

AN ABSTRACT OF THE THESIS OF

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Two hundred and fifty-four nonindustrial private forest landowners in western Oregon were surveyed to develop baseline information about harvesting practices and to examine the influence of marketing procedures on delivered log prices. Most respondents harvested to meet income or silvicultural objectives. Harvests on ownerships less than 50 acres in size accounted for over one third of the harvest volume. The majority of harvests were partial cuts; salvage harvests comprised about 20 percent of the sales. Most respondents managed their own sales or relied on the logger or timber buyer. Consultants managed only six percent of the sales. Respondents who left the sale details to the logger were significantly less satisfied with the sale results and earned lower prices than other landowners. A regression analysis was performed to evaluate the relationships between sale procedures and the delivered log price. The model indicated that sale to export buyers and the number of buyers contacted were positively associated with sale price; payment of the logger on a percentage basis, lack of familiarity with price levels and trends, and buyer-initiated sales were negatively associated with the sales price. Analysis of the relationships between ownership characteristics and sale procedures indicated that experienced landowners with larger holdings were better timber marketers by normative standards.

Timber Harvesting and Marketing Practices
on NIPF Lands in Western Oregon

by

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TIMBER HARVESTING AND MARKETING PRACTICES ON NIPF LANDS IN WESTERN OREGON

INTRODUCTION

With control of nearly 60 percent of the forest land in the United States, nonindustrial private forest (NIPF) landowners play a key role in supplying the nation's timber needs (USDA Forest Service, 1989). Most individual NIPF landowners sell timber infrequently, however. As a result, they tend to be uninformed about current prices and market conditions (Hubbard and Abt 1988). This raises concerns for efficiency and equity. If inexperience and a lack of information prevent landowners from allocating their products to the highest paying market, the "signal" (i.e. price) they receive may discourage them from investing in timber production at the socially desirable level (Cubbage and Haynes 1988). Such handicaps may also place landowners at a "competitive" disadvantage with respect to timber buyers.

A number of publicly sponsored forestry assistance programs have been established to address these concerns. Technical assistance programs provide landowners with general "how-to" marketing advice and in some cases assist landowners directly in preparing their timber sales. Extension programs educate landowners about how to market timber through workshops, tours, publications, and other outlets. Price reporting services supply landowners with data about prevailing stumpage prices.

Researchers have evaluated the effectiveness of technical assistance (e.g. see Cubbage 1983, Hubbard and Abt 1988) and price reporting services (e.g. Rosen 1984). As

yet, however, little attention has been focused on marketing education programs. These programs advocate a prescriptive approach to selling timber (Cleaves 1993, personal communication) in which landowners develop marketing strategies on the basis of long term ownership goals, scope out the market to understand the needs of potential buyers, measure and mark the timber prior to harvest, obtain a written sale agreement, solicit offers under a competitive bidding system, and use technical assistance when appropriate (Cleaves 1992, Rosen and others 1989). With the notable exception of technical assistance, the influence of these procedures on sale outcomes has not been evaluated or quantified. In addition, while ownership and tract characteristics have been identified as determinants of harvesting behavior, few studies have considered how these characteristics, as well as landowner objectives, might affect marketing decisions. Finally, most of the research on marketing practices has been carried out in the eastern half of the U.S. In contrast to Oregon, many states in the eastern part of the country have publicly-funded timber sales assistance programs and have traditionally relied heavily on the NIPF sector as a source of timber supply. One question of interest is whether marketing practices observed in Oregon are typical of the country as a whole.

This study seeks to develop baseline information about the influence of specific marketing practices on the sale price. The study procedure used (a survey questionnaire) precluded an evaluation of another important sale result - the residual stand condition. The study also does not evaluate the relationship between sale procedures and landowner satisfaction.

A better understanding of the effects of marketing

practices on sale results would help policy makers identify elements of the marketing process that could be improved through technical assistance and education. This information would also be of use in evaluating regulatory, tax, and other policies that affect NIPF landowners. Finally, knowledge of the relationships between ownership characteristics and marketing procedures would help foresters target assistance and educational programs.

REVIEW OF PREVIOUS STUDIES

This literature review is organized into five sections. Section one deals with landowners' timber harvesting objectives. Section two describes how landowners market timber, with emphasis on the use of sale advisors and the procedures used to select the buyer. Section three evaluates the effects of technical assistance and price reporting on marketing procedures and outcomes. Section four examines how ownership characteristics influence marketing decisions. The final section describes the "prescriptive approach" to marketing.

Reasons for Harvesting

Profit Maximization vs. Utility Maximization

Researchers have proposed two contrasting theories to explain NIPF landowners' harvesting behavior. According to one theory, landowners harvest to maximize the return on their initial investment. Under this theory, the landowner acts as a firm and the timber stand is a factor of production (Alig and others 1990). In contrast, Binkley (1981) argued that landowners derive both monetary and non-monetary benefits from their forest land and seek to maximize utility rather than profits. Harvests are made only when the utility gained exceeds the utility that would be obtained by leaving the timber on the stump for aesthetic purposes and future sale.

Ownership Characteristics as Determinants of Harvesting

A number of studies have shown the likelihood of harvest to increase with higher stumpage prices, larger

tract size, lower income, occupation as a farmer, and the use of technical assistance (Alig and others 1990). Connaughton and Campbell (as reported in Lettman and others, 1991) determined that NIPF landowners in Oregon harvested at about the same rate as industrial landowners when tract volume and growth rate were taken into account. Landowners tended to harvest as growth rate declined and per acre volume increased.

Results from Survey-based Studies

Landowners frequently cite having "mature" timber as their primary reason for harvesting (Carpenter 1986, Clark and others 1992, Kelly 1983, Callahan and others 1979, Bullard and Moulton 1988). Monetary-related reasons (e.g., needed income, offered good price) and silvicultural objectives (e.g., timber needed thinning, improve growth of the residual stand) are also commonly mentioned (Clark and others 1992, Bullard and Moulton 1988, Kelly 1983). The relative importance of these categories of reasons varies from study to study. Bullard and Moulton (1988), for example, reported that "timber was mature" and "offered a good price" were moderately or highly important reasons for harvesting for 34 of 40 landowners, while salvage and "improved residual growth" were important for 17 and 24 of the 40 owners, respectively. Clark and others (1992) determined that the top three reasons for harvesting among NIPF landowners in New Hampshire were "timber needed thinning," "timber mature," and "to generate income." In a Vermont study (Kelly 1983), 44 percent of landowners harvested primarily for monetary reasons and 43 percent for "ecological" reasons.

It should be noted that the definition of mature timber is seldom specified in survey questionnaires. Some

landowners may well equate "maturity" with simple merchantability; that is, timber is "mature" as soon as it can be sold. This is somewhat different than the financial or biological definition of timber maturity used by most foresters. In addition, the reasons landowners give for harvesting are usually limited to those supplied by the survey questionnaire; even if an "other" category is included, survey respondents will often select one of the suggested reasons rather than make the effort to verbalize an alternative response (Bliss and Martin 1989).

Few studies have included questions that asked landowners whether they or the timber buyer initiated the sale. This would be one indication of the aggressiveness of procurement efforts, and might also have implications for marketing practices. Callahan and others (1979) found that, contrary to their expectations, a sample of Indiana landowners initiated the majority (60 percent) of sales.

Anecdotal evidence (Cleaves 1992, personal communication) suggests that landowners may harvest timber if they believe they will be unable to harvest in the future because of regulatory restrictions. Examples of such restrictions include log export bans and measures to protect spotted owl habitat. No research studies to date have examined this issue in the forestry sector.

Cabbage (1983), Bullard and Moulton (1988), and Clark and others (1992) found that landowners who used technical assistance had different sale objectives than unassisted landowners. These studies were based small samples and compared equal sized groups of assisted and unassisted owners. Bullard and Moulton reported that 15 of 20 unassisted landowners rated "pay estate taxes" or "other

income needs" as moderately or highly important reasons for harvesting, while only four of 20 assisted landowners did so. "Offered a good price" was important for all 20 unassisted landowners compared with four of 20 assisted landowners. "Improved residual growth," on the other hand, was an important sale objective for 19 of 20 assisted landowners but only five of 20 unassisted owners.

Unassisted landowners in these studies tended to harvest more of the available volume per acre than assisted landowners. Assisted landowners generally partial cut their stands while unassisted landowners clearcut them. This suggests that unassisted landowners are simply acting in accordance with different sale objectives. Assisted owner may earn higher per unit returns, but total returns may be higher for unassisted landowners because they harvest more volume.

Marketing Procedures

The Role of Information

Both the utility and profit maximization theories described above assume that landowners are fully informed about timber markets and stand values (Larson and Hardie 1989). This is seldom true in practice. Since acquiring information is costly, landowners weigh the perceived opportunity cost of gathering additional marketing information with its expected benefits.

Rosen and others (1989) suggest that landowners' behavior as timber sellers parallels their behavior as consumers. Thus as both consumers and timber sellers landowners typically engage in a limited search for price and market information and rely primarily on buyers instead

of third party information sources. Landowners who place a higher importance on timber production, however, are more apt to engage in thorough information searches. Additionally, landowners whose marketing practices are suboptimal by normative standards tend to be less satisfied with the price they receive and the post-sale condition of the stand.

Sources of Assistance in the Timber Selling Process

Potential sources of advice and assistance include private consultants, technical assistance foresters, loggers, timber buyers, and friends and neighbors (Cleaves 1992). Marketing professionals recommend that landowners use consulting foresters or foresters employed in technical assistance programs to assist with the marketing process because they can perform such tasks as measuring and marking the timber and soliciting bids from buyers more cost-effectively than most landowners, even after accounting for the consultant's fees or program costs.

How frequently do landowners use technical assistance? Previous research suggests that most sales are managed by the logger, the buyer, or the landowner himself. For example, Royer and Kaiser (1985) reported that 35 percent of NIPF landowners in Georgia selling timber used the logger or timber buyer as their primary sale advisor, and 28 percent managed their own sales. Thirty-seven percent of the sales were consultant-assisted. Rosen and others (1989) found that 24 percent of landowners consulted with a professional forester, 23 percent managed their own sales, and over 50 percent of sales were logger-managed. Likewise, Clark and others (1992) reported that just 38 percent of 240 New Hampshire NIPF owners used technical assistance.

Bidding Procedures, Selection of the Buyer, and Price

Landowners can select a timber buyer in one of several ways. The easiest way is to arrange to have the logs delivered to the closest mill, at which point the landowner accepts whatever price the mill offers. Another possibility is to negotiate the sale price with one or more buyers. Landowners can also survey local mills to obtain price quotes.

Marketing professionals contend that with a product like timber that has no fixed price, contact with a larger number of buyers should result in a higher sales price on the average (Cleaves 1992, personnel communication). Hence it is recommended that landowners issue a mailing or prospectus to solicit formal written offers from all potential buyers. This maximizes the landowner's opportunity to extract competitive prices and the mills' opportunity to consider the offering.

Non-price factors, such as the buyer's reputation or previous dealings with a particular mill, may also figure into the selection process (Cleaves 1992). One study (Callahan and others 1979) reported that landowners selected the timber buyer on the basis of price alone in about two thirds of the sales and on the basis of other factors in the remaining third of the sales.

Clark and others (1992) reported that 34 percent of forester-assisted and 4 percent of unassisted owners solicited written offers from potential buyers. Twenty-four of 40 Mississippi landowners interviewed by Bullard and Moulton (1988) used sealed or oral bids to determine the sale price. Half or more of the landowners in several studies accepted the first offer or negotiated with a single

buyer (Rosen and Kaiser 1988, Hickman 1983, Rosen and others 1989). Fifty-seven percent of landowners in a Louisiana study (Marlin 1978) employed sealed bidding procedures, and of these landowners, 75 percent obtained three or more bids. Contacting a large number of mills may not guarantee a larger number of bids, however. For example, in 22 of 71 sales in one study (Callahan and others 1979) only one bid was received.

The relationship between the number of bids received and the sale price was not evaluated in any of the studies cited above.

Use of Written Agreements

Marketing education and assistance programs recommend the use of a written timber sale agreement. Ideally, such an agreement helps landowners communicate their expectations to the logger and gives them recourse if their woodland is damaged. As with the use of technical assistance and competitive bidding, written agreements are used by only a minority of landowners (Marlin 1978, Hickman 1983). Hickman's study, for example, found that only 3 of 10 individuals selling timber in the 1982-83 period used written sale agreements. Cleaves and Fitzgerald (1988) reported that 64% the individuals attending a woodland owners conference used written agreements in previous timber sales. Since this sample presumably represented NIPF owners with a high level of marketing skills, the percentage using written sale agreements seemed low (Cleaves 1992, personal communication).

Policy Interventions

Technical Assistance

What effect does technical assistance have on sale results? Several studies have addressed this question with specific reference to stumpage prices and residual stand conditions.

Cubbage (1983), Bullard and Moulton (1988), Hubbard and Abt (1989), and Jackson (1985) found that landowners who used technical assistance often earned higher per unit returns than unassisted owners. Price differentials ranged from 20 percent (Jackson) to nearly 60 percent (Cubbage).

In a Florida study (Hubbard and Abt 1988), marketing assistance provided by the state Division of Forestry had a positive but statistically insignificant effect on the sales price. Assistance from private consulting foresters had a negative effect for low value stands and a positive effect for high value stands.

An Indiana study (Callahan and others 1979) reported that professional forestry assistance was not associated with higher sales prices. However, assisted sales tended to involve a larger number of bids than unassisted sales, and the number of bids received was itself correlated with the sale price. This apparent paradox was explained by differences in the quality of timber harvested. In unassisted sales, the logger generally decided which trees to cut, whereas in assisted sales, the forester made this decision. The result was that unassisted sales usually involved a larger quantity of valuable veneer quality walnut, which accounted for much of the observed price variation.

Both Cubbage (1983) and Jackson (1985) found higher post-sale residual volume and growth potential in stands harvested under the supervision of a forester than in stands harvested without such assistance. Jackson also reported that NIPF owners who employed professional foresters were more likely to use Best Management Practices (BMPs) on a voluntary basis. Royer and Kaiser found that in the southern U.S., seed trees are usually retained in stands harvested under the supervision of a forester. This helps ensure that future stands will be stocked with commercially valuable pine species. In contrast, stands harvested without such professional guidance typically revert to less valuable hardwoods.

None of these studies attempted to identify the specific marketing practices that were responsible for the financial gains observed. However, the studies did reveal three important differences in the ways assisted and unassisted landowners marketed their timber. First, assisted landowners tended to use competitive bidding to establish the sale price, whereas unassisted owners used negotiation. For example, 14 of 20 assisted landowners in Cubbage's study used sealed or oral bids while 19 of 20 unassisted landowners either accepted the first price offered or negotiated a price. Bullard and Moulton found that 9 of 20 assisted landowners administered their sales via sealed bids. This was true for only one of the unassisted landowners.

Second, assisted owners typically measured and marked their timber prior to the sale. According to Cubbage (1983), the presence of a reliable inventory can lower the buyer's risk premium. This often translates into a higher price offer.

Third, assisted landowners benefit from their foresters' ability to allocate logs and other sale products to their highest value markets. For example, Clark and others (1991) found that while assisted sales did not receive more bids than unassisted sales, they did involve a larger number of products sold (4.4 vs. 3.3) and final delivery points (2.2 vs. 1.8).

Price Reporting

Prices reports vary greatly in format and scope. Some are region-wide (e.g. Timber Mart South covers the southeastern U.S.); others are local in coverage. They are available from public agencies and through subscriptions with private sector reporting services.

Price reports are intended to help fill the informational gap many landowners face when selling timber. With knowledge of current prices for a given type or grade of timber, landowners have some basis on which to judge the value of their own stand. However, the use of price reports has only been reported among a small minority of landowners. Rosen and others (1989), for example, determined that only four percent of New York NIPF owners had consulted the State stumpage price report.

Ownership Characteristics and Marketing Decisions

Ownership characteristics have been identified as determinants of timber harvesting and investment behavior. One might also expect them to have an influence on marketing behavior. A few studies have addressed ownership characteristic-marketing practice relationships. Hubbard and Abt (1989) found that landowners assisted by private consultants tended to own their land longer and were more

often heirs of forest land than landowners assisted by public sector foresters or unassisted landowners. Bullard and Moulton (1988) indicated that assisted and unassisted landowners were similar with respect to residence status and income. In both of the above studies, the sample sizes were quite small (45 and 40, respectively). Clark and others (1992) found no significant differences between assisted and unassisted owners in terms of tenure, age, and previous timber sales experience. Larson and Hardie (1989) determined that landowners with higher incomes and larger ownerships were more active in acquiring market information and were more likely to use professional foresters. A New York study (Rosen and others 1989) found no significant relationship between previous timber sales experience and the use of technical assistance, published price information, and competitive bidding.

Prescriptive Approaches to Marketing

The prescriptive approach to marketing is a loosely defined set of procedures based on economic theory and practical experience. It is advocated in extension education programs as technical assistance programs, though not always by that name. In essence, the approach presumes that landowners can maximize their timber sale gains, monetary and otherwise, by systematically obtaining and evaluating information, developing marketing strategies based on a clearly defined set of goals, and, in some circumstances, using more efficient intermediaries such as consultants. The specific procedures entailed in this approach vary from region to region and among sale types. For example, log sales require a much greater degree of landowner involvement in marketing than stumpage sales. An Oregon State University Extension publication (Cleaves 1992)

outlines one variation on the prescriptive approach as seven steps. They are: 1) clarify goals and objectives; 2) find the right advice; 3) structure the sale; 4) scope out the market; 5) measure and mark the timber; 6) select the right logger; and 7) solicit and evaluate offers.

From a more theoretical standpoint, the prescriptive approach has been described as consisting of competition elements, timing elements, product quality elements, and control elements (Cleaves 1992, written communication). Appendix 4 contains a detailed list of these elements and the procedures they entail.

MARKETING PRACTICES FRAMEWORK

The following marketing practices framework is intended to 1) summarize the preceding literature review; and 2) identify gaps in knowledge about marketing practices.

Fig. 1 - Landowner Marketing Behavior Framework

<u>FACTORS</u>	<u>DECISIONS</u>	<u>RESULTS</u>
POLICY FACTORS	* WHEN TO HARVEST	UNIT PRICE
* Technical assistance		
* Price reporting		
* Marketing education		
LANDOWNER	* HOW MUCH TO HARVEST	RESIDUAL STAND CONDITION
OBJECTIVES/CHARACTERISTICS		
* Demographics		
* Ownership goals		
TRACT CHARACTERISTICS	* HOW TO CONDUCT THE SALE	LANDOWNER SATISFACTION
* Volume per acre, growth		
* Size of holding		

Discussion

There are three primary decisions in the marketing process: when to sell, how much to sell (or conversely, how much to leave), and how to conduct the sale. The "how to conduct the sale" decision actually encompasses a large number of separate decisions, including how to approach and select a buyer, how to pay the logger, who to use as a sale advisor, so forth.

Three sets of factors influence the three marketing decisions, and through them, the sale results. These factors include ownership and tract characteristics, landowner demographic characteristics and objectives, and policy factors. The sale results include the per unit price, the residual stand condition, and the landowner's satisfaction with the price and post sale condition of the stand.

Policy Factors, Marketing Decisions, and Outcomes

There is considerable evidence that technical assistance, at least, has a significant and positive effect on stumpage prices and residual stand conditions.

There are two areas of concern with regard to marketing education programs. One is the extent to which these programs actually influence landowners' marketing behavior. The other is to identify the elements of the prescriptive approach to marketing that affect sale outcomes. Little research has been done in either area. In addition, few studies have evaluated how individual marketing procedures, whether part of the normative model or otherwise, influence sale outcomes.

The primary hypothesis advanced and tested in this study is that use of elements of the prescriptive marketing approach advocated in extension education programs will have a positive and significant effect on the sale price and the landowner's satisfaction with the sale results. The influence of marketing education programs on landowner behavior is not addressed.

Owner Characteristics and Marketing Decisions

Studies show that demographic characteristics such as landowner income are associated with timber harvesting and investment behavior (Alig and others 1990). In a few cases these characteristics have been tested in relation to the use of specific marketing practices, particularly the use of technical assistance. However, no study has yet made a comprehensive evaluation of the relationship between ownership characteristics and marketing procedures. Additionally, long-term ownership objectives have also not been tested with respect to marketing procedures. This study examines only the relationships between several ownership characteristics and marketing procedures. Ownership objectives are not considered.

Tract Characteristics, Marketing Procedures, and Sale Outcomes

The size of holding has been shown in many studies to be related to the propensity to harvest timber. One might also expect that ownership size was related to use of elements of the prescriptive marketing model. Specifically, we might anticipate that a higher proportion of landowners with above average size holdings would measure the stand volume and employ technical assistance. This hypothesis is based in part on unpublished results from a 1989 survey of Oregon landowners (Oregon Department of Forestry 1989) which showed that owners of 100+ acre holdings were more apt to consult with foresters and prepare inventories.

As noted previously, growth rates and per acre volume are important factors in determining when stands are harvested.

Summary - Marketing Procedures and Timber Supply

Harvesting contributes directly to short-term timber supplies (Alig and others 1990). When the market operates efficiently, landowners receive the "correct" price signal and adjust their level of harvest accordingly. Barriers or impediments to efficiency, such as incomplete or inaccurate price information, distort price signals. In the immediate term, this may lead to lower harvests, as suggested by the shape of the short-run supply curve of a producer in a competitive market. In the long term, landowners may be less willing than they would be in the presence of efficient markets to harvest and make investments in timber production. Harvesting and marketing procedures can also affect long-run timber supply by determining the volume and growth potential of the residual stand.

OBJECTIVES

This study has four primary objectives:

1. To provide baseline descriptions of the following sale characteristics and marketing procedures on NIPF lands in western Oregon in 1991:
 - A) harvest attributes by type of harvest and size of sale;
 - B) harvest attributes by ownership size;
 - C) landowners' reasons for harvesting;
 - D) sale (marketing) procedures including
 - * the use of different sale managers;
 - * owner knowledge of stand volume and other attributes;
 - * selection of trees to be harvested;
 - * methods used to contact buyers;
 - * methods used to select the buyer and arrive at a price;
 - * the type of sale (stumpage vs. log);
 - * logging payments and arrangements;
 - * use of written agreements;
 - E) landowners' satisfaction with the results of the sale.
2. To determine how logger/buyer-managed, owner-managed, and consultant-managed sales differ with respect to marketing procedures and sale outcomes.

3. To determine if use of elements of the prescriptive marketing approach can help explain variations in the sale price. Also, to determine what other factors or decisions may help explain variations in price.

A) The elements of the prescriptive marketing approach are grouped in three categories as follows:

Competition elements

- access to full array of markets (domestic and export).
- use of written prospectus.
- contact with a large number of potential buyers.
- compare offers based on stumpage value equivalents.
- sorted (merchandized) the logs.

Timing and product quality elements

- understanding of pricing systems.
- use of on-site tour for buyers.

Control elements

- use of an inventory of timber volume and growth.
- use of professional assistance.
- use of written agreements.
- mark timber for take/leave.

B) Elements or factors, not part of the prescriptive approach, which may influence sale outcomes:

- buyer/seller initiation of the sale.
- type of harvest.
- sale volume.
- type of sale advisor.
- paid logger on a percentage basis/otherwise.
- type of sale.

4. To determine if several landowner and ownership characteristics are associated with the use of particular sale procedures.

The characteristics include:

- ownership size/acres of forest land owned;
- previous timber sales experience;
- income;
- residence status.

The procedures include:

- the use of different sale managers;
- payment of the logger on a percent split basis;
- sale to an export buyer;
- buyer initiation of the sale;
- the number of buyers contacted;
- the type of sale (salvage sales or otherwise).

PROCEDURES

Study Population

The study population consisted of private forest landowners who: 1) harvested timber in 1991; 2) did not own a processing facility such as a sawmill; 3) owned, at the time of harvest, at least one but not more than 10,000 acres of forest land in one or more counties west of the Cascade range.

Sampling Frame and Selection of Respondents

Oregon law requires forest landowners to file a written notification with the state Department of Forestry at least 15 days in advance of any harvest operation. The notifications are compiled in a computer database in Salem.

A list of all timber harvest notifications filed by private forest landowners in western Oregon during 1991 was obtained from the Department of Forestry. This list served as the sampling frame for the study. Each notification included the landowner's name, address, phone number, and ownership type (e.g., corporation).

Several modifications of the list were necessary before a sample could be drawn. First, an attempt was made to screen out notifications filed by landowners who did not meet the study population definition given above. In recording harvest notification data, the Department of Forestry divides private owners into two categories: individuals, and partnerships/corporations. Many landowners in the latter category hold more than 10,000 acres of forest land and/or own a processing facility. Since the notifications did not provide complete information

about these factors, it was necessary to make a subjective judgement about which landowners in the partnership/corporation category fell outside of the study population definition. A conservative approach was taken in making such judgements. Only those landowners clearly recognizable as industrial owners, such as Weyerhaeuser and Boise Cascade, were eliminated. Also eliminated were companies identified by their names as real estate agencies. Consequently, it is likely that the final list from which the sample was drawn included notifications from some landowners who did not meet the study population definition.

A second modification of the list involved reducing the number of notifications to one per owner. This was done to give each owner a known probability of selection in the sample. The resulting list contained a total of 4,207 notifications. The list was then sorted alphabetically by the landowner's last name in order to simplify administration of the survey.

Starting with a randomly selected integer between one and seven, a systematic, 1-in-7 sample was drawn. This generated a list of 601 notifications.

Survey Design

The survey was designed and implemented in accordance with procedures recommended by Dilman (1978). Several individuals knowledgeable about timber marketing practices reviewed an initial draft of the questionnaire, including two forestry extension specialists, a manager of a publicly-owned forest, a private consultant, and a private forest landowner. The questionnaire was then presented to an audience of about 15 nonindustrial private forest (NIPF) landowners at a forestry extension meeting. The landowners

completed the questionnaire and offered suggestions for improvements, which led to further modifications and revisions.

The initial mailout took place on January 18, 1993. Each questionnaire was accompanied by a cover letter signed by the principal investigator and a self-addressed stamped envelope. Respondents who were interested in the survey results could request them by placing their name and address on the back of the return envelope. About 50 landowners (approximately 20 percent of the respondents) requested copies of the results.

A follow-up postcard was sent to non-respondents ten days after the initial mailing. A second letter and a replacement questionnaire were sent to the remaining non-respondents after five weeks.

Thirty-eight questionnaires were returned as undeliverable. Additionally, a total of 97 questionnaires were received from respondents who 1) did not harvest timber in 1991; 2) did not own forest land at the time of harvest; 3) owned more than 10,000 acres of forest land; and/or 4) owned processing facilities. These questionnaires were eliminated from the data set, leaving an adjusted sample base of 469 individuals (see Appendix I, Table II for summary information on the disposition of questionnaires).

Returns were accepted through May 1, 1993. On this date, 254 usable questionnaires had been received, for an adjusted completion rate of 55 percent (see Appendix I for a summary of returns). This was lower than expected, given results from previous surveys using Dilman's (1978) approach.

Non-response Survey

A follow-up telephone survey of a random subsample of non-respondents was conducted to address the possibility of bias. Names and phone numbers were obtained for 99 landowners in a systematic, 1-in-2 sample of the 198 non-respondents. Sixty-two of the 99 owners were contacted. Of these 62, seven refused to participate in the survey, 13 indicated that they did not harvest in 1991 or did not own forest land, and 42 provided usable responses.

The survey queried landowners about the type of harvest they conducted, the amount (volume) and acreage of the sale, their level of price familiarity, use of sale advisors, method of payment of the logger, and the number of acres of forest land they owned. These proved to be important questions in the mail portion of the study. Care was taken to duplicate the question format used in the mail questionnaire.

Where applicable, chi-square tests were used to compare the frequency of responses to the questions among respondents and non-respondents (the test results are summarized in Appendix II). Had the sample size been considerably larger, a goodness-of-fit test would have been more appropriate. No statistically significant results were observed from the Chi-square tests. However, the sample size may have been too small to detect actual differences (Mason 1993, personal communication).

T-tests were used to compare the mean values for respondents and non-respondents of the acres harvested, acres of forest land owned, and volume harvested. The null hypothesis of no differences in the means could not be rejected for any of the three tests (Appendix II). The

caveat given above regarding sample size applies here as well.

It is concluded that while these results do not provide any evidence of non-response bias, the tests would have to be conducted with a much larger sample of non-respondents to make a definitive statement about the presence or absence of bias.

Procedures Used in Analyzing the Data

Frequency distributions and univariate statistics were developed for individual questions as appropriate. Cross tabulations were tested with a Chi-square statistic. SAS (Schlotzhauer and Littel 1987) was used for all statistical analyses.

A stepwise regression model was developed to evaluate the effects of marketing procedures and sale characteristics on the sale price. Seventeen sale procedure and attribute variables were considered. The steps followed in constructing the regression model were as follows:

- 1) All 17 variables were placed in a correlation matrix with the per unit (mbf) price.
- 2) Only delivered log sales (see question 17) were considered.
- 3) Variables not correlated with price (using a significance standard of 0.05) were eliminated from further consideration.
- 4) The remaining variables were considered with and without price observations greater than \$ 1,000. An regression

model developed prior to the analysis described here indicated that one observation, corresponding to a price of \$ 1,200, was a probable outlier.

5) Variables not significant (using the 0.05 significance standard) when the outlier was removed were dropped from further consideration.

6) The remaining variables were tested for inter-correlations. As expected, a number of the variables were correlated at a 0.05 significance standard. Two variables, "own" (corresponding to owner-managed sales) and "log" (corresponding to logger-managed sales) were highly negatively correlated ($r=0.8$). Own was dropped from further consideration, since it was slightly less correlated with sale price than "log."

7) A stepwise regression procedure was performed using the remaining variables.

8) The residual values from the final regression equation were plotted against the predicted values. There were no obvious patterns which suggested the need for a transformation or inclusion of a quadratic term in the model. The residuals were also checked for outlier using studentized residuals. One (of 126) had an absolute value between two and three and another had an absolute value of almost five, indicating that it was a probable outlier (Schlotzhauer and Littell 1987). The outlier corresponded to a price observation of \$ 1,200/mbf, some \$ 400/mbf greater than the next highest reported price. Such differences are not particularly unusual, since prices vary widely according to the grade and species of timber. There was no reason to suspect that the observation was unreliable

or biased; hence it was retained in the data set considered for the regression model.

The relationships between several ownership characteristics and sale procedures were tested using chi-square tests and t-tests.

RESULTS AND DISCUSSION

Baseline Descriptions of Sale Characteristics and Marketing Procedures

Results: Harvest Characteristics by Type of Harvest

Nearly half (47 percent) of harvests were partial cuts or commercial thins. Twenty-two percent were clearcuts and 19 percent were salvage operations. The balance (12 percent) included conversions of understocked forest land and mixes of more than one harvest type. Eighty-eight percent of sales were of conifers; 10 percent were predominantly of hardwoods, and 2 percent were evenly split between conifers and hardwoods.

Harvests ranged in size from less an acre to more than 500 acres. Clearcuts averaged 14 acres, partial cuts 18 acres, and salvage cuts 26 acres. Timber harvest ages ranged from 10 to 200+ years. The average was 52 years. By harvest type, average ages were: clearcuts, 57 years; partial cuts, 45 years; and salvage cuts, 61 years. Salvage harvests had the greatest age variation. Ninety-five percent of all clearcuts were in timber less than 85 years old.

The average volume for each type of harvest was as follows: clearcuts 236 mbf (thousand board feet); partial cuts 75 mbf; and salvage cuts, 80 mbf. Clearcuts accounted for 47 percent of the volume sold. Partial cuts accounted for another 31 percent, with salvage cuts (11 percent) and other harvest types (11 percent) accounting for the remainder.

Clearcut volumes averaged 13.3 mbf/acre. Salvage sale volume averaged 2.1 mbf/acre, while partial cuts and commercial thins contained an average of 4.5 mbf/acre. Ninety percent of clearcuts and partial cuts generated less than 26 mbf/acre and 11 mbf/acre, respectively.

The preceding information is summarized below in Table 1.

Table 1 -- Sale characteristics by type of harvest

	percent of	Acres harvested		mbf harvested		Vol/ac	Age (mean)
	harvests	Mean	% of total	Mean	% of total		
clearcut	22	14	17	236	47	13	57
partial cut	47	18	49	75	31	3	45
salvage	19	26	27	80	11	2.1	61
other	14	15	7	90	11	7.7	60
Total:	100	-	100	-	100		

(N=232)

The average harvest volume was 91 mbf. Harvests of less than 50 mbf represented more than 50 percent of all sales but only about 12 percent of the total harvest volume. On the other hand, harvests of greater than 250 mbf represented less than 10 percent of all sales but accounted for about 45 percent of the harvest volume (Table 2).

Table 2 -- Size of sale

Sale volume (mbf)	Percent of sales	Percent of sale volume
< 20 mbf	30	4
20 - 50 mbf	24	8
50 - 99 mbf	18	14
100 - 249 mbf	20	29
250+ mbf	8	45
Total:	100	100

(N=232)

Discussion: Harvest Characteristics

Oregon Department of Forestry records (e.g., ODF 1988-90) indicate that in any given year partial cuts comprise half or more of all harvests on NIPF lands in western Oregon. Hence the frequency of partial cuts observed in this study (47 percent of the total) was not surprising. But since ODF's records do not differentiate between types of partial cutting, the extent of salvage cutting (19 percent of all harvests in this study) had not previously been documented. Researchers in other states have found salvage cuts to comprise as much as a third of all harvest activity (Moulton and Cabbage 1990).

The survey data indicate that the average age of stands that were partial cut in 1991 was about 45 years. Nearly one fourth of the clearcuts were in stands less than 50 years in age; 12 percent were in stands less than 40 years in age. Ninety percent of all clearcuts and 95 percent of all partial cuts were in stands 85 years or younger in age. Clearly, the majority of landowners harvested their timber long before it matured biologically. Whether or not the stands were cut at the point of financial maturity could not be determined without data on stand growth and discount

rates.

Lettman and others (1991), using Forest Service inventory data, determined that most harvesting in western Oregon in the 1985-90 period was in stands 50 or more years on age. The youngest age at which a stand was clearcut in their sample plots was 40 years. In this study twelve percent of the clearcuts were in stands less than 40 years in age; the youngest age at which a stand was clearcut was 30 years. These differences may be accounted for by the sampling schemes used: owner-based in this study versus area-based in Lettman's study. Also, the researchers made field determinations of the harvest types in Lettman's study, whereas in this study respondents reported what kind of harvests they made. As a result, harvest types may be defined differently in the two studies. Finally, prices were high in 1991 compared to the 1985-90 period. This may have induced some landowners to harvest timber they wouldn't have in a less vigorous market.

By forest industry standards, the volume per acre harvested on NIPF lands in western Oregon is very low. As noted above, clearcuts produced only 13 mbf/acre on the average, less than a third of the volume typically generated on comparable industrial lands. Previous research has shown that a significant proportion of the NIPF land base has been subjected to repeated partial cutting (Lettman and others 1991). This may account for the low volume per acre observed.

The distribution of sale volume in relation to the total volume harvested was also notable. There were many small sales which collectively accounted for only a small portion of the total volume, and a few large sales, which

accounted for most of it. Many of these large sales were clearcuts.

Results: Harvest Characteristics by Ownership Size

Most of the acres (69 percent) and volume (64 percent) were harvested from ownerships greater than 50 acres in size. However, harvest intensity (mbf/acre) was greater on the smaller-sized (< 50 acre) ownerships. Also, a larger proportion (total acres/harvested acres) of smaller ownerships were harvested (Table 3).

Seventy-one percent of the harvest volume came from the 40 percent of the land base consisting of ownerships of less than 500 acres. Ownerships ranging from 500 and 10,000 acres in size accounted for 60 percent of the total forest acreage but only 21 percent of the volume sold.

The harvest intensity (mbf/acre) in each of the ownership size classes varied according to the type of harvest (Table 4). Clearcut intensities ranged from 10.7 MBA/acre in the 1-9 acre class to 20.7 mbf/acre in the 500-10000 acre class. Partial cuts exhibited the opposite trend, decreasing from 5.7 mbf/ac in the 1-9 acre class to only 0.8 mbf/ac in the 500-10000 acre class. The volume per acre intensity of salvage harvests also showed a general decline as the size class increased.

Table 3 -- Sale characteristics by ownership size

size (acres)	Percent of total:			Percent of	mbf/ac
	sales	acres owned	sale volume	ownership harvested	
1-9	22	< 1	7	67	7.3
10-49	34	5	28	46	5.7
50-499	37	34	37	13	4.3
500-9999	7	60	29	5	3.8
Total:	100	100	100	NA	NA

(N=231)

Table 4 -- Volume per acre by type of harvest and ownership size

size (acres)	mbf/acre			
	clearcut	partial cut	salvage	other
1-9	10.7	5.7	6.3	11.5
10-49	11.2	4.0	1.8	7.0
50-499	12.0	3.2	1.3	9.2
500-9999	20.7	0.8	2.5	6.9

(N=231)

Discussion: Harvest Characteristics by Ownership Size

The fact that so much of the harvest volume was derived from a relatively small proportion of the land base was unexpected. Unpublished results from a 1989 survey of Oregon woodland owners (Oregon Department of Forestry 1989) indicate that harvest participation rates increase dramatically with ownership size. For example, just 12 percent of the landowners in the 1-9 acre size class harvested in the 10 years prior to 1989, compared to 75 percent of the landowners in the 500-999 acre class. Additionally, the ODF survey revealed that larger owners (arbitrarily defined as those with holding greater than 50

acres in size) controlled 85 percent of the land base. Thus it was anticipated that the bulk of the harvest volume would come from larger ownerships. However, this study shows that, in 1991 at least, both the volume per acre and the proportion of an individual ownership harvested increased as size class decreased. With a few exceptions, this trend was consistent across harvest types. Also, more than half of sales were on small (< 50 acres) ownerships. The end result was that smaller ownerships, collectively, made a substantial contribution to the 1991 NIPF timber harvest. Whether this is a consistent trend or an anomaly of 1991's market conditions is an interesting topic for future research.

Results: Landowners' Reasons for Harvesting

Respondents were asked to rank the three most important reasons they harvested timber in 1991 from a list of 13 possible reasons. During the data coding, two additional reasons were derived from responses in the "other" category: "clear for home site" and "miscellaneous clearing." These reasons or harvest objectives were intended to describe "triggers" that precipitated harvests, not long term ownership goals.

The three "most important" reasons for harvesting were "needed income" (32 percent of the responses), "improve stand condition and value" (14 percent), and "salvage dead, diseased, and dying timber" (12 percent). The four "second most important" reasons were "improve stand condition and value" (20 percent of the responses), "timber needed thinning" (14 percent), and "needed income" and "avoid potential future restrictions on harvesting" (both 11 percent). The three most frequently mentioned "third most important" reasons were "offered good price" (18 percent),

"improve stand condition and value" (15 percent), and "timber needed thinning" (11 percent).

Disregarding the rank assigned (i.e. "most important," etc.), the three most frequently cited reasons for harvesting were "needed income" (20 percent), "improve stand condition and value" (16 percent), and "timber needed thinning (11 percent). Five percent of respondents said "timber was mature" was the most important reason they harvested, and six percent indicated that this was one of the three most important reasons for harvesting. This contrasts with results from other studies in which "timber was mature" played a much more prominent role as a harvest motivation.

While only two percent of respondents cited potential regulatory restrictions as their "most important" reason for harvesting, 11 percent cited potential harvest restrictions and three percent potential export restrictions as the "second most important" reason they harvested. Eight percent said that potential regulatory restrictions were one of their three most important reasons for harvesting. These respondents harvested 15 percent of the volume and 12 percent of the acres represented in the survey.

A related question addressed the issue of buyer procurement efforts as a harvest trigger. Anecdotal evidence (Cleaves 1992, personal communication) suggested that many landowners were receiving postcards, phone calls, and other communications from timber buyers seeking to purchase stumpage or logs. We wanted to know how successful these procurement efforts were in inducing landowners to harvest. Thirty-seven percent of respondents reported that they had been contacted by a buyer prior to making their

sale. Of these respondents, 43 percent sold to this buyer.

Table 5 summarizes how respondents ranked the reasons given for harvesting timber.

An index (Table 6) was developed from the list of 15 potential reasons described above. Six categories of reasons or harvest objectives were developed: stand improvement, income, clearing, regulatory restrictions, timing, and miscellaneous reasons. Again disregarding the assigned rank, the percentage of respondents citing reasons in each category was as follows: stand improvement (37 percent), income (28 percent), timing (10 percent), land clearing (10 percent), potential regulatory restrictions (8 percent), and miscellaneous (7 percent).

Table 5 -- Reasons for harvesting, by rank

Reason	percent mentioned, by rank			
	most	second most	third most	combined
Buyer recommended harvest	< 1	2	0	< 1
Forester recommended harvest	3	5	3	3
Timber was mature	5	7	6	6
Clear land for sale	5	< 1	4	4
Needed income	32	11	13	20
Avoid potential harvest restrict.	2	11	8	7
Harvest scheduled in plan	2	6	5	4
Avoid potential export restrict.	0	2	0	< 1
Improve stand condition/value	14	20	15	16
Timber needed thinning	7	14	14	11
Salvage dead & diseased timber	12	8	9	10
Received good offer	< 1	7	18	8
Other	7	2	2	4
Clear for home site	5	0	0	2
Clear for misc. reasons	5	5	3	4
Total:	100	100	100	100

(N=172)

Table 6 -- Reasons for harvesting, index

Reason	percent mentioned, by rank			
	most	second most	third most	combined
Stand improvement/silviculture	33	42	38	37
Income	33	18	31	28
Clearing	15	5	7	10
Timing	7	13	11	10
Potential restrictions	2	13	8	8
Miscellaneous	10	9	5	7
Total:	100	100	100	100

(N=172)

Definitions of table categories used in Table 6:

1. Stand improvement/silviculture:
 - * Improve stand condition and value
 - * Timber needed thinning
 - * Salvage dead and diseased timber
2. Income:
 - * Needed income
 - * Offered good price
3. Clearing:
 - * Clear for home site
 - * Clear for sale
 - * Clear for other reasons
4. Timing:
 - * Timber was mature
 - * Harvest scheduled in management plan
5. Regulatory Restrictions
 - * Avoid potential harvest restrictions
 - * Avoid potential export restrictions
6. Miscellaneous
 - * Forester recommended harvest
 - * Buyer recommended harvest
 - * Other

Discussion: Reasons for Harvesting

As found in other studies dealing with harvest motivations, respondents to this survey were primarily concerned with income-related and silvicultural objectives. However, respondents did not select "timber was mature" as a primary reason for harvesting to the extent reported in other studies. This may have been due to the large number of alternative responses respondents had to choose from. As previously noted, the reasons landowners give for harvesting timber in a multiple choice question are limited to the answer choices provided, and this survey provided more

choices than most.

Also of interest was the fact that regulatory uncertainty played a role as a harvest trigger for some landowners. This result suggests that in a rapidly changing, unstable policy environment, some of the timber harvest will come from landowners who feel they are forced to "use it or lose it."

Results: Sale Procedures

Sources of advice and assistance

Forty-two percent of respondents reported that they handled most of the details of their timber sale. The logger was the primary advisor in 44 percent of the sales. The use of private consultants was limited: only 6 percent reported that a consultant handled their sale. Other advisors included the timber buyer (5 percent of sales) and relatives, friends, and neighbors (2 percent of sales).

Knowledge of stand attributes

Nearly 40 percent measured the stand volume prior to selling. Forty percent determined the age and 28 percent measured the growth rate of the timber to be harvested.

Selection and marking of trees to be harvested

Trees were selected for harvest by the logger or buyer in 13 percent of the sales. In another 17 percent of the sales, the logger/buyer selected the trees with direction from the landowner or advisor. Diameter limit cuts were used in 14 percent of the sales, and all trees within the sale boundary were cuts in 27 percent of the sales. In the remaining 29 percent of the sales, the landowner or advisor marked the tree to be harvested with paint or flagging.

Methods used to contact buyers

Three percent of respondents said they used a written prospectus to contact buyers. Fifteen percent gave tours of the sale area. The majority (68 percent) canvassed mills by phone. A significant proportion of respondents (25 percent) reported that they made no contacts with buyers themselves because "the logger handled it all." In addition, 12 percent were contacted by a mill representative and 19 percent by another log buyer.

Methods used to select buyer and arrive at price

On the average, landowners offered to sell their timber to 2.7 buyers. The average number of bids received was 2.4 and ranged from 1-12. Thirty percent of the landowners contacted only one mill; hence they accepted the first price offered. Half of the landowners contacted two or three mills. The remaining 20 percent contacted four or more mills.

Sixteen percent of respondents reported that they selected the buyer on the basis of stumpage value. The actual number who calculated the stumpage equivalent of their return was probably larger, since many landowners mentioned considering hauling costs in addition to the delivered price. It is likely that many simply don't recognize or understand the term "stumpage value."

Forty-four percent selected the mill offering the highest delivered price and 26 percent said they selected the buyer on the basis of other factors. Among the "other" factors most frequently mentioned were "nearest mill" and "sold to same buyer previously." Fourteen percent of respondents were not sure of the basis on which they sold to the buyer. Price was the only factor considered in

selecting the timber buyer in 29 percent of the sales. The buyer's reputation and other considerations were important selection factors in 67 percent of the sales.

Type of sale

Eighty percent of sales were of logs delivered to the mill. Nine percent were stumpage sales, 6 percent were listed as "other," and in 5 percent of respondents were unaware of what type of sale was made.

Sale purchaser

One or more mills purchased the timber in the majority of sales (70 percent). In 12 percent of the sales, both a mill and an export buyer purchased the timber. An export buyer was the exclusive purchaser in 4 percent of the sales. A logger or independent broker purchased the timber in the remaining 14 percent of the sales. In most cases (67 percent), the landowner was paid per unit delivered. Landowners received lump sum payments in 30 percent of the sales.

Logging arrangements and payments

Thirty-six percent of the respondents paid the logger a percentage of the mill proceeds. This percentage ranged from 29-60 percent and averaged 46 percent. Sixteen percent of respondents paid the logger on a per unit (mbf) basis. The payment per mbf averaged \$ 130 and ranged from \$ 20 to \$ 190. Eleven percent of respondents said the timber buyer paid the logger. In 28 percent of the sales, the landowners did the logging.

Respondents who paid the logger a percentage of the mill proceeds earned an average of \$ 50/mbf less than other owners. Additionally, given the average 54/46

landowner/logger proceeds split, landowners paid an average of \$ 185/mbf for logging costs. This compares to \$ 140/mbf on the average for other landowners.

Use of written agreements

Thirty nine percent of respondents used a written agreement with the logger to govern the harvest operation. The most common elements included in the agreements were payment schedules and guarantees (86 percent of the agreements), liability insurance (74 percent), logging procedures and restrictions (68 percent), fire protection measures (65 percent), designation of harvestable trees (63 percent), logging road and skid trail specifications (52 percent), and guarantees of performance and bonding (52 percent).

Landowner satisfaction with the sale results

Landowners were asked to rate their satisfaction with the price received and the post-harvest condition of their woodland. A five point scale was used, with 1 corresponding to "very dissatisfied" and 5 corresponding to "very satisfied." Eighty-two percent of respondents were somewhat or very satisfied with the price they received, and 80 percent were somewhat or very satisfied with the condition of their woodland after harvest.

Discussion:

These results are largely consistent with those observed in other studies. There are a few notable differences, however. Only 13 percent of respondents to this study said a logger designated the trees to be harvested. Other studies (e.g. Rosen and others 1989) have reported much higher proportions of so-called "loggers-choice" sales. Thirty percent of respondents to this study

contacted only a single buyer, compared to half or more in other studies (e.g. Hickman 1983, Royer and Kaiser 1988). The proportion of respondents who did their own logging (28 percent) was higher than expected, although comparative figures are not available from other studies. The fact that so many respondents (56 percent) sorted their timber was also surprising. These differences suggest that Oregon NIPF landowners may be more sophisticated timber marketers than their peers in other states. On the other hand, only six percent of respondents used technical assistance. This is lower than reported elsewhere (e.g. Rosen 1989). However, only private consultants provide assistance in timber sale preparation in Oregon. In some other states these services are also provided by publicly-employed foresters. The use of sale advisors, including forestry consultants, is discussed in depth in the following section.

The majority of respondents (71 percent) considered non-price factors (e.g. "reputation," "fair scale," "sold to same mill previously") in selecting the buyer. This suggests that price is only one part of the utility function for most landowners.

Table 7 below summarizes respondents' use of elements of the prescriptive marketing approach.

Table 7 -- Use of elements of the prescriptive marketing approach (after Cleaves 1992)

	yes	no
measured growth	28	72
measured age	40	60
measured volume	40	60
marked timber	29	71
sorted timber	56	44
used prospectus	3	97
offered sale tour	15	85
calculated stumpage value	16	84
used consultant	6	94

(N=237)

Implications of the Use of Different Sale Managers

Owner-managed, logger or buyer-managed, and consultant-managed sale were compared with respect to the marketing procedures used, price received, and landowner's satisfaction with the sale results.

Sale Procedures

Chi-square tests revealed statistically significant patterns among sale managers with regard to measurement of the stand volume, growth, and age, the use of written sale agreements, landowners' levels of price familiarity, and landowner satisfaction with the sale results. Bonferoni (Schlotzhauer and Ladle 1987) tests showed statistically significant differences in the number of buyers contacted and the sale price.

A smaller proportion of respondents who relied on the logger or timber buyer to manage their sale measured these stand attributes than respondents who managed their own sales or hired a consultant. Measurement of stand attributes was most common in consultant-managed sales (Table 8).

Landowners who handled their own sales were more familiar with price levels and trends than landowners who employed consultants or relied on the logger or buyer to handle the sale details (Table 9). Consultant sales also involved contact with a larger number of buyers (an average of 3.57 versus 3.17 and 2.11 for owner and logger-managed sales respectively), and were more likely to include written agreements (Table 10). Such agreements were used in 61 percent of consultant-managed sales, 50 percent of logger-managed sales, and 23 percent of owner-managed sales. However, in 60 percent of owner-managed sales the landowner

did the logging, so a written agreement was not applicable.

Despite the fact that consultant-managed sales generally involved the use of more elements of the prescriptive marketing model than the other two types of sales, they earned lower per unit prices on the average than landowner managed sales (\$ 461/mbf versus \$ 425/mbf) (Table 10), even before including consultants' fees. However, this difference was not statistically significant. Logger or buyer managed sales earned an average of \$ 387/mbf. This was significantly different from the average price received in owner-managed sales, but not from the average price received in consultant-managed sales.

Differences in respondents' levels of satisfaction with the results of their sales were also associated with the type of sale advisor used. Twenty-six percent of the respondents who relied on the logger or buyer to handle the sale were neutral or dissatisfied with the price received. The corresponding figures for landowner- and consultant-managed sales were 10 and 17 percent respectively. Regarding satisfaction with the condition of the woodland after harvest, dissatisfaction or neutrality was reported by 26 percent of those with consultant-managed sales, 22 percent of those with logger or buyer-managed sales, and 10 percent of owner-managed sales. The chi-square statistic for both of these patterns was significant (Tables 11 and 12).

Table 8 -- Efforts to measure stand attributes by advisor class

	(percent)		
	measured volume (Q16d)	measured growth (Q16b)	measured age (Q16a)
Sale advisor:	yes	yes	yes
Landowner	40	37	50
Logger/buyer	34	18	28
Consultant	65	41	53
(N=237)	$\chi^2=6.64, p=0.036, 2df$	$\chi^2=11.51, p=0.003, 2df$	$\chi^2=11.5, p=0.003, 2df$

Table 9 -- Self-assessment of price familiarity

Advisor	Self-assessment of price familiarity (Q9)			Total
	Unfamiliar	Somewhat familiar	Very familiar	
Landowner	8	42	50	100
Logger/buyer	42	46	12	100
Consultant	40	45	15	100
(N=247)	$\chi^2=57.7, p<0.001, 4 df$			

Table 10 -- Mean number of buyers contacted and price received

	Mean number of buyers contacted	Mean price received (\$/MBA)
Landowner	3.17	461
Logger/advisor	2.11	387
Consultant	3.57	425
(N=248)	$F=10.58, 2/224 df, p=0.0001$	$F=5.76, 2/152 df, p=0.0039$

Table 11 -- Landowner satisfaction with the price received

Satisfaction with price received (Q14)				
Advisor	Very	Somewhat	Neither/dis.	Total
Landowner	54	29	17	100
Logger/buyer	34	40	26	100
Consultant	55	35	10	100
(N=245)	$\chi^2=9.82, p=0.044, 4 \text{ df}$			

Table 12 -- Landowner satisfaction with the post-sale stand condition

Satisfaction with condition of woodland (Q14)				
Advisor	Very	Somewhat	Neither/dis.	Total
Landowner	81	12	7	100
Logger/buyer	46	32	22	100
Consultant	58	16	26	100
(N=245)	$\chi^2=30, p<0.001, 4 \text{ df}$			

Discussion: Sources of Advice and Assistance

Nearly half of the landowners in the study relied on a logger or timber buyer to handle the details of their sale. In most cases, this meant the logger or buyer made the primary decisions about how to sell the timber and how many and which trees to cut. This study did not evaluate the relationship between the type of sale advisor used and the residual stand condition. However, the study data do indicate that landowners who relied on the logger or buyer earned lower prices and were somewhat less satisfied on the average than landowners who managed their own sales or employed a consultant.

The large proportion of logger-managed sales observed in this survey is consistent with the results of other NIPF landowner studies. In addition, one other study (Rosen and others 1989) also found that landowners who relied on the logger to manage the sale were less satisfied with both the sale price and the post-sale condition of their woodland.

In contrast to the results observed in other studies, however, landowners who hired a consultant did not earn higher per unit sale prices. There are several possible explanations for this. One is that the data set was too small to detect actual differences associated with consultant managed sales. Another is that consultants were no more skilled at marketing timber than the more skillful "do-it-yourself" landowners.

Still another potential reason is that differences in the quality of the timber harvested under the three types of sale managers accounted for such great variations in price that any variations from differences in marketing procedures were invisible. In partial cuts, landowners and loggers may remove the most valuable trees, whereas foresters may thin more conservatively. Data from several technical assistance studies (e.g. Cabbage 1983, Hubbard and Abt 1988) support this idea. Thus it is possible that, given the quality of timber harvested, consultants were the most effective marketers. Finally, it should be noted that the landowners themselves indicated whether or not they used a consultant. Loggers and timber buyers may identify themselves as consultants but may not offer the same kind of services and provide the same level of expertise as "true" forestry consultants. No data were available on the qualifications of consultants used.

Influence of Sale Procedures on the Sale Price

Multiple regression analysis was performed to evaluate the relationship between sale procedures and delivered log prices. Seventeen variables were considered in the analysis, of which 11 corresponded to elements of the prescriptive marketing approach. The other 6 variables represented marketing procedures and sale attributes that previous studies suggested might be determinants of price.

Results:

Five variables met the 0.05 significance standard for inclusion in the final model. Three of these variables corresponded to elements of the prescriptive approach: price familiarity, use of the export market, and the the number of buyers contacted. The other two variables in the model represented buyer initiation of the sale and payment of the logger on a percentage basis. Table 13 describes all 17 variables used in the model. Table 14 summarizes the regression model and coefficients.

Table 13 -- Regression variable definitions

Variable	Explanation (code)
<u>Elements of the normative model:</u>	
Export	Sold part of all of timber to export buyer (coded 1=yes, 0=no)
Stump	Compared offers on the basis of stumpage equivalent values (coded 1=yes, 0=no)
Contacts	Number of buyers contacted (actual value coded)
Un	Self-assessed price familiarity (coded 1=very unfamiliar, 0=otherwise)
Some	Self-assessed price familiarity (coded 1=somewhat familiar, 0=otherwise)
Very	Self-assessed price familiarity (coded 1=very familiar, 0=otherwise)
Sort	Sorted (merchandized) logs (coded 1=yes, 0=no)
Mailing	Issued mailing to potential buyers (coded 1=yes, 0=no)
Tour	Offered on-site buyer tour (coded 1=yes, 0=no)
Gro	Measured stand growth rate (coded 1=yes, 0=no)
Inv	Inventoried stand volume (coded 1=yes, 0=no)
<u>Non-model elements:</u>	
Own	Owner-managed sale (coded 1=yes, 0=otherwise)
Log	Logger or buyer-managed sale (coded 1=yes, 0=otherwise)
Cons	Consultant-managed sale (coded 1=yes, 0=otherwise)
Ownlog	Did own logging (coded 1=yes, 0=otherwise)
Salevol	Sale volume (MBA) (actual value coded)
Pcnt.	Paid logger on a percentage split basis (coded 1=yes, 0=no)

Table 14 -- Results of regression of procedure variables on sale price

Variable	Parameter est.	SE	F - value	Prob > F
Intercept	391.7	22.2	311.7	0.0001
Export	96.8	28.6	11.4	0.0010
Initiate	-82.5	34.5	5.7	0.0182
Contacts	17.9	5.9	9.2	0.0030
Un	-90.1	33.0	7.4	0.0074
Pcnt.	-53.9	22.6	5.7	0.0189
Model F =11.1 , Prob>F = 0.0001 R ² =0.36 (N=126)				

Discussion:

The practical significance of the regression coefficients is discussed below.

Buyer vs. seller initiation of the sale

Landowners who sell in response to procurement efforts earn lower prices than landowners who initiate their own sales. This is not surprising, since most of these landowners are probably less well-informed than others about prices and pricing systems, and are more likely to rely on the buyer for this information. In addition, such passive sellers probably put less thought into deciding when to sell. Notably, most landowners (84 percent) said that they initiated their own sales. It is not clear whether this pattern is typical; a sample drawn from a period of more aggressive procurement activities might show a lower proportion of self-initiated sales.

Price familiarity

The regression model indicated that landowners who were very unfamiliar with prices, according to their self-

assessment, earned considerably lower prices than landowners with a better knowledge of price levels and trends.

Payment of the logger on a percentage split basis

The advantage of paying on this basis is its simplicity: most of the marketing decisions are left up to the logger, and the landowner knows exactly what proportion of the sale revenue he is getting. In addition, landowners may reason that the logger has the incentive to seek the highest possible price under this arrangement. However, as log values increase, so do logging costs. For example, a landowner who might have paid \$125/mbf a few years ago now pays \$175/mbf or more, even though the logger's costs have not increased by nearly this much. In addition, logger-managed sales earned lower prices on the average than either consultant- or owner-managed sales, suggesting that many loggers' marketing techniques are no better than most landowners'.

Contact with a large number of potential buyers

The variable corresponding to the number of buyers contacted was highly significant in the regression model and made the single largest contribution to the r-squared value (partial r-squared value=0.12) As theory would suggest, the more potential buyers the landowner contacts, the better his chance is of extracting the highest possible price.

Notably, there were no statistically significant differences in the number of offers received over a large range of sale volume. Additionally, the ratio of the number of offers received to the number of mills contacted was close to one across all sizes of sales. These results suggest that landowners may be able to obtain additional offers simply by contacting more mills, regardless of the

size of their sale.

Use of export markets

The choice to export some or all of a timber sale is a marketing decision; the ability to do so depends on the quality of timber available in relation to the current specifications of the export market. Hence some portion of the price variation accounted for by the regression model is a function of the physical characteristics of the timber and not marketing procedures.

The model accounted for about 36 percent of the variation in price. To compare, a study of 45 NIPF timber sales in Florida (Hubbard and Abt 1988) reported an R-squared value of 0.45. The two studies differed in important respects, however. The Florida study used stumpage equivalent price as the dependent variable, whereas this study used the delivered log price. One would expect stumpage price variations to be greater because of differences in logging and hauling costs. On the other hand, the Florida study estimated the market value of the timber based on results from a stump cruise. This study made no attempt to measure variations in price due to grade, species, or quality differences. Such differences were reflected in the model only with respect to the export variable, as described above.

The variation in sale price not explained by the model is probably a function of differences in log quality and location. As noted previously, there are substantial differences in price for different grades of logs and species; hence the fact that the regression model explained only about a third of the variation in price was not unexpected. Also, delivered prices probably vary depending

on location. Landowners in an area where logs are purchased by only a few mills may earn lower prices than landowners in areas with more competitive markets. The model does suggest that marketing decisions are important; it is not merely the physical characteristics of the timber and other factors external to the marketing process that determine price.

There were a few surprises in the list of variables that were not included in the regression model. Previous studies have shown technical assistance to be associated with higher sales prices. Possible reasons for the lack of significance of this variable are discussed in an earlier section. Also notable was the insignificance of the sale volume, contrary to results observed elsewhere (e.g. Hubbard and Abt 1988). As depicted in figure 2, the average price difference between sales of 20-49 mbf and 250+ mbf was only \$ 19 (\$ 429 vs. \$ 458 respectively). This difference was not statistically different. Sales of less than 20 mbf did garner a lower price: \$ 388/mbf. It should be noted that while there is not be a price premium for volume, logging economies of scale might result in lower stumpage values for smaller sales.

The study generated no evidence for the contention that the use of a prospectus, offering an on-site buyer tour, evaluating the stumpage value equivalent of offers, and sorting the timber for sale to different markets were associated with the sale price. However, with the exception of the latter activity, few landowners employed these procedures. Definitive conclusions regarding their effects on sale price would require a much larger sample size.

If anything, the regression model results suggest that "passive" marketers fare poorly compared to other

landowners. Merely by initiating the sale, contacting several potential buyers, gaining some familiarity with current price levels and trends, and avoiding payment of the logger on a percentage split basis, a landowner could net considerably higher prices than he otherwise would. However, whether the marketing behavior of "passive" owners is a function of their objectives or of lack of knowledge and experience is unclear. This topic needs further study.

Finally, a cautionary note is in order. There were only 126 observations used in the regression equation. This was because many survey respondents did not report the price they received. It is assumed that the missing prices value are not higher or lower on the average than prices reported by respondents who contributed price data to the model. Also, as with many observational studies, there were numerous correlations among the explanatory variables. As a result, the set of variables selected in the regression model does not represent the only possible set of procedure variables associated with sale price. Rather, it represents one set of explanatory variables that can be used to predict some of the variation in price.

Owner Characteristics and Sale Procedures

Hypotheses:

What are the characteristics of landowners who used sale procedures the regression equation suggests are associated with sale price? How do these landowners differ from other survey respondents, if at all? These questions were addressed by testing the relationships between individual ownership characteristics and sale procedures, using both chi-square and t-tests where appropriate. The landowner's choice of a sale manager was included as a procedure variable. Although not significant in the final regression model, this variable is of considerable practical significance.

The ownership characteristics considered were: 1) acres of forest land owned; 2) residence status (resident or non-resident); and 3) income. Also considered was previous timber sales experience. Expected results were as follows:

Ownership size

Numerous studies have shown ownership size to be an important determinant of harvesting behavior (Alig and others 1990). Unpublished data from an Oregon study (ODF 1989) reveal that both the proportion of harvests and various management activities increases as the size class increases. This led to the expectation that owners of larger holding would also be more likely to use elements of the prescriptive marketing approach.

Residence status

The rationale for testing this variable was that non-residents may hold income-oriented ownership objectives to a greater extent than residents, and so would be more apt to

develop their marketing skills.

Income

Binkley's (1981) utility-maximization model suggests that as non-timber income increases, landowners place increasing value on the non-monetary attributes of their forest land. Extending this idea to marketing practices, one might expect higher income landowners to exert more control over the harvest operation in order to minimize aesthetic impacts. This would be manifested in the use of written agreements and marking the timber prior to harvest, for example.

Previous experience

Rosen and others (1989) found no relationships between timber sales experience and the use of several marketing practices. They concluded that many landowners simply repeat the same marketing behavior again and again. Intuitively, however, one might expect experienced landowners to exhibit more sophisticated marketing behavior.

Results and Discussion:

Because of the large number of tests involved, summary statistics are included in Appendix 5 rather than in the body of the text. The results are summarized in tabular form in Table 15.

Ownership size

Larger ownership size corresponded with higher levels of price familiarity, a higher proportion of sales to export buyers, a smaller proportion of logger-managed sales, and a smaller proportion of sales in which the logger was paid on a percentage split basis. There was no statistically significant relationship between ownership size and the

proportion of buyer-initiated sales.

In essence, these results suggests that larger owners are better timber marketers by normative standards. This is not surprising given the importance of size to harvest and investment behavior.

Experience

Respondents with previous timber sales experience tended to be more familiar with prices, were less likely to rely on the logger or buyer to manage their sale, and were more likely to sell to an export buyer than respondents who first sold timber in 1991.

Contrary to results reported by Rosen and others (1989), experienced landowners in this study did a better job of marketing by normative standards than inexperienced landowners. However, there was no statistically significant difference in the proportions of experienced and inexperienced landowners who paid the logger on a percentage split basis, suggesting that this payment arrangement is an entrenched tradition.

Residence

A higher proportion of non-residents than residents sold to an export buyer and said they were "very familiar" with prices. Further analysis revealed that, as expected, a much larger proportion of non-residents than resident owners had primarily income related ownership goals. This might be an important fact to consider when designing and targeting marketing education programs.

Income

There were no statistically significant patterns between income levels and both the use of written agreements and marking the timber prior to the sale. This suggests that while higher income landowners may have more concern for aesthetics and other non-monetary attributes of their stand, their concern is not reflected in marketing behavior.

Table 15 -- Matrix of sale procedure/ownership characteristic relationships

	Acres	Experience	Residence status
Sale to export buyer	** (91)	** (96)	** (101)
Buyer initiated sale	n.s. (92)	n.s. (97)	n.s. (102)
Paid logger on pcnt. basis	** (93)	n.s. (98)	n.s. (103)
Price familiarity	** (94)	** (99)	** (104)
Sale manager	** (95)	** (100)	n.s. (105)

Note: The numbers in parenthesis in the table refer to page numbers in the text where the test results are displayed in detail.

Key to table:

n.s. = not significant

* = significant at = 0.1

** = significant at = 0.05

CONCLUSIONS AND POLICY IMPLICATIONS

Respondents with small ownerships (less than 50 acres) controlled only a small fraction of the timber base represented in the survey but contributed over a third of the harvest volume. If this pattern is representative and is consistent from year to year, it would have important policy implications. An on-going debate in forestry is whether to target programs to the largest number of owners or the greatest number of acres. Since larger landowners control the most of the timber base and exhibit higher participation rates in harvest and management activities, orienting programs to these owners, it is often argued, will have the greatest impact on the landscape. However, most studies consider the decision to harvest or manage rather than the intensity of the activity. As this study illustrates, the intensity dimension is important. Since smaller landowners harvested more volume per acre and a greater proportion of their ownerships, and were more numerous than larger owners, their contribution to the harvest volume was far larger than one might expect.

Most landowners managed their own sales or left the primary marketing decisions up to the logger. In only a minority of sales did the seller contact more than two or three local mills. Price was the sole criterion in selecting the buyer in less than a third of the sales. These results suggest that informal networks among landowners, loggers, and buyers are the primary mechanism by which NIPF timber moves into the market. While this behavior may appear irrational from a profit-maximizing standpoint, it may be perfectly rational given landowners' objectives. More research is needed to determine the types and importance of these non-monetary attributes.

What role does this leave for the prescriptive approach to marketing? Although most survey respondents were satisfied with the results of their sales, many could have made large financial gains by marketing their timber differently. Higher sale prices might have in turn induced landowners to invest more heavily in timber production. Thus one important marketing education task is to demonstrate the potential for obtaining higher prices through improved marketing strategies. Also, the prescriptive model is intended to help landowners maximize their utility in making tradeoffs between monetary and non-monetary objectives. Hence even if landowners did not follow the model to increase their sale returns, they would still potentially benefit by increasing their satisfaction with the non-financial aspects of the sale.

To what types of woodland owners should marketing education programs be directed? This study shows that experienced landowners with larger holding are more effective timber marketers by normative standards. These landowners would probably be easier to reach than other landowners since many are already actively involved in extension programs, woodland owner groups, and so on. However, the substantial contribution of smaller landowners to the harvest base suggests that they should also be included in marketing education efforts.

This study did not evaluate the effects of marketing practices on the residual stand condition or landowner satisfaction. These are two important sale results worthy of further research.

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APPENDICES

APPENDIX 1 - SUMMARY OF RESPONSE RATES

Table 1 -- Mailing Schedule and Response Rates

<u>Mailing date</u>	<u>Contents</u>	<u>Percent</u>
Jan. 18, 1993	Letter and questionnaire	
Jan. 28, 1993	Reminder postcard	39
Feb. 22, 1993	Letter and questionnaire	<u>16</u>
		55
		(N=254)

Table 2 -- Sample Size and Disposition of Questionnaires

<u>Outcome</u>	<u>Percent</u>	<u>(N)</u>
Completed	43**	254
Undeliverable	6	38
Refused	3	14
Did not harvest	13	80
Not applicable*	3	17
Not returned	33	198
Totals	100	601

* includes respondents who did not own forest land at the time of harvest or owned more than 10,000 acres of forest land, and/or respondents who owned a processing facility.

** of initial sample. Adjusted sample base was 466, obtained from the original 601 less 135 (not applicable, did not harvest, not delivered). Hence the response rate based on the adjusted sample base was 55 percent (254 usable questionnaires out of 466).

APPENDIX 2 - SUMMARY OF TESTS FOR NON-RESPONSE BIAS

Table 1 -- Comparison of mail and telephone survey, Q2

Harvest type:	Mail	Telephone
Partial cut	21	26
Clearcut	46	60
Salvage	20	7
Other	13	7
Total	100	100
(N)	254	42
$\chi^2 = 5.48$, $p = 0.12$, 3 df.		

Table 2 -- Comparison of mail and telephone survey, Q9

	Mail	Telephone
Very familiar	28	39
Generally familiar	44	32
Unfamiliar	28	29
Total	100	100
(N)	254	42
$\chi^2 = 2.80$, $p = 0.25$, 2 df.		

Table 3 -- Comparison of mail and telephone survey, Q15

	Mail	Telephone
Landowner	45	44
Logger/buyer	49	44
Consultant	6	12
Total	100	100
(N)	254	42
$\chi^2 = 2.42$, $p = 0.30$, 2 df.		

Table 4 -- Comparison of mail and telephone survey, Q26

	Mail	Telephone
Percentage split	34	26
Paid per mbf cut	27	21
Own logging/other	39	52
Total	100	100
(N)	254	42
$\chi^2 = 2.97$, $p = 0.24$, 2 df.		

Table 5 -- Comparison of mail and telephone survey, Q3

	Mail	Telephone	Difference
Mean	18	23	-5
SE	3	4	
Sample size	242	40	
$t = 1.07$, $p = 0.27$			

Table 6 -- Comparison of mail and telephone survey, Q33

	Mail	Telephone	Difference
Mean	164	222	+58
SE	51	37	
Sample size	222	40	
$t = 0.93$, $p = 0.35$			

Table 7 -- Comparison of mail and telephone survey, Q4 & 5

	Mail	Telephone	Difference
Mean	147	120	-27
SE	31	16	
Sample size	134	25	
$t = 0.69$, $p = 0.43$			

APPENDIX 3 - COPY OF QUESTIONNAIRE/RESPONSE FREQUENCIES

- 1) Did you harvest any timber from your property during 1991? (Circle one number)

- 1 YES
2 NO

IF YOU DID NOT HARVEST TIMBER DURING 1991, IT IS NOT NECESSARY FOR YOU TO COMPLETE THIS QUESTIONNAIRE. PLEASE RETURN THE QUESTIONNAIRE IN THE POSTAGE PAID ENVELOPE SO THAT WE MAY TAKE YOUR NAME OFF THE MAILING LIST.

The following questions refer to the timber harvest you made in 1991.

- (2) What type of harvest did you conduct in 1991? (Circle one number)

Response category	Percent
CLEARCUT	22
PARTIAL CUT OR COMMERCIAL THIN	47
SALVAGE, REMOVED SOME TREES	17
SALVAGE, REMOVED MOST OR ALL OF TREES	2
CONVERTED AN UNDERSTOCKED FOREST	2
OTHER	5
MIX	5
(N=251)	100

- (3) How many acres did you harvest?

(N=242)	
MEAN	17.7
SD	45.5
RANGE	1-500
MED	6
SUM	4149

(4) How much volume did you harvest?

	(MBA)	(N=140)
	MEAN	17.7
	SD	45.5
	RANGE	1-500
	MED	6
	SUM	4149

OR

	(Truckloads)	(N=85)
	MEAN	11.4
	SD	14
	RANGE	1-70
	MED	5
	SUM	970

OR

	(Tons)	(N=7)
	MEAN	452
	SD	545
	RANGE	18-1400
	MED	214
	SUM	2712

(5) What kind of trees did you harvest? (Circle one number)

Response category	Percent
MOSTLY CONIFERS	88
MOSTLY HARDWOODS	10
MIX	2
(N=249)	100

(6) About how old was the timber you harvested?

(years)	(N=223)
MEAN	52
SD	25
RANGE	10-200+
MED	50
SUM	-

(7) Were you contacted before you sold timber in 1991 by a logger or timber buyer who offered to purchase your timber? (Circle one number)

Response category	Percent
NO	63
YES	37
(N=250)	100

(8) Did you offer to sell your timber to one of these buyers? (Circle one number)

Response category	Percent
NO	57
YES	43
(N=90)	100

(9) How familiar were you with log or timber prices before you sold timber in 1991? (Circle one number)

Response category	Percent
VERY FAMILIAR	28
GENERALLY FAMILIAR	44
UNFAMILIAR	28
(N=248)	100

(10) Below are several reasons or objectives for harvesting timber. What were the three most important reasons you harvested timber in 1991? (Place a letter from the list below in each box)

- | | |
|--|---|
| <p>___ MOST IMPORTANT REASON</p> <p>___ SECOND MOST IMPORTANT REASON</p> <p>___ THIRD MOST IMPORTANT REASON</p> <p>(N=172)</p> | <p>A. Logger or timber buyer recommended harvest</p> <p>B. Forester/ consultant recommended harvest</p> <p>C. Timber was mature</p> <p>D. To clear land for sale of property</p> <p>E. Needed income</p> <p>F. To avoid possible future harvest restrictions</p> <p>G. Harvest scheduled in management plan</p> <p>H. To avoid possible future log export restrictions</p> <p>I. To improve stand condition and/or value</p> <p>J. Timber needed thinning</p> <p>K. To salvage dead, diseased, or damaged timber</p> <p>L. Buyer offered good price</p> <p>M. Other _____</p> |
|--|---|

(11) How much of a priority were monetary returns in your decision to sell timber? (Circle one number)

Response category	Percent
HIGH PRIORITY	31
MEDIUM PRIORITY	39
LOW PRIORITY	30
(N=252)	100

- (12) How satisfied were you with the condition of your woodland after the harvest? (Circle one number)

Response category	Percent
VERY SATISFIED	60
SOMEWHAT SATISFIED	21
NEITHER SATISFIED NOR DISSATISFIED	11
SOMEWHAT DISSATISFIED	3
VERY DISSATISFIED	4
(N=251)	100

- (13) If you were dissatisfied (responses "4" or "5" above), why were you dissatisfied?

- (14) How satisfied or dissatisfied were you with the price you received? (Circle one number)

Response category	Percent
VERY SATISFIED	45
SOMEWHAT SATISFIED	35
NEITHER SATISFIED NOR DISSATISFIED	14
SOMEWHAT DISSATISFIED	4
VERY DISSATISFIED	2
(N=245)	100

The following questions concern how you went about the process of selling timber in 1991. Please answer the questions to the best of your ability - we are very interested in whatever information you can provide.

(15) Who handled most of the details of your timber sale? (Circle one number)

Response category	Percent
YOU, THE LANDOWNER	42
THE LOGGER	44
THE TIMBER BUYER	5
A PRIVATE CONSULTANT	6
OTHER ADVISOR (PLEASE SPECIFY)	2
(N=251)	100

(16) Did you or your advisor measure any of the following prior to the sale?
(Circle either a "1" or "2" for each type of measurement)

Response category	Did measure	Didn't measure
AGE OF THE TIMBER	40	60
GROWTH RATE OF TIMBER	28	72
DEGREE OF CROWDING OF TREES IN STAND	45	55
STAND VOLUME IN BOARD FEET	39	61
OTHER (PLEASE DESCRIBE)	3	97
(N=237)		

(17) What type of sale did you choose? (Circle one number)

Response category	Percent
SOLD CUTTING RIGHTS TO STANDING TIMBER	9
SOLD LOGS DELIVERED TO THE MILL	81
OTHER (PLEASE DESCRIBE)	6
(N=247)	100

- (18) How did you make contact with potential timber buyers? (Circle either a "1" or "2" for each type of contact)

Response category	YES	NO
PUT OUT BIDS TO POTENTIAL BUYERS (MAILING)	3	97
CONTACTED MILLS OR LOG BROKERS BY PHONE	68	32
PUT SALE NOTICE IN NEWSPAPER	< 1	99
CONDUCTED TOUR OF SALE AREA	15	85
MILL REPRESENTATIVE CONTACTED YOU	12	88
OTHER LOG BUYER CONTACTED YOU	14	86
OTHER (PLEASE DESCRIBE)	25	75
(N=240)		

- (19) How many mills and/or log buyers did you offer to sell your timber to?

	(N=228)
MEAN	2.7
SD	1.8
RANGE	0-12
MED	2
SUM	-

- (20) How many offers (verbal or written) did you receive from these mills/buyers?

(years)	(N=211)
MEAN	2.4
SD	1.9
RANGE	0-12
MED	2
SUM	-

(21) How did you select the timber buyer? (Circle one number)

Response category	Percent
SELECTED MILL OFFERING HIGHEST DELIVERED PRICE	44
SOLD ON THE BASIS OF HIGHEST STUMPAGE VALUE (DELIVERED PRICE LESS LOGGING AND HAULING COSTS)	16
OTHER (PLEASE DESCRIBE)	26
NOT SURE	14
(N=243)	100

(22) Was price the only factor you considered in selecting the timber buyer? (Circle one number)

Response category	Percent
YES	29
NO, BUYER'S REPUTATION WAS A FACTOR IN SELECTION	47
NO, OTHER FACTORS WERE IMPORTANT IN SELECTION OF BUYER	24
(n=241)	4

(23) Who purchased your timber? (Circle one number)

Response category	Percent
MILL	70
EXPORT LOG BUYER	4
LOGGER	8
INDEPENDENT TIMBER BUYER OR BROKER	5
MILL AND EXPORT LOG BUYER	13
OTHER (PLEASE DESCRIBE)	1
(N=246)	100

(24) On what basis were you paid for the timber you sold? (Circle one number)

Response category	Percent
PAID PER UNIT DELIVERED	67
LUMP SUM PAYMENT IN ADVANCE	4
LUMP SUM OR INSTALLMENT PAYMENT AFTER DELIVERY TO MILL	26
DOWN PAYMENT FOLLOWED BY PER UNIT PAYMENT DURING DELIVERY	1
NOT SURE	3
(N=242)	100

(25) How much were you paid for the timber you sold?

(PER MBF)	(N=155)
MEAN	429
SD	132
RANGE	14-1200
MED	425
SUM	-

OR

(TOTAL)	(N=25)
MEAN	32
SD	14
RANGE	5-56
MED	31
SUM	-

OR

(PER TON)	(N=18)
MEAN	52
SD	25
RANGE	10-200+
MED	50
SUM	-

(26) On what basis did you pay the logger? (Circle one number)

Response category	Percent
PAID LOGGER A PERCENTAGE OF MILL PROCEEDS	36
PAID LOGGER ON A PER UNIT (MBA OR TON) BASIS	16
TIMBER BUYER PAID LOGGER	11
DID YOUR OWN LOGGING	28
OTHER (PLEASE DESCRIBE)	8
NOT SURE	2
(N=244)	100

(27) How much did you pay to have the timber logged and delivered to the mill?

(PERCENT OF MILL DELIVERED PROCEEDS)	(N=87)
MEAN	46
SD	7
RANGE	29-60
MED	50
SUM	-

OR

(PER MBA)	(N=39)
MEAN	130
SD	39
RANGE	20-190
MED	141
SUM	-

OR

(TOTAL)	(N=25)
MEAN	1600
SD	2278
RANGE	125-9800
MED	690
SUM	-

- (28) Did you use a written contract with the logger and/or timber buyer for the harvesting operation? This is not the same as a purchase order or sale agreement for the timber. (Circle one number)

NO	61
YES	39
(n=234)	100

(29) Please indicate which of the following provisions were included in the terms of the contract. (Circle either a "1" or a "2" for each contract provision)

(years)	In contract	Not in contract
PAYMENT SCHEDULES AND GUARANTEES	86	14
DESIGNATION OF HARVESTABLE TREES	63	37
LIABILITY INSURANCE	74	26
FIRE PROTECTION MEASURES	65	35
LOGGING PROCEDURES AND RESTRICTIONS	68	32
LOGGING AND SKID ROAD SPECIFICATIONS	52	48
GUARANTEES OF PERFORMANCE AND BONDING	52	48
OTHER (PLEASE DESCRIBE)	9	91
(N=92)		-

(30) How were trees selected for harvest? (Circle one number)

ALL TREES WITHIN SALE BOUNDARY WERE CUT	27
TREES OVER OR UNDER CERTAIN DIAMETERS WERE CUT	14
LOGGER/LOG BUYER SELECTED TREES TO CUT	13
LOGGER/BUYER SELECTED TREES WITH DIRECTION FROM YOU OR ADVISOR	17
TREES WERE MARKED WITH PAINT OR FLAGGING BY YOU OR ADVISOR	29
NOT SURE	1
(N=242)	100

- (31) Did you cut and sort logs by species, size, or grade for delivery to different mills? (Circle one number)

YES	56
NO	44
(N=236)	100

- (32) What are your plans for harvesting in the future? (Circle one number)

WILL NOT HARVEST IN FUTURE - NO MATURE TIMBER WILL BE AVAILABLE	13
WILL NOT HARVEST IN FUTURE - EVEN IF MATURE TIMBER IS AVAILABLE	9
MAY HARVEST IN FUTURE	37
PLAN TO HARVEST IN THE NEXT FIVE YEARS	29
PLAN TO HARVEST IN SIX OR MORE YEARS	6
SOLD LAND	5
(N=244)	100

Now we would like to ask you several questions about your forest land.

- (33) How many acres of any type of land do you own in the state of Oregon, and how many acres are forested?

(TOTAL ACRES)	(N=240)
MEAN	228
SD	664
RANGE	0-7223
MED	56
SUM	53333

(FOREST ACRES)	(N=231)
MEAN	164
SD	556
RANGE	0-7200
MED	30
SUM	36840

- (34) How many individual parcels of forest land do you own in Oregon?

	(N=235)
MEAN	2
SD	2.7
RANGE	0-30
MED	1
SUM	-

(35) How would you classify your property ownership? (Circle one number)

INDIVIDUAL	27
JOINT (WITH SPOUSE)	57
PARTNERSHIP	6
CORPORATION	4
UNDIVIDED ESTATE	2
OTHER (PLEASE DESCRIBE)	4
(N=244)	100

(36) How did you acquire your property? (Circle one number)

PURCHASED FROM RELATIVE	10
PURCHASED FROM NON-RELATIVE	70
INHERITED	11
GIFT	1
OTHER (PLEASE DESCRIBE)	8
(N=246)	100

(37) Do you live on or immediately adjacent to your forest land? (Circle one number)

YES	29
NO	71
(N=247)	100

- (38) How many years have you owned your forest land? If you own more than one piece of land, please answer for the parcel you have owned the longest. (Circle one number)

	(N=216)
0-5 YEARS	25
6-10 YEARS	13
11-15 YEARS	14
16-20 YEARS	10
21-25 YEARS	9
25+ YEARS	28
(N=250)	100

- (39) Below are several possible reasons or goals for owning forest land. What are the three most important reasons you own forest land? (place a letter from the list below in each box)

___ MOST IMPORTANT REASON	A. Personal or family recreation
___ SECOND MOST IMPORTANT REASON	B. Wildlife appreciation
___ THIRD MOST IMPORTANT REASON	C. Part of a farm or ranch
	D. Improve land and protect from abuse
	E. Grow timber for income
	F. Hold land as an investment
	G. Pass land on to heirs
	H. Experience the joy of working on your land
	I. Create pleasant surroundings for your residence
	J. Other goals: _____

(N=242)

- (40) Did you perform any forestry practices on your land prior to your 1991 timber sale? Please circle the appropriate number(s) after each activity listed below.

	Not done in past	Done in last 10 years	Done before 1981	Done both periods
SALVAGE DEAD, DAMAGED, OR DYING TIMBER	48	39	7	6
PLANT TREES FOR REFORESTATION	47	40	5	8
TIMBER STAND IMPROVEMENT ACTIVITIES	61	29	4	6
CONSULT WITH FORESTER	60	33	3	4
PARTIAL CUT OR COMMERCIALY THIN TIMBER	53	31	10	6
CLERKED PATCHES OF TIMBER	67	22	8	2
OTHER (PLEASE DESCRIBE)	94	4	<1	1
(N=237)				

Finally, a couple of questions about you

- (41) What is your age? (Circle one number)

LESS THAN 30 YEARS	2
30-39 YEARS	14
40-49 YEARS	24
50-59 YEARS	18
60-69 YEARS	23
70+ YEARS	18
(N=250)	
100	

(42) What is your annual household income? (Circle one number)

LESS THAN \$ 20,000	19
\$ 20,000 - \$ 39,999	33
\$ 40,000 - \$ 59,999	26
\$ 60,000 - \$ 79,999	11
\$ 80,000 - \$ 99,999	5
GREATER THAN \$ 100,000	6
(N=229)	100

APPENDIX 4 - ELEMENTS OF THE PRESCRIPTIVE MARKETING APPROACHCompetition Elements

- * Use of price reports
- * Use of full array of markets (domestic & export)
- * Use of prospectus
- * Contact with a large number of mills
- * Calculated stumpage value equivalent of offers
- * Sorted (merchandized) logs to best markets

Timing Elements

- * Financial evaluation of options
- * Awareness of market cycles
- * Discussed with advisor

Product Quality Elements

- * Preliminary conference with buyers
- * Knowledge of log grades/quality
- * Understanding of pricing system
- * Establishment of log bucking guidelines
- * Offered on-site buyer tour

Control Elements

- * Established goals and objectives
- * Presence of an inventory of volume and growth
- * Use of professional assistance
- * Evaluation of sale structure options (stumpage, log, etc.)
- * Use of a written agreement
- * Mark timber for take/leave
- * Used a list of loggers
- * Used landowner references

**APPENDIX 5 - TEST RESULTS: OWNER CHARACTERISTICS
AND SALE PROCEDURES**

Table 1 -- Ownership size (acres) * sale via export

Procedure: T-test

Forest coded as actual value (# of acres).
Purch coded 0=sold domestic only; 1=sold export or
domestic/export mix.

TTEST PROCEDURE

Variable: FOREST

PURCH	N	Mean	Std Error	Minimum	Maximum
0	194	157.0	41.3	0.0	7200.0
1	37	198.7	66.6	3.0	1950.0

Variances	T	DF	Prob> T
Unequal	-0.5311	67.3	0.5971
Equal	-0.4198	229.0	0.6750

For H0: Variances are equal, $F' = 2.02$ $DF = (193, 36)$
 $Prob>F' = 0.0138$

Table 2 -- Ownership size * buyer vs. seller initiation of the sale

Procedure: T-test

Forest coded as actual value (# of acres)

TTEST PROCEDURE

Variable: FOREST

PROC	N	Mean	Std Error	Minimum	Maximum
0	194	176.9	42.7	0	7200.0
1	34	93.5	34.1	0	1040.0

Variances	T	DF	Prob> T
Unequal	1.5245	153.0	0.1294
Equal	0.8080	226.0	0.4200

For H0: Variances are equal, $F' = 8.92$ $DF = (193, 33)$
 Prob>F' = 0.0000

Table 3 -- Ownership size (acres) * means of paying logger

Procedure: T-test

Forest coded actual value (# of acres).

Pcnt coded 1=sold on percentage split basis; 0=otherwise.

TTEST PROCEDURE

Variable: FOREST

PCNT	N	Mean	Std Error	Minimum	Maximum
0	152	217.8	54.0	0	7200.0
1	79	59.7	16.8	0	1000.0

Variances	T	DF	Prob> T
Unequal	2.8015	176.5	0.0057
Equal	2.0811	229.0	0.0385

For H0: Variances are equal, $F' = 21.50$ $DF = (151,78)$
 Prob>F' = 0.0000

Table 4 -- Ownership size * price familiarity

Procedure: t-test.

Forest coded actual value (# of acres).

Prifam coded 0=unfamiliar with prices; 1=otherwise.

TTEST PROCEDURE

Variable: FOREST

PRIFAM	N	Mean	Std Error
0	170	217.2	48.6
1	61	14.7	2.8

Variances	T	DF	Prob> T
Unequal	4.1528	170.1	0.0001
Equal	2.4877	229.0	0.0136

For H0: Variances are equal, $F' = 832.67$ $DF = (169, 60)$
 $Prob>F' = 0.0000$

Table 5 -- Ownership size (acres) * type of sale advisor

Procedure: T-test

Forest coded actual value (acres).

Adv coded 2=logger/buyer-managed sale; 1=otherwise.

TTEST PROCEDURE

Variable: FOREST

ADV	N	Mean	SE	Minimum	Maximum
1	121	245.5	729.9	66.4	7200.0
2	110	73.8	198.9	19.0	1500.0

Variances	T	DF	Prob> T
Unequal	2.4888	139.4	0.0140
Equal	2.3883	229.0	0.0177

For H0: Variances are equal, $F' = 13.46$ $DF = (120, 109)$
 $Prob>F' = 0.0000$

Table 6 -- Experience * sale via export

Procedure: Chi-square test

E coded 1=sold timber previously; 0=no previous sales.
 Purch coded 0=sold domestic only; 1= sold export or
 domestic/export mix.

TABLE OF PURCH BY E

PURCH	E		Total
	0	1	
Row Pct			
0	48.24	51.76	
1	23.08	76.92	
Total	105	133	238

Frequency Missing = 16

STATISTICS FOR TABLE OF PURCH BY E

Statistic	DF	Value	Prob
Chi-Square	1	8.376	0.004
Likelihood Ratio Chi-Square	1	8.874	0.003
Continuity Adj. Chi-Square	1	7.386	0.007
Mantel-Haenszel Chi-Square	1	8.341	0.004
Fisher's Exact Test (Left)			0.999
(Right)			2.72E-03
(2-Tail)			4.45E-03
Phi Coefficient		0.188	
Contingency Coefficient		0.184	
Cramer's V		0.188	

Effective Sample Size = 238

Frequency Missing = 16

Table 7 -- Experience * buyer vs. seller initiation of the sale

Procedure: Chi-square test

E coded 1=sold timber previously; 0=no previous sales.
Proc coded 0=seller-initiated sale; 1=buyer-initiated sale.

TABLE OF PROC BY E

PROC	E		
Row Pct	0	1	Total
0	42.29	57.71	
1	55.88	44.12	
Total	104	131	235

Frequency Missing = 19

STATISTICS FOR TABLE OF PROC BY E

Statistic	DF	Value	Prob
Chi-Square	1	2.178	0.140
Likelihood Ratio Chi-Square	1	2.163	0.141
Continuity Adj. Chi-Square	1	1.662	0.197
Mantel-Haenszel Chi-Square	1	2.169	0.141
Fisher's Exact Test (Left)			9.90E-02
(Right)			0.951
(2-Tail)			0.191
Phi Coefficient		-0.096	
Contingency Coefficient		0.096	
Cramer's V		-0.096	

Effective Sample Size = 235
Frequency Missing = 19

Table 8 -- Experience * means of paying logger

Procedure: Chi-square test

E coded 1=sold timber previously; 0=no previous sales.

Pcnt coded 1=paid logger on percentage split basis; 0=otherwise.

TABLE OF PCNT BY E

PCNT	E		
Row Pct	0	1	Total
0	43.04	56.96	
1	46.25	53.75	
Total	105	133	238

Frequency Missing = 16

STATISTICS FOR TABLE OF PCNT BY E

Statistic	DF	Value	Prob
Chi-Square	1	0.222	0.637
Likelihood Ratio Chi-Square	1	0.222	0.638
Continuity Adj. Chi-Square	1	0.111	0.739
Mantel-Haenszel Chi-Square	1	0.221	0.638
Fisher's Exact Test (Left)			0.369
(Right)			0.729
(2-Tail)			0.679
Phi Coefficient		-0.031	
Contingency Coefficient		0.031	
Cramer's V		-0.031	

Effective Sample Size = 238

Frequency Missing = 16

Table 9 -- Experience * price familiarity

Procedure: Chi-square test

E coded 1=sold timber previously; 0=no previous sales.
 Fam coded 1=unfamiliar with prices; 2=somewhat familiar with prices; 3=very familiar with prices.

TABLE OF FAM BY E

FAM	E		
Row Pct	0	1	Total
1	77.78	22.22	
2	36.54	63.46	
3	22.39	77.61	
Total	102	132	234

Frequency Missing = 20

STATISTICS FOR TABLE OF FAM BY E

Statistic	DF	Value	Prob
Chi-Square	2	44.298	0.000
Likelihood Ratio Chi-Square	2	45.993	0.000
Mantel-Haenszel Chi-Square	1	39.818	0.000
Phi Coefficient		0.435	
Contingency Coefficient		0.399	
Cramer's V		0.435	

Effective Sample Size = 234

Frequency Missing = 20

Table 10 -- Experience * type of sale advisor

Procedure: Chi-square test

E coded 1=sold timber previously; 0=no previous sales.
 Adv coded 1=owner-managed sale; 2=logger/buyer-managed sale;
 3=consultant-managed sale.

TABLE OF ADV BY E

ADV	E		Total
Row Pct	0	1	
1	32.73	67.27	
2	54.78	45.22	
3	46.15	53.85	
Total	105	133	238

Frequency Missing = 16

STATISTICS FOR TABLE OF ADV BY E

Statistic	DF	Value	Prob
Chi-Square	2	11.116	0.004
Likelihood Ratio Chi-Square	2	11.231	0.004
Mantel-Haenszel Chi-Square	1	7.921	0.005
Phi Coefficient		0.216	
Contingency Coefficient		0.211	
Cramer's V		0.216	

Effective Sample Size = 238

Frequency Missing = 16

Table 11 -- Residence status * sale via export market

Procedure: Chi-square test

Res coded 1=non-resident; 2=resident.

Purch coded 0=sold domestic only; 1=sold export or export/domestic mix.

PURCH	RES		Total
Row Pct	1	2	
0	25.24	74.76	
1	47.37	52.63	
Total	71	177	248

Frequency Missing = 6

STATISTICS FOR TABLE OF PURCH BY RES

Statistic	DF	Value	Prob
Chi-Square	1	7.713	0.005
Likelihood Ratio Chi-Square	1	7.156	0.007
Continuity Adj. Chi-Square	1	6.668	0.010
Mantel-Haenszel Chi-Square	1	7.681	0.006
Fisher's Exact Test (Left)			6.11E-03
(Right)			0.998
(2-Tail)			1.02E-02
Phi Coefficient			-0.176
Contingency Coefficient			0.174
Cramer's V			-0.176

Effective Sample Size = 248

Frequency Missing = 6

Table 12 -- Residence status * buyer vs. seller initiation
of the sale

Procedure: Chi-square test

Res coded 1=non-resident; 2=resident.

Proc coded 0=seller-initiated sale; 1=buyer-initiated sale.

TABLE OF PROC BY RES

PROC	RES		
Row Pct	1	2	Total
0	28.85	71.15	
1	27.03	72.97	
Total	70	175	245

Frequency Missing = 9

STATISTICS FOR TABLE OF PROC BY RES

Statistic	DF	Value	Prob
Chi-Square	1	0.051	0.821
Likelihood Ratio Chi-Square	1	0.051	0.821
Continuity Adj. Chi-Square	1	0.001	0.977
Mantel-Haenszel Chi-Square	1	0.051	0.822
Fisher's Exact Test (Left)			0.658
(Right)			0.497
(2-Tail)			1.000
Phi Coefficient		0.014	
Contingency Coefficient		0.014	
Cramer's V		0.014	

Effective Sample Size = 245

Frequency Missing = 9

Table 13 -- Residence status * means of paying logger

Procedure: Chi-square test

Res coded 1=nonresident; 2=resident.

Pcnt coded 1=sold on percentage split basis; 0=otherwise.

TABLE OF PCNT BY RES

PCNT	RES		
Row Pct	1	2	Total
0	29.27	70.73	
1	27.38	72.62	
Total	71	177	248

Frequency Missing = 6

STATISTICS FOR TABLE OF PCNT BY RES

Statistic	DF	Value	Prob
Chi-Square	1	0.097	0.756
Likelihood Ratio Chi-Square	1	0.097	0.755
Continuity Adj. Chi-Square	1	0.026	0.871
Mantel-Haenszel Chi-Square	1	0.096	0.756
Fisher's Exact Test (Left)			0.675
(Right)			0.438
(2-Tail)			0.882
Phi Coefficient		0.020	
Contingency Coefficient		0.020	
Cramer's V		0.020	

Effective Sample Size = 248

Frequency Missing = 6

Table 14 -- Residence status * price familiarity

Procedure: Chi-square test

Res coded 1=non-resident; 2=resident.

Fam coded 1=unfamiliar wiith prices; 2=soemwhat familiar with prices; 3=very familiar with prices.

TABLE OF FAM BY RES

FAM	RES		Total
Row Pct	1	2	
1	26.87	73.13	
2	22.43	77.57	
3	42.03	57.97	
Total	71	172	243

Frequency Missing = 11

STATISTICS FOR TABLE OF FAM BY RES

Statistic	DF	Value	Prob
Chi-Square	2	8.039	0.018
Likelihood Ratio Chi-Square	2	7.808	0.020
Mantel-Haenszel Chi-Square	1	3.842	0.050
Phi Coefficient		0.182	
Contingency Coefficient		0.179	
Cramer's V		0.182	

Effective Sample Size = 243

Frequency Missing = 11

Table 15 -- Residence status * type of sale advisor

Procedure: Chi-square test

Res coded 1=non-resident; 2=resident.

Adv coded 1=landowner-managed sale; 2=logger/buyer-managed sale;
3=consultant-managed sale.

	ADV	RES		
Row Pct		1	2	Total
1		31.58	68.42	
2		26.05	73.95	
3		26.67	73.33	
Total		71	177	248

Frequency Missing = 6

STATISTICS FOR TABLE OF ADV BY RES

Statistic	DF	Value	Prob
Chi-Square	2	0.901	0.637
Likelihood Ratio Chi-Square	2	0.899	0.638
Mantel-Haenszel Chi-Square	1	0.729	0.393
Phi Coefficient		0.060	
Contingency Coefficient		0.060	
Cramer's V		0.060	

Effective Sample Size = 248

Frequency Missing = 6