a given distribution? It has been stated that equity is a matter of well being, which depends on the interpersonal distribution of entitlements to the returns from

property and human capital (Hochman 1974). Usually communities hold some differences in well being to be legitimate, while denying the fairness of others (Hochman 1974). That societies have different concepts of distributive justice has allowed equity controversies to continue for centuries. New theories are continually being developed and then challenged by great social thinkers. At present, a totally adequate concept of equity has yet to be fully developed.

During the past century, the concept that met with most favor among social philosophers was utilitarianism. The basic utilitarian principle, described as a theory of choice which determines the greatest good for the greatest number, is simple in theory; imprecise in practice. The central idea of utilitarianism is that the value of an action is determined by its consequences as they relate to overall social well being (Frohock 1979). Actions are evaluated for their consequences, not for any intrinsic merit (Frohock 1979). Utilitarians would have income distributed so as to achieve the greatest total sum of happiness, an objective thought appealing to all men (Musgrave and Musgrave 1980). There are, however, great problems with the theory, i.e., an inadequate means of measuring an individual's utility or happiness, and subsequently, choosing the proper point along a utility frontier. Given an infinite number of points and the lack of criteria to guide selection, the problem becomes especially acute. Interpersonal comparisons of utility are not analytically feasible, since there is no means of testing the magnitude of one person's satisfaction as compared to another's (Breit 1974). Musgrave (1959) states, "In the political process and for the sake of development of public policy, society in fact

postulates that people have similar utility functions and assigns social values to the utility derived from successive units of income." This is far from an adequate solution that further encourages unjust distribution of resources. An additional objection to the classical principal of utility as a rule of distribution is the absence of a reference to claims, merit and desert--without which a theory of distributive justice cannot be given serious consideration (Rescher 1966). Although utility theory appears to be a solid step forward in defining more equitable distributions, it has been steadily discredited and is no longer held in high esteem.

John Rawls (1971) is widely held to have developed the most socially significant work on a theory of social justice. Rawl's develops an alternative to utilitarianism based on the concept of justice as fairness. He attempts to demonstrate that there is only one structure of economic rewards that everyone would be willing to accept (Hewlett 1977). A fair distribution is defined as one in which individuals choosing freely, would agree in the state of nature in which neither rules or endowments pre-exist (Hochman 1974). Acting under conditions of total ignorance, individuals will use rational choice that will lead to a socially just outcome (Hochman 1974, Frohock 1979, Rawls 1971). The social contract individuals agree upon when ignorant of personal prospects, leads to rules and institutions that govern claims to personal property and human capital. This, in turn, determines, aside from random variation, the distribution of income (Hochman 1974). Rawls also states that to provide genuine equality of opportunity, society must give more attention to those with fewer native assets and those borne into less favorable social positions.

The theory of social justice like all theories involving the equitable relationship of people and their resources has not met with uncritical acceptance. Hewlett criticizes Rawls' principles of maximization because it assumes people are risk averse, that everyone acts on the assumption that they will come out at the bottom. The theory has also been criticized because it allows some undesirable social distribution (Frohock 1979). But perhaps the most important criticism is the extreme difficulty of putting the theory into practice (Frohock 1979, Hewlett 1977). Although Rawls may adequately explain a theory that would lead to a totally just distribution of resources, there exists no practical method of putting it into action.

Other criteria for guiding decisions that have major distributional consequences have been synthesized from various theories of equity.

Frohock (1979), for example, sets forth the following:

- select combination of policies which result in equal net values for each segment of society (strict equality criteria).
- select combination of policies which result in the greatest total net value to society (productive criteria).
- select combination of policies which includes that policy having the highest net value for the worst-off segment of society (worst-off criteria).
- select combination of policies which have the highest average net value for all segments of society (average criteria).

By placing the word "forest" in front of policies in each of the above, the criteria suddenly have implications for analysts and policy makers struggling with equity questions that are embodied in many forestry issues.



Equity theory has a long and colorful history, yet has not reached a point whereby public policy planners can easily use it in the development of policy. The theories have, however, helped bring to the forefront the importance of equity considerations.

#### Measures of Equity

A significant first step in the study of equity is a search for things that can be distributed equitably (Pfaff 1972). A theory of distributive justice must provide a mechanism whereby the relative merits of a particular distribution can be assessed, the assessment being made from an ethical or moral point of view (Rescher 1966). This mechanism is essential if some criterion of merit is to be established for choosing the best alternative from several competing options. The issue of proper measures of equity is no more clearcut than the definition of equity theory. Kenneth Boulding (1972) writes, "An economist thinks of distribution of wealth, that is of stocks and capital and valuable objects, or of income, which is the gross increase of wealth, or what would have been the increase in wealth if consumption had been zero. Political scientists think in terms of the distribution of power, some people having more power than others in a political sense. Sociologists think of distribution as status, some have high status, some have low." William Briet (1972) provides another view of the issue, "Whether equity is defined in terms of current or permanent income or such broad but vaguer concepts as opportunity is a matter of values or intuitions. Even if a proper measure of well being could be agreed upon, it is essentially impossible to define a uniquely

Pareto-optimal distribution when individuals have prior benefit of endowments, whether these take the form of wealth, position or some other measure of status." From a practical perspective, income and wealth are often the measures used to judge impacts of public policy on the equity of distributions (Okum 1975). In the case of the Forestry Incentives Program, however, such measures fail to encompass Program benefits that cannot be measured in terms of effects on income or wealth (e.g., certain types of recreation, aesthetics, unpolluted air, quality water).

Obviously, effective measures of equity impact have yet to be fully developed. The issue involves many interpersonal choices which may never be adequately satisfied such that all individuals are comfortable with the ultimate decision. Yet, to progress toward an increasing degree of social equity, equity measurement problems must be overcome.

#### Equity-Efficiency Tradeoffs

Balancing social interests in equity with legitimate social concerns over efficiency can pose a major dilemma for planners of public policy. Higher economic efficiency in program design frequently leads to less equitable outcomes; alternatively an equitable solution tends to be not only very costly, but also economically less efficient. It has been noted that a basic conflict between equity and efficiency choice results because of the fact that the poor (communities and people) are generally less efficient at producing goods than the rich.

Nowhere is the entanglement between equity and efficiency more profound than in the development and administration of natural resources policy. The policies administered by the U.S. Forest Service, for example, are designed to enhance the integrity of our nation's forest land resource. In so doing, they tend to concentrate on efficient management of resources with little regard to the distributional impacts that may result. Krutilla and Haigh (1975) conclude that the Forest Service is ill equipped to play an active role as a social welfare organization, and that policies concerning the production of primary commodities are poor instruments to use to deliver final consumption services to the needy. Does this imply that the distributional consequences of forest policies should be ignored, with policy makers concentrating on the increased efficiency of resource management no matter who might reap the benefits? This would seem a most near-sighted and unjust approach. Although forest policies are generally not meant to be instruments of redistribution, they will undoubtedly have redistributional effects. Improvements may be favorable if the effects are considered in the development of public policy and during any examination of the effectiveness of that policy. Policies that are determined to be inequitable could be adjusted so that a more equitable outcome will result.

The tradeoffs between equity and efficiency are particularly difficult to balance when dealing with public policy affecting the nonindustrial private forest landowner. Attempting to achieve cost effective and economically efficient production of timber while also maintaining an equitable distribution of program funds and impacts is a difficult task.

The difficulties arise as a result of some fundamental issues involving this particular group. The first of these is that the majority of such owners live in the South and Northeast, therefore, any allocation of funds to this group will be sent primarily to these two areas. Another factor is that economically efficient investments are usually made on larger tracts of timberland, the owners of these larger tracts are not typically among the poorer members of society. Another problem is that forestry investments tend to transfer the returns to future generations. Tradeoffs exist and need to be carefully balanced with due consideration given to impacts any changes may have on equity of efficiency. While society may well accept some efficiency loss to obtain an equity gain, distributional adjustments should be made to minimize any efficiency loss (Musgrave and Musgrave 1980).

When making choices involving efficiency and equity, the decision maker may use any of the following rules:

- Ignore questions of need and spend only for the most efficient projects.
- Ignore efficiency and give the funds to the most needy.
- Establish a minimum efficiency, then select according to need, review the outcome and evaluate the constraints.
- Establish a minimum need, then select according to efficiency, review the outcome and evaluate the constraints, or
- Develop an explicit preference function between need and efficiency.

The last choice is preferable, although it is the most difficult to develop and implement (McGuire and Garm 1972).

## SUBSIDIES AND TRANSFERS: THE GRANTS ECONOMY

Introduction

The grants economy has grown to be one of the most important sectors of the United States economy. It consists of many nonmarket transactions such as subsidies, transfer payments and charitable contributions, of which the Forestry Incentives Program is but a very small part. Martin and Anita Pfaff (1972) have written, "Although our society proposes to be a capitalist market society where economic relationships are based largely on exchange, a closer look reveals an extensive network of nonmarket flows. These nonmarket flows have grown so large that they tend to distort the prevailing exchange flows."

The general purpose of the grants economy is to act as a supplement to the exchange economy. Subsidies are usually designed to alter a perceived allocative inefficiency within the exchange economy. Their primary effect is to modify the market behavior of consumers and producers. The economic theory of subsidy payments (Carl Shoup 1972), is that of how government can induce changes in relative prices in the private sector, by offering rewards rather than imposing penalties so that the private sector action will either reallocate resources to increase aggregate value of output in an already fully employed economy, or redistribute incomes or both.

Agriculture, Education and Tax Programs

Although the purpose of the grants economy is to modify market behavior to achieve improved allocative efficiency, these contrived changes frequently lead to altered income distributions that decrease equity within society. Analyses of subsidy programs have frequently demonstrated the regressive distributive results of public policy, whereby the middle income or high income classes often benefit more from the transfer of income than do the poor (Mundel 1972, Bonnen 1970, Schultz 1972). The equity issue and the question of distribution of income have been given a great deal of emphasis in the analysis of nonforestry government programs and policies. A brief examination of a few of these policies and programs provides a better understanding of the pervasive nature of subsidies within our economy, and the extent to which these often well-intended programs lead to increased inequity. Implicit public grants that occur as a result of income tax provisions, for example, have greatly disrupted the progressivity of the nation's income tax system (Pfaff and Pfaff, 1972) (Table 1). This outcome seems particularly ironic in that the U.S. income tax system is purported to highly progressive.

Studies designed to review the impact of major subsidy programs that have specialized targets reveal surprising results with regard to the equity of distribution of the program funds. James Bonnen and Charles Schultze have both done extensive work studying the distribution of benefits from the United States Department of Agriculture farm programs (Bonnen 1968, 1969 and Schultze 1971). These programs have been designed to

Table 1. Distribution of implicit public grants conveyed by all deductions and exemptions of the U.S. individual income tax laws, by class of total income. 1965.

Income Class	Grants Due to Deductions			Per Capita
	Absolute (million dollars)	Proportion of Total (percent)	Cumulative Proportion (percent)	
- \$999,999 to 0.....	-17,150	-0	-0	-40.22
0 to \$600.....	46,497	.1	0.	13.30
\$600 to \$1,000.....	248,670	.4	0.4	37.95
\$1,000 to \$1,500.....	522,178	.8	1.3	139.81
\$1,500 to \$2,000.....	718,926	1.1	2.4	188.03
\$2,000 to \$2,500.....	707,188	1.1	3.5	214.14
\$2,500 to \$3,000.....	815,839	1.3	4.8	263.53
\$3,000 to \$3,500.....	948,215	1.5	6.2	307.14
\$3,500 to \$4,000.....	942,967	1.5	7.7	341.03
\$4,000 to \$4,500.....	1,071,310	1.7	9.4	366.27
\$4,500 to \$5,000.....	1,170,479	1.8	11.2	433.44
\$5,000 to \$6,000.....	2,371,902	3.7	14.9	493.91
\$6,000 to \$7,000.....	2,956,082	4.6	19.4	599.51
\$7,000 to \$8,000.....	3,652,301	5.7	25.3	780.20
\$8,000 to \$9,000.....	4,015,041	6.3	31.5	998.72
\$9,000 to \$10,000.....	3,955,415	6.2	37.7	1,033.96
\$10,000 to \$11,000.....	3,904,306	5.1	43.8	1,162.71
\$11,000 to \$12,000.....	3,176,246	5.0	48.8	1,306.03
\$12,000 to \$13,000.....	2,798,354	4.4	53.2	1,477.46
\$13,000 to \$14,000.....	2,433,563	3.8	57.0	1,668.34
\$14,000 to \$15,000.....	2,240,936	3.5	60.5	1,792.06
\$15,000 to \$20,000.....	6,040,810	9.7	69.9	2,329.68
\$20,000 to \$25,000.....	2,947,014	4.6	74.5	2,474.78
\$25,000 to \$50,000.....	7,068,517	11.1	85.6	5,565.45
\$50,000 to \$100,000.....	3,879,380	5.1	91.6	14,368.82
\$100,000 to \$150,000.....	1,346,996	2.1	93.9	32,071.79
\$150,000 to \$200,000.....	624,728	1.0	94.7	47,185.46
\$200,000 to \$500,000.....	1,461,905	2.3	97.0	91,511.33
\$500,000 to \$1,000,000.....	674,068	1.1	98.1	248,458.47
\$1,000,000.....	1,235,339	1.9	100.0	955,405.55

Source: Pfaff and Pfaff 1972.

enhance farm production and to benefit the small farmers, while maintaining the integrity of the small farm within this country. But as Bonnen notes, farm programs are generally designed so that a farmer's access to them is associated with the size of the assets controlled, the amount of land operated, and the volume of output generated (Bonnen 1968). With this in mind, it should not be surprising that as an instrument to benefit small farmers, these programs have met with limited success. Table 2 displays the distribution of commodity program benefits to the various size classes of farms. Again, there is little doubt that the majority of the program benefits are going to larger farms that are characterized by higher sales volume. No less than 69 percent of the benefits accrued to farms that fell within the top 20 percent of all farms according to size. In 1970, these programs cost the federal government over \$5 billion. In addition, American consumers paid an extra \$4.5 billion for farm products because of these programs (Schultze 1971). It would appear, therefore, that the contribution of these programs to a more equitable distribution of income is indeed tenuous.

Another sector of the economy which receives large amounts of public subsidies is that of higher education. Research shows that such subsidies are not meeting the goal of bringing more equality to higher education, but are in fact creating more inequality among those receiving subsidies (Schultz 1972 and Mundel 1972). Writing about optimal investment in college instruction, Theodore Schultz (1972) notes, "The allocation of resources for higher education in the U.S. is neither socially efficient



Table 2. Distribution of farm income and commodity program benefits, by farm size. Mid-1960s.

Source and year	Farm size						Gini concentration ratio <sup>a</sup>
	Lower 20 percent	Lower 40 percent	Lower 60 percent	Top 40 percent	Top 20 percent	Top 5 percent	
Farmer and farm manager total money income, 1963	3.2	11.7	26.4	73.6	50.5	20.8	0.468
Program benefits							
Sugar cane, 1965	1.0	2.9	6.3	93.7	83.1	63.2	0.799
Cotton, 1964	1.8	6.6	15.1	84.9	69.2	41.2	0.653
Rice, 1963	1.0	5.5	15.1	84.9	65.3	34.6	0.632
Wheat, 1964							
Price supports	3.4	8.3	20.7	79.3	62.3	30.5	0.566
Direct payments	6.9	14.2	26.4	73.6	57.3	27.9	0.480
Total	3.3	8.1	20.4	79.6	62.4	30.5	0.569
Feed grains, 1964							
Price supports	0.5	3.2	15.3	84.7	57.3	24.4	0.588
Direct payments	4.4	16.1	31.8	68.2	46.8	20.7	0.405
Total	1.0	4.9	17.3	82.7	56.1	23.9	0.565
Peanuts, 1964	3.8	10.9	23.7	76.3	57.2	28.5	0.522
Tobacco, 1965	3.9	13.2	26.5	73.5	52.8	24.9	0.476
Sugar beets, 1965	5.0	14.3	27.0	73.0	50.5	24.4	0.456
Agricultural conservation program, 1964							
All eligibles	7.9	15.8	34.7	65.3	39.2	n.a.	0.343
Recipients	10.5	22.8	40.3	59.7	36.6	13.8	0.271

<sup>a</sup> The more closely the Gini concentration ratio approaches one, the more unequal is the distribution; zero represents a completely equal distribution.

Source: Bonnen 1969.

nor equitable. There is evidence, for example, that an inordinate part of the subsidies to higher education is used to provide higher education services below cost to the growing proportion of students who come from families who have the wealth and income to pay the full cost." There are programs, among those that aid higher education, that promote the goals of redistribution and equity by providing aid to predominantly low and middle income students. But as exhibited in Table 3, these progressive effects are reversed by the outcomes of other programs. The overall impact of Federal aid to higher education appears to be slight, while the impact of the funds on the economic barriers faced by students from various income levels is somewhat regressive.

One final example of the effects of government policies on the inequities of income distribution, one that should be more familiar to those within the forestry profession, is an examination of the tax subsidy to the wood-based industry, i.e., the converting of ordinary income to capital gain income. In a 1972 study, it was noted that such a conversion reduced Federal revenues by \$130 to \$140 million per year with the greatest benefit accruing to the large integrated timber company while little if anything was gained by the small woodlot owner (Sunley 1972). Eighty percent of the benefits are gained by corporations with most of the remainder distributed to individuals in the high income brackets (Sunley 1972). This subsidy is not meant to effect income distribution but was meant to encourage better land management practices on forested lands. However, Sunley argues that no evidence exists that shows the subsidy has increased timber supply or encouraged conservation.

Table 3. Average undergraduate subsidies resulting from Federal Higher Education Funds, by family income. 1967.

Family income	Definition of subsidy <sup>a</sup>			
	A	B	C	D
	All Federal funds	All Federal funds excluding research	100 percent of student aid grants plus 33 percent of loans plus all institutional aid	100 percent of student aid grants plus 33 percent of loans plus institutional aid; excluding research
Less than \$4,000.....	\$1,871	\$1,428	\$1,257	\$811
\$4,000 to \$6,000.....	1,729	1,231	1,247	757
\$6,000 to \$8,000.....	1,539	995	1,220	671
\$8,000 to \$10,000.....	1,430	814	1,238	629
\$10,000 to \$15,000.....	1,293	578	1,264	540
\$15,000 to \$20,000.....	1,360	541	1,360	547
\$20,000 to \$25,000.....	1,529	557	1,529	552
\$25,000 to \$30,000.....	1,597	553	1,597	553
More than \$30,000.....	1,791	561	1,791	564

<sup>a</sup> Dollars per student.

Source: Mundel 1972.

Although this review of subsidy programs is limited, it indicates that many such programs frequently stray far from their goals and objectives, thereby not aiding in the achievement of the overall societal goal of increased equity and more adequate distribution of resources. This is not meant as a blanket condemnation of subsidy programs--some have proven to be an effective means of contributing to reduced inequity. Even programs that do not have as a specific goal the redistribution of income have been successful in promoting this goal. This review does indicate, however, that program policies are often inadequately formulated, resulting in failure to achieve desired goals or objectives. Much can be done with regard to program evaluation so that the outcomes of policy decisions more closely resemble that which was intended.

## FORESTRY INCENTIVES PROGRAM:

## DISTRIBUTION OF BENEFITS

The Forestry Incentives Program (FIP) was authorized in 1973 to provide technical and financial assistance to the owners of nonindustrial private forests. Its intent is to correct market conditions that fail to allocate the investment capital required to assure future supplies of timber in adequate amounts and at acceptable prices. Program funds are available to any landowner that possesses more than 10 or less than 1000 acres of productive forest land. The 1000 acre limit may be waived upon consent of the Secretary of Agriculture. Funds are distributed so as to achieve additional timber volumes in the most cost effective and allocatively efficient manner. The Program is not perceived as a means of redistributing income or wealth; however, its implementation does result in Program funds being allocated among different geographic regions, generations, and income classes.

Determining the extent of income redistribution that occurs as a result of the Forestry Incentives Program is no easy task. For example, individual recipients of the Program's funds are often not the only persons to benefit. Additional benefits include increased employment based on services required as a result of the Program, community growth resulting from increased expenditures that are a result of Program activities, increased business sales brought on by increased demand of those newly employed, and reduction of future timber supply prices resulting from increased availability of wood fiber. The incidence of these secondary benefits has very real equity implications. An even more formidable

challenge to assessment of equity impacts is the data voids that inhibit analysis. Information on which to base judgements about the Program's income distribution consequences are sorely lacking. Available data can only serve as a proxy for actual measures of impact, e.g., income class of participants. The picture presented here will be far from complete. Hopefully it will lend to a somewhat better understanding of the distributional impacts of the Program, and will encourage collection of data necessary to carry-out more sophisticated analyses.

#### State and Regional Distribution of Funds

Funds for the Forestry Incentives Program are allocated to individual states based on a formula designed to enhance the Program's allocative efficiency and cost effectiveness. This allocation formula does not take into account any distributional consequences. The formula for allocating the cost share funds to the individual states is based on several factors: the total amount of available private forest land suitable for cost effective investment, the individual state demand for cost-share funds, and the commercial availability of the future timber that is produced. Through the use of this formula, the Southern region of the nation is heavily favored to receive cost-share funds. Within the Southern states, often over 70 percent of the commercial forest land is controlled by nonindustrial private landowners; much of this land is highly productive and offers a more than adequate return on investment in a relatively short time period. An additional factor favoring investments on Southern forest land is the growth of the region's wood-based industry, an industry that is applying

increased pressure on the forest resource. This increased demand for timber should insure a readily available market for future timber crops grown with Program funds.

Over 75 percent of the 1981 cost share allocation for the Forestry Incentives Program was expended in Southern states. This percentage is consistent with earlier allocations that have taken place during the Program's brief history (Table 4). After the South, the remaining regions of the country each received approximately the same percentage of funds, i.e., the Central states received 9 percent and the Northeastern and Western states each received 7 percent of the funds (Figure 1). The Rocky Mountain and Plains States region, which has very little nonindustrial private forest landownership, received only one percent of the 1981 allocation. The top ten states for percentage of funds received in 1981 were all located in the South; these ten states alone received 75 percent of the Program allocation (Table 5). Alabama and Georgia led all states in the amount of funds received, with each state obtaining approximately 11 percent of the total 1981 funding.

The effects of this skewed regional distribution of incentives program funds may be significant to the economies of the various regions. The concentration of Program expenditures in the South may be providing continued support to the current strong impetus toward the development of increased industrial capacity within the wood-based industry of that region. With the federal government, in effect, subsidizing some of the region's future timber supply, the industry does not have to shoulder the entire

Table 4. Cumulative summary of Forestry Incentives Program from inception through September 30, 1981, by state, number of participants, acres, cost-share amount.

State	Number of Participants	Number of Acres	Cost-Shares	
			Total	Percent of Total
Alabama	3,198	166,421	8,662,032	10.91
Arizona	19	1,107	44,867	0.06
Arkansas	2,857	144,374	5,136,139	6.47
California	487	11,203	1,112,836	1.40
Colorado	106	2,647	144,444	0.18
Connecticut	378	9,366	202,529	0.25
Delaware	39	1,905	132,490	0.17
Florida	1,509	73,334	3,576,297	4.50
Georgia	2,726	120,007	7,078,175	8.91
Hawaii	7	200	37,772	0.05
Idaho	88	1,315	111,112	0.14
Illinois	743	14,994	493,124	0.62
Indiana	1,365	39,943	815,188	1.03
Iowa	343	5,608	221,800	0.28
Kansas	227	4,002	159,894	0.20
Kentucky	1,270	41,512	962,306	1.21
Louisiana	1,780	83,015	3,709,367	4.67
Maine	1,380	18,376	654,343	0.82
Maryland	543	17,578	723,740	0.91
Massachusetts	1,503	25,290	511,541	0.64
Michigan	2,609	43,457	1,207,033	1.52
Minnesota	1,096	18,551	876,774	1.10
Mississippi	3,204	119,537	5,500,480	6.93
Missouri	1,485	69,989	1,455,339	1.83
Montana	205	3,531	258,280	0.33
Nebraska	146	2,138	103,434	0.13
Nevada	2	23	998	a
New Hampshire	1,392	19,509	615,456	0.77
New Jersey	952	11,359	192,059	0.24
New Mexico	124	5,959	162,673	0.20
New York	3,250	45,818	1,237,808	1.56
North Carolina	4,747	141,513	7,023,975	8.84
North Dakota	55	396	31,333	0.04
Ohio	1,854	47,483	1,593,586	2.01
Oklahoma	416	33,765	768,706	0.97



Table 4. Continued.

State	Number of Participants	Number of Acres	Cost-Shares	
			Total	Percent of Total
Oregon	683	21,959	1,726,358	2.17
Pennsylvania	1,974	25,138	1,029,722	1.30
Rhode Island	125	1,794	52,139	0.07
South Carolina	2,845	103,911	5,957,972	7.50
South Dakota	117	1,691	95,377	0.12
Tennessee	588	22,585	754,023	0.95
Texas	2,009	99,001	4,321,016	5.44
Utah	1	12	900	a
Vermont	1,032	27,280	482,311	0.61
Virginia	3,601	136,649	5,731,640	7.22
Washington	529	18,314	1,387,346	1.75
West Virginia	2,268	100,651	1,195,849	1.51
Wisconsin	2,133	31,971	1,101,889	1.39
Wyoming	31	1,500	64,291	0.08
U.S. TOTAL	60,023	1,937,681	79,418,673	100.00 <sup>b</sup>

<sup>a</sup> Less than 0.01 percent.

<sup>b</sup> Total may not equal due to rounding.

Source: Agricultural Stabilization and Conservation Service. 1982.



Table 5. Forestry Incentives Program expenditures, by state and region. 1981.

State and Region	Expenditures (dollars)	Proportion of Total National Expenditures (percent)
<u>Southern Region</u>		
Alabama	1,968,439	11.24
Georgia	1,904,827	10.88
South Carolina	1,711,557	9.77
North Carolina	1,266,389	7.23
Mississippi	1,160,060	6.62
Arkansas	1,124,636	6.42
Virginia	1,109,987	6.34
Texas	1,040,381	5.94
Florida	1,029,664	5.88
Louisiana	769,079	4.39
Tennessee	129,211	0.74
Oklahoma	128,277	0.73
Regional Total	13,342,507	76.18
<u>Central Region</u>		
Wisconsin	277,535	1.58
Minnesota	263,928	1.51
Ohio	237,417	1.36
Michigan	188,310	1.08
Indiana	155,844	0.89
Missouri	152,366	0.87
Kentucky	144,739	0.83
Illinois	72,957	0.42
Iowa	36,041	0.21
Regional Total	1,529,137	8.75
<u>Pacific Coast Region</u>		
Oregon	541,622	3.09
Washington	439,459	2.51
California	233,655	1.33
Hawaii	17,257	0.10
Alaska	0	0.00
Regional Total	1,231,993	7.03

Table 5. Continued.

State and Region	Expenditures (dollars)	Proportion of Total National Expenditures (percent)
<u>Northeast Region</u>		
New York	215,103	1.23
West Virginia	198,752	1.13
Maryland	192,326	1.10
Pennsylvania	171,478	0.98
Maine	95,618	0.55
New Hampshire	85,238	0.49
Delaware	71,420	0.41
Massachusetts	61,229	0.35
Vermont	59,569	0.34
New Jersey	24,634	0.14
Connecticut	23,137	0.13
Rhode Island	9,929	0.06
Regional Total	1,208,433	6.91
<u>Rocky Mountain and Plains Region</u>		
Montana	38,414	0.22
Idaho	33,093	0.19
Colorado	32,648	0.19
Wyoming	26,683	0.15
South Dakota	26,586	0.15
New Mexico	21,551	0.12
Kansas	16,441	0.09
Nebraska	4,428	0.03
Nevada	371	0.00
Arizona	0	0.00
North Dakota	0	0.00
Utah	0	0.00
Regional Total	200,215	1.14
U.S. TOTAL	17,512,285	100.00 <sup>a</sup>

<sup>a</sup> Percentages may not add due to rounding.

Source: Agricultural Stabilization and Conservation Service. 1981.

burden. It is possible that the higher level of subsidization within the South may have a detrimental effect on the wood-based industry within the other regions of the country. If the investments in the development of a region's timber resource are significantly higher than in other regions, industries in these other regions could face a price disadvantage. Actual data is limited as to the current impact of this Program on specific regional economies. While it is probably true that any current regional imbalance due to the Program is minimal, continued emphasis on development of the Southern timber resource may lead to greater regional imbalances.

The equity issue becomes very clear at this point: Should persons living outside the South suffer as a result of public policy that is meant to promote the growth of the region's timber, and, subsequently, favors one segment of society at the expense of another? The Central States and the Northeast regions are most likely to be hurt by this policy, because, unlike the Pacific Coast and Rocky Mountain States, they do not have large acreages of National Forest land nor do they receive a large portion of the Program's funding for their relatively large acreage of nonindustrial private forest. The federal investments in National Forests within the western states may be more than enough to balance the effects of subsidy payments made in the South. Obviously, these regional effects deserve much closer attention from an equity perspective.

Income of Program Participants

To accurately measure the incidence of direct benefits that occur when funds are distributed to the individuals participating in the Forestry Incentives Program, information describing the income level and accumulated wealth of the participants is needed. Lacking this information, other measures must provide an indication of the incidence of Program benefits. For example, average income and the amount of payments going to individual geographic areas can serve as an adequate proxy for income and payments received by individuals (McKee and Day 1969). Table 6 provides a ranking of per capita and family incomes by state along with national rank in receipt of cumulative FIP funds. Note in particular the low ranking of the states that make up the Southern region, i.e., 8 of the 10 poorest states in the country are in the South. Although these measurements lack the precision of specific data on individual Program recipients, they provide an indication of the economic condition of regions to which most Program dollars flow. If a significant negative correlation exists between low per capita income levels for specific geographic areas and high program expenditures, one could conclude that the Program may be providing greater benefits to persons on the lower end of the economic scale. These benefits could be occurring through the receipt of direct payments, or indirectly through increased employment opportunities, or by an enhanced economic climate generated by the expenditure of government monies within the area.

Table 6. Per capita income, median family income, Forestry Incentives Program rank, by state.

Forestry Incentives Program Investment Rank <sup>ab</sup>	State	1974 Per Capita Income <sup>a</sup>		1970 Median Family Income <sup>a</sup>	
		Amount (dollars)	Rank	Amount (dollars)	Rank
1	Alabama	3,624	45	7,263	48
2	Georgia	4,091	36	8,165	37
3	North Carolina	3,875	40	7,770	40
4	South Carolina	3,635	44	7,620	42
5	Virginia	4,701	17	9,044	25
6	Mississippi	3,098	50	6,068	50
7	Arkansas	3,378	49	6,271	49
8	Texas	4,188	33	8,486	33
9	Louisiana	3,545	48	7,527	43
10	Florida	4,815	13	8,261	35
11	Oregon	4,660	20	9,487	22
12	Ohio	4,561	23	10,309	13
13	Missouri	4,254	32	8,908	29
14	Washington	4,864	12	10,404	12
15	New York	4,903	10	10,609	11
16	Michigan	4,751	16	11,029	6
17	West Virginia	3,617	46	7,414	47
18	California	5,114	6	10,729	9
19	Wisconsin	4,468	27	10,065	15
20	Pennsylvania	4,449	29	9,554	20
21	Kentucky	3,712	42	7,439	46
22	Minnesota	4,675	18	9,928	17
23	Indiana	4,458	28	9,966	16
24	Oklahoma	3,983	38	7,720	41
25	Tennessee	3,821	41	7,446	45
26	Maryland	5,299	3	11,057	5
27	Maine	3,694	43	8,205	36
28	New Hampshire	4,281	31	9,682	19
29	Massachusetts	4,755	15	10,833	8
30	Illinois	5,107	7	10,957	7
31	Vermont	3,907	39	8,928	28
32	Montana	4,347	30	8,509	32
33	Iowa	4,628	21	9,016	26
34	Connecticut	5,348	2	11,808	2
35	New Jersey	5,237	4	11,403	4

Table 6. Continued.

Forestry Incentives Program Investment Rank <sup>ab</sup>	State	1974 Per Capita Income <sup>a</sup>		1970 Median Family Income <sup>a</sup>	
		Amount (dollars)	Rank	Amount (dollars)	Rank
36	New Mexico	3,601	47	7,845	38
37	Kansas	4,669	19	8,690	30
38	Colorado	4,884	11	9,552	21
39	Delaware	4,809	14	10,209	14
40	Idaho	4,119	35	8,380	34
41	Nebraska	4,508	26	8,562	31
42	South Dakota	4,167	34	7,490	44
43	Wyoming	4,566	22	8,944	27
44	Rhode Island	4,558	24	9,733	18
45	Arizona	4,530	25	9,185	24
46	Hawaii	4,963	9	11,552	3
47	North Dakota	5,087	8	7,836	39
48	Nevada	5,149	5	10,687	10
49	Utah	4,022	37	9,320	23
50	Alaska	6,315	1	12,441	1

<sup>a</sup> Rankings: 50 = lowest, 1 = highest.

<sup>b</sup> Cumulative federal share from Program inception through September 30, 1981.

Source: Bureau of the Census, 1977, and Table 4.



The distribution of Program funds to each state was analyzed to determine if the states' per capita income could be correlated with the distribution of 1981 Program funds expended within states. Per capita income figures were used since they best represent the average beneficiary within the state, whether the individual recipient of the cost share payment or the individual who receives secondary Program benefits. The correlation coefficient calculated indicated that a correlation indeed existed and was significant at the 5 percent level, but was not high enough to allow for more than tenuous conclusions (the correlation coefficient was  $-.4827$ ).

Analysis of variance calculations were also done grouping the states into various income classes using per capita income as the indicator value. This analysis showed that the variance existing between the income groups could be attributed to the amount of funding received by the states with the lowest per capita incomes. Given such evidence, it seems safe to conclude that a significantly greater portion of the funding is received by the states with the lowest per capita income.

After examining the distribution of Program funds at the state level, the distribution was further broken down to the individual counties. Of the approximately 3100 counties in the United States, Program funds are distributed to about 1300. The distribution of funds at the county level was first examined using all 3100 counties. The correlation of Program funds received with county income level proved to be insignificant; it displayed a much lower level of correlation than occurred when examining

the distribution to the states (the correlation coefficient was  $-.1746$ ). The analysis also compared only those counties which received Program funds with per capita county income; this correlation also proved to be insignificant. Although these tests do not indicate a relationship which would prove poorer counties are receiving a greater share of Program funds, the tests should not be misconstrued to conclude that the funding is leading to decreased equity. These tests yield only information on the relationship between Program expenditures and county income levels. The results should not be surprising considering the Forestry Incentives Program's emphasis on timber production, not the redistribution of income.

Additional calculations were made using the distribution within individual states to each county within the state. An examination of the top 40 states, with respect to the level of Program funds received, revealed that no state had a significant amount of Program dollars being expended in counties with below average levels of per capita income.

The results of these calculations leave many unanswered questions and only serve to create more questions about the distribution of program benefits. If the Program did prove to be distributing funds to areas with below average income levels, one would be able to surmise that it may prove to be more beneficial to the poor. Without this correlation, little more can be concluded about Program benefits. More factors need to be examined, especially factors that may serve as more adequate proxies for income or wealth.

### Land as Wealth of Program Participants

Ideally, an equity evaluation of Forestry Incentives Program expenditures should embody analyses of the relationship between the amount of Program money received by a participant and that person's wealth. Unfortunately, data to specifically define such a relationship are not readily available. The amount of forest land each participant owned, however, is available, and landownership usually is a strong indicator of an individual's overall wealth.

Data on landownership is collected by the Agricultural Stabilization and Conservation Service (ASCS) in the course of administering the Program and determining eligibility. Table 7 displays the number of cases, average tract size and percent of total acres treated by ownership size class within each region. Nationally, the largest portion of the treated acres, 34 percent, belonged to landowners who controlled between 201 and 500 acres. An additional 25 percent of the treatments were conducted by landowners who had holdings of over 500 acres.

The above figures become even more meaningful when an asset valuation of the landholdings is calculated for the individuals within each of the ownership size classes. Using forest land value information recently published by deSteigeur (1981), a minimum asset value was calculated for each landownership size class in each region.<sup>3</sup> The minimum land asset values

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<sup>3</sup> DeSteigeur (1981) did not have regional values of land for the Pacific Coast or Rocky Mountain and Plains States regions. For these regions, the national average per acre value of forestry land was used. For the North and South, land values were calculated using information

Table 7. Forest land treated with Forestry Incentive Program funds by average tract size, number of cases, region and ownership size class, 1981.

Region	Size of Total Land Ownership												Total Number Cases Treated <sup>a</sup>
	1 - 100 Acres			101 - 200 Acres			201 - 500 Acres			501 + Acres			
	Number of Cases	Average Tract Size	Acres Treated (percent)	Number of Cases	Average Tract Size	Acres Treated (percent)	Number of Cases	Average Tract Size	Acres Treated (percent)	Number of Cases	Average Tract Size	Acres Treated (percent)	
North	1254	11.8	26.6	933	15.1	22.5	832	18.6	27.9	345	32.2	20.0	3364
South	1422	25.0	17.0	1230	26.0	21.3	1607	46.6	36.0	874	61.4	25.8	5133
Plains & Rockies	27	12.1	20.0	21	12.8	16.4	29	15.3	27.2	21	28.2	36.4	98
Pacific Coast	145	20.8	29.5	70	25.5	17.4	80	37.2	29.1	61	40.1	23.9	356
Total U.S.	2848	18.8	19.4	2254	26.8	21.9	2548	36.8	34.0	1301	52.1	24.6	8951

<sup>a</sup> Derived from Forest Service administrative records (FIP-17s), which may differ slightly from published ASCS reports.

Note: the number of cases does not exactly coincide with either the number of participants in the program or the number of farms because more than one case can occur on a farm, and there may be more than one participant per case.

Source: Risbrudt and Ellefson, 1983.

for four landownership size classes are presented in Table 8. The values were calculated using the minimum number of acres owned in a particular class (Table 8)--average landholdings in each class was unknown. The latter would have provided a better estimate of asset value, especially for owners of small acreages. Land sales below 200 acres generally have higher market prices (deSteigeur 1981). Consequently, the wealth of individuals owning small acreages is probably underestimated. Recognizing these data problems, it is obvious that the average participant in the Program has a very valuable asset, namely, forest land. At least 59 percent of the participating landowners own land valued at \$95,000 or more, and 23 percent have land valued in excess of \$237,000.

Using the value of Program participants' land to draw inferences about Program equity probably raises more questions than it answers. For example, without the subsidy, is the rate of return provided by the forestry investment sufficiently high to inspire the landowner to invest--no matter the owner's financial position? Alternative investments may exist that guarantee higher personal returns with less risk than forestry investments. Is the necessary capital for these investments readily available to the average landowner? It is very likely that some of these

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<sup>3</sup> on land sales from specific areas within each region. It should be noted that the regions defined by deSteigeur were defined slightly different from those used for this review. Also deSteigeur states that land as a factor in forestry production is difficult to analyze because documented information on land transactions is hard to obtain, this lack of information makes the establishment of relative prices extremely difficult. However, the USDA Economic Research Service, through some recent actions, has helped alleviate this information void, now land values are available that give a fair representation of actual market values (deSteigeur 1981).

Table 8. Value of land owned by persons receiving Forestry Incentive payments, by size of land holding and region. 1981.

Region	Size of Total Land Ownership											
	1 - 100 Acres			101 - 200 Acres			201 - 500 Acres			501 + Acres		
	Land Value (dollars)	Acres Treated (percent)	Land Value (dollars)	Acres Treated (percent)	Land Value (dollars)	Acres Treated (percent)	Land Value (dollars)	Acres Treated (percent)	Land Value (dollars)	Acres Treated (percent)		
South	612	18.0	61,250	22.3	122,500	36.5	306,250	23.2				
North	475	17.0	47,500	25.9	95,000	27.8	237,500	18.9				
Rockies & Plains	569	20.1	56,900	15.3	113,800	29.2	284,000	35.4				
Pacific Coast	569	33.0	56,900	17.1	113,800	27.8	284,000	22.1				
Total		20.2		22.4		34.7		22.6				

a Value of one acre of land.

b Land values represent minimum landholding that qualifies for inclusion in that size class.

Source: Based on deSteiguer 1981 and data from U.S. Forest Service.

landowners, who have large amounts of equity in their land, do not have incomes that are sufficient to take advantage of the investment opportunities represented by their forest land. There also is little doubt that other landowners with large tracts of land as part of their wealth have incomes that are adequate enough to provide the necessary investment capital.

The picture of the average Program participant is far from complete. The question of Program equity does not solely rest with the distribution of payments to individuals. It is not as simple as trying to determine whether the funds allocated go to the rich or the poor. Other factors are important in determining if the social welfare of the nation is improved by this Program, and if those on the lower end of the economic spectrum are receiving a fair share of the benefits. This Program does not only benefit the individual participants, but has secondary impacts as well, e.g., increased employment. The distribution of the funds to individuals can be an effective means of redistributing resources, but is not the only means of redistribution resulting from the Program. A close examination of the entire picture is necessary before any valid conclusions can be made.

#### Direct Benefits to Participants

There are two major direct benefits that recipients of Forestry Incentives Program funds receive, namely, the initial payment and the subsequent increase in value of their land where the treatment was applied; and the long term benefit of return on their investment (actually,

combined federal and private investment, of which 50-75 percent was initially paid for by the federal government).

The most direct benefit of the Program is the payment received for improving the management of the forest situated on an individual's land. This payment serves to increase the value of the land by improving tree growth which subsequently results in an increased flow of capital. As a means to evaluate the program equity, an examination of the incidence of actual dollars expended was thought to be an adequate proxy. As discussed before, nationally the largest portion of the treated acres (59 percent) were among those who held large amounts of land (200 acres or more).<sup>4</sup> In addition, in all of the regions of the country average tract size treated increased as ownership size increased (Risbrudt and Ellefson 1983). Nationally, tract size more than doubled, between ownership of 100 acres or less and those of more than 500 acres (Risbrudt and Ellefson 1983).

As a result of the increased size of the treated acreages, landowners in the largest landholding class received a greater amount of Program dollars per case than those in the smaller landownership size classes (Table 9). Except for the Plains and Rocky Mountain regions, landowners with holdings greater than 200 acres received more than the average payment per case within their particular regions. So, not only do the landowners with the largest holdings receive the most in the absolute sense,

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<sup>4</sup> This is a direct result of Program administrative policy which requires that cost-shares be invested in forest lands and management practices that are most effective (Mills 1979).



Table 9. Average per case expenditures by the Forestry Incentive Program, by ownership size class and region. 1981.

Region	Size of Total Land Ownership											
	1 - 100 Acres		101 - 200 Acres		201 - 500 Acres		500 + Acres		All Sizes			
	Expenditure per Case (dollars)	Proportion (percent)	Expenditure per Case (dollars)	Proportion (percent)	Expenditure per Case (dollars)	Proportion (percent)	Expenditure per Case (dollars)	Proportion (percent)	Expenditure per Case (dollars)	Proportion (percent)		
South	1235.2	18.0	1767.6	22.3	2210.8	36.5	2584.1	23.2	1897.9	100.0		
North	369.1	27.5	467.4	25.9	562.4	27.8	925.2	18.9	501.2	100.0		
Plains & Rockies	726.8	20.1	710.4	15.3	983.3	29.2	1643.6	35.4	995.6	100.0		
Pacific Coast	1698.7	33.0	1820.4	17.1	2601.5	27.8	2712.8	22.1	2099.2	100.0		
Total U.S.	872.6	20.2	1221.2	22.4	1670.9	34.7	2135.0	22.6	1371.1	100.0		

Source: Risbrudt and Ellefson, 1983.

they also receive greater payments individually than those landowners with smaller landholdings. These payments serve to increase the value of the larger landholdings to a greater degree than the increases which can be expected for owners of small land tracts.

The expected return on investment is another area in which the individual landowner benefits from the receipt of Program payments. Using the discount rate preferred by the Forest Service to examine returns on investments, the \$14.5 million spent during the 1979 fiscal year has been calculated to have a present net worth of \$332.5 million and the financial return to the individual private landowner is \$1,335 per acre, when just the private investment is considered (Risbrudt and Ellefson 1983).<sup>5</sup> Since the landowners in the larger landholding class have a higher average treated tract size, it would appear that they also receive a higher proportion of benefits from returns on their investment. These landowners have already been shown to control significantly greater wealth (as defined by the value of their land) than the smaller landowners. As a group they reap a disproportionate share of the actual Program payments and receive a greater share of the expected returns on Program investments. Once again, it appears that the majority of the direct Program benefits go to landowners who occupy higher status along the economic spectrum.

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<sup>5</sup> Discount rate of 4 percent (Row, Kaiser and Sessions 1981).

Distribution of Secondary Program Benefits

The incidence of secondary benefits--which tend to be widely distributed--may well be the most important equity aspect of the Forestry Incentives Program. Consider, for example, persons who have gained employment as a result of the Program's implementation. The Program has created an increased need for foresters and private consultants to act as technical advisors; it has created an increased demand for nursery stock which has led to increased staff size for nurseries; and it has increased employment for contractors who conduct the required treatments and are paid with cost share funds. Many persons so employed are dependent on the continued existence of the Program to continue their current economic livelihood and many benefit from employment associated with increased wood production and harvests in the future. It may be that many individuals who depend upon employment created by the Program are among the poorer members of society. For example, 56 percent of the investment that Program contractors have made is related to maintaining a labor force (Moody 1982). Of the total work conducted by Program contractors, 52 percent is related to the Program, while 44 percent would not be in business except for the existence of the Program. In addition, nurseries would be forced to cut back if the Program were eliminated since much of the stock is distributed to individuals using cost share funds for planting. So the Program can be said to have created jobs, and these jobs may be benefiting individuals on the low end of the economic ladder.

Another secondary impact is represented by the increases in timber supply resulting from the expenditure of cost share funds. If wood supply is limited and its price is high, then society as a whole may be poorer. It has been estimated that 1979 Program investments will lead to the increased production of 942 million cu.ft. of sawtimber and 366 million cu. ft. of pulpwood (Risbrudt and Ellefson 1983). This increased production may prove to be very beneficial to society, particularly if timber demand increases to the extent predicted. Much of the increased timber production occurring as a result of the Program is occurring on forest lands in the South. This may lead to increased production of forest products within the states of the region, and lead to increased economic stability among communities dependent on forest industries. Many of the Southern states have below average per capita incomes and may thus benefit from this increased industrial development.

Additional benefits from the Program accrue to the many recreational users of nonindustrial woodlands. Also, benefits to water users occur as a result of better forest management. These outcomes have not been adequately measured, a situation reflecting the extreme difficulty in assigning a value to their use, although it may be assumed to be positive.

The impact of secondary benefits from a Forestry Incentives Program are very likely to be vast. Unfortunately, there is but a meager supply of information that is available to document such benefits. If analysts and administrators have problems relating Program investments to direct beneficiaries, their problems multiply when secondary equity impacts are

considered. These benefits need to be carefully considered before any final judgement is made on the impact the Program has on the equitable distribution of public funds.

#### Equity Implications of Program Changes

An equity consideration that deserves comment is the issue of transitional equity. Transitional equity involves the consequences of changing public policy, and the subsequent effect on individuals operating under current policy. Changes in government policy can frequently result in inequitable outcomes for persons having made decisions based on the rules that existed under old policies. In the case of the Forestry Incentives Program, particular groups of individuals are more likely to be adversely affected when Program changes are made. A reduction in or elimination of the Program could result in losses for nonindustrial private landowners that have made investment decisions based on the availability of cost share payments. In many states, particularly in the South, there is a backlog of applicants for the program (over two years in some states). Landowners qualifying for funds, but not receiving them because the current year's allocation was exhausted, have in all likelihood made a decision to invest in their forest land using federal assistance. At the end of the 1981 fiscal year, there was \$29.8 million (or more than two years funding at the current level of allocation) in outstanding applications for cost share funds that have been approved but not completed because funds were unavailable (Agricultural Stabilization and Conservation Service 1981). It would be difficult to view as equitable any Program changes

that did not allow for funding of landowners already qualified. These individuals have made investment decisions based on current government policy which is designed to encourage forest management. They would surely suffer a penalty for their decisions if the Program was eliminated or drastically reduced.

Another group that would be adversely affected and could possibly suffer large losses in the wake of the elimination of the Program are forestry contractors and nursery operations and their employees. As discussed previously, many such operators are dependent on the work provided by the Program; they have made investments in equipment and built a labor force solely to serve the needs of the Program. In part, the current success of the Program is a result of the availability of contractors and nursery operations to supply needed materials and services. Equity standards will be better served if policy changes that affect the Program are carefully considered so as to minimize losses to these operations. As appropriate, these individuals could be compensated for any loss resulting from a major shift in public policy.

Transitional equity is an important part of the total equity picture. Public policy planners can provide more equitable outcomes by recognizing the transitional implications of policy changes. Changes in established rules and practices invariably create transitional equity problems. Policy changes can be improved if planners strive to minimize adverse affects so that the overall impact of federal policy improves the fairness of distribution.

## SUMMARY AND CONCLUSIONS

Equity Information Deficiencies

The composite picture of the distribution of benefits from the Forestry Incentives Program is hardly complete. The measurements described in this report only serve as proxies to actual distributions. These measurements may give policy analysts an initial indication of the distribution of Program benefits, but are limited in their usefulness as a means of developing significant changes in policy. More detailed information from the recipients of Program funds would enable equity implications to be more adequately addressed. Data concerning a participant's total income, overall wealth, age, race and family characteristics could be collected. This information would allow for a more complete evaluation--proxy data would be unnecessary. Some socioeconomic data could be acquired during the administrative phase of the Program. The information could be collected with questions included on the application form used to request Program funds (ACP-245). Any move to do so, however, would need a thorough review prior to implementation, since the collection of such information could be perceived by some individuals as an invasion of privacy.

Another method of obtaining socio-economic data from Program participants would be to survey past recipients. This method was used in an analysis of the Forestry Incentives Program in South Carolina (Dunn and Beese 1977). The study found the average participant in the Program to be a 50 year old professional, with an average income of \$17,000, who

owned 338 acres of land. Summaries of income and age group data are displayed in Figures 2 and 3. This method could be an adequate means of collecting the data required; however, it may be much more costly than collecting the same data when individuals are applying for Program funds.

Access to better information on the Program's impacts on community stability, future timber prices, regional forestry development and individual forestry contractors is also in order. Lacking such data makes judgements about the incidence of secondary Program benefits tentative at best.

#### Future Policy Directions

The distributional impacts of the Forestry Incentives Program are relatively small. If, however, it is determined that the Program is not adequately contributing to the elimination of social inequities, changes in the design of current policies may be desirable. Innovative program designs need to be examined, including:

- Program funds targeted to economically depressed areas. The Economic Development Administration distributes grants based on county income levels and the local unemployment rate. These indicators could be combined into the formula presently used to distribute Program funding. Economically depressed areas with available productive private forest land could be favored to receive funding.



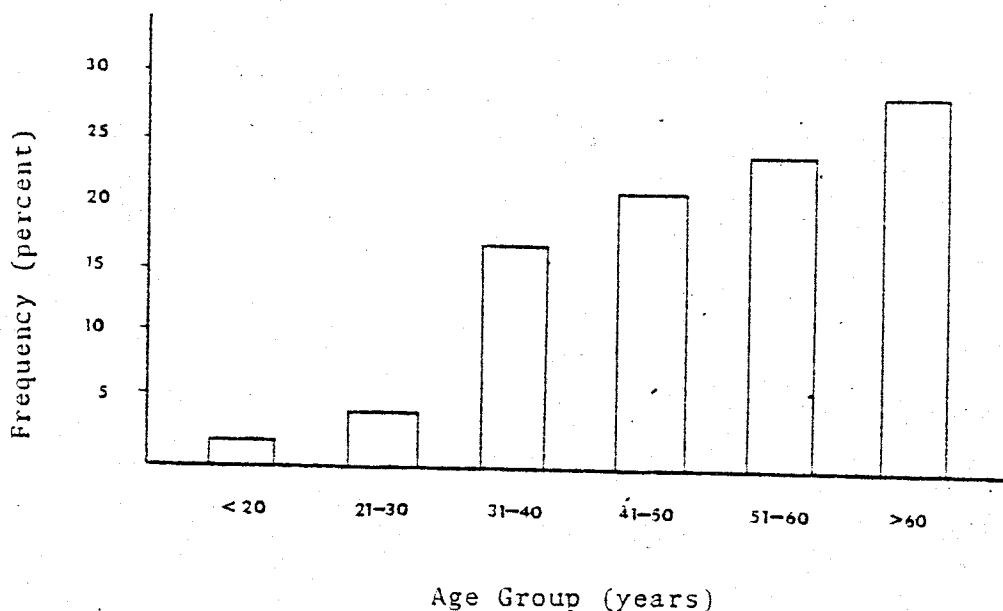


Figure 2. Age profile of 1974 and 1975 Forestry Incentives Program participants in South Carolina.

Source: Dunn and Beese 1977.

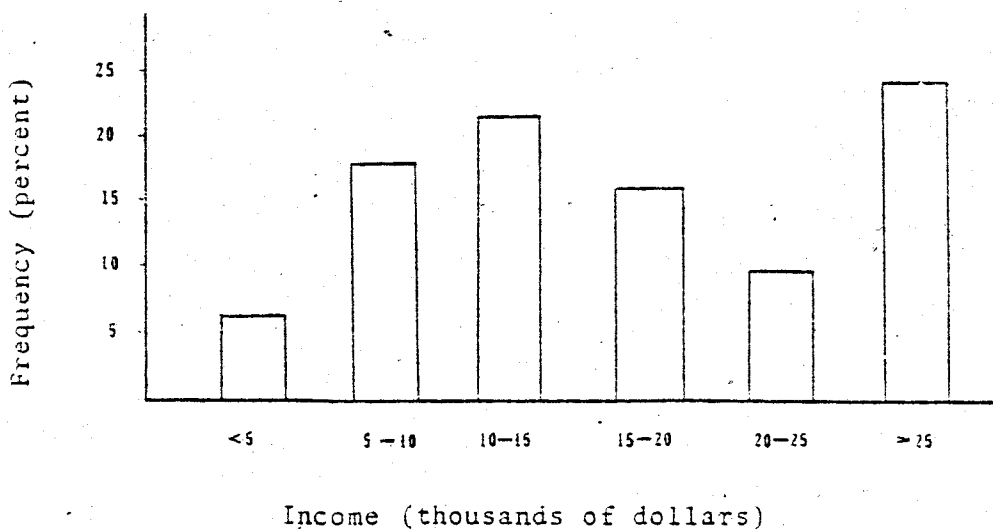


Figure 3. Annual income profile of 1974 and 1975 Forestry Incentives Program participants in South Carolina.

Source: Dunn and Beese 1977.

- A maximum income or wealth ceiling for obtaining Program funds.

Funds would first be distributed to those qualifying individuals below a set income/wealth level. If additional funds were available after all applicants below the maximum were satisfied, then the wealth restriction could be relaxed.

Although the Forestry Incentives Program represents but a minute part of total government expenditures that have equity impacts, the distribution of Program benefits among individuals, regions and generations should not be overlooked.<sup>6</sup> No matter what the scale of the Program, it will more than likely effect the distribution of resources in the economy; thus adversely effecting some and benefiting others. The Program can serve in a modest fashion to lessen existing inequities while still maintaining high levels of increased forest production. This goal can be achieved if appropriate distributional concerns are identified and integrated into planning processes. Without doing so, the risk of not meeting distributional intentions, however modest, will be very high (Hyde 1980).

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<sup>6</sup> In the first eight years of the Program's operation, a total of \$88.6 million in federal cost-shares were paid to landowners (Risbrudt and Ellefson 1983).

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