Confidence Swindles of Older Consumers: The Crimes and Their Particulars as Seen by Bunco Investigators in Local Police Departments

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Consumer fraud is the most commonly committed crime against the elderly and one type of consumer fraud, confidence games and swindles, is more frequently directed at older citizens than any other. This paper reports the principal findings of a national survey focusing on such crimes and their effects on older consumers. The respondents are bunco investigators representing 331 local police departments in 39 states. The survey findings reveal particulars for the three most commonly employed confidence swindles targeting elders.

Consumer fraud is the most commonly committed crime against the elderly and one type of consumer fraud, confidence games and swindles, is more frequently directed at older citizens than any other. Yet despite the prevalence of this crime there is a lack of reliable information available about how it is practiced today in communities across the nation. The present study attempts to close this gap by surveying bunco investigators in local police departments in an effort to secure an understanding of the most common types of confidence swindles targeting older consumers. We start with a brief review of the existing literature, continue with a description of the study's procedures and results, and end with a discussion of the findings and their implications.

Literature Review

Consumer fraud is viewed by some scholars as a mixed category of criminal offenses which includes confidence games and swindles as a subcategory. Other subcategories, according to Elmore (1981), include health and medical frauds; general merchandising frauds; mail-order frauds; income creation, protection and investment frauds; and social psychological frauds. As Blum (1972) has noted, the confidence swindle often differs from other forms of consumer fraud in that its perpetrators usually provide no consumer product or service in exchange for the victim's money, while perpetrators of other consumer frauds may deliver goods, but not the ones ordered, or at a much higher price than that expected to be paid by the buyer.

Although Alston (1986) reports that there is little reliable information on the characteristics of victims of confidence games, the experience of the American Association for Retired Persons (AARP), and of law enforcement agencies, is that the older person is often the chief target of the confidence swindler.

One reason that it has been difficult to combat confidence swindling of the elderly is that there is not one but many types of such swindles. If there were only one type, law enforcement officers and consumer educators could focus their efforts on identifying a single set or pattern of circumstances which is likely to precipitate a confidence swindle. However, with many types the problem is substantially more difficult.

For law enforcement officers and consumer educators to deal effectively with confidence swindles directed against the elderly, it is necessary to start with a specification of the particulars of the most common types of swindles now being perpetrated on this age group. For each type one needs to know the characteristics of the perpetrators of the swindles as well as their victims; the specific behaviors of swindlers and victims; the objective circumstances under which the swindles occur (physical setting, time of day, day of week and month, season of the year, etc.); and the consequences of the swindles (e.g., financial losses to victims).

Procedure

While detailed timely information is needed for common types of confidence swindles, it is not clear how one goes about securing this information. Three primary sources are available to the researcher: the confidence swindlers, their victims, and the law enforcement officers who investigate confidence swindles. Examination of these three primary sources of information on confidence swindles currently practiced in American communities, leads one to

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conclude that local police who specialize in investigating such swindles are by far the most reliable; and this being the case, they appeared to be the appropriate respondent group for our survey research study. Access to this population has been recently facilitated by the establishment of the National Association of Bunco Investigators (NABI) in 1984. The organization now lists over 500 law enforcement officers in city and county police departments in the United States and it is this group which served as the target population for this research study.

Although the target population is not representative of the United States as a whole the biases which exist appear to be in the direction of larger communities (23 of the 25 largest American cities are represented) and communities experiencing relatively high incidences of confidence swindles. The total NABI membership of local police officers to be surveyed represents 39 of the 50 states as well as the District of Columbia. (Excluded are many relatively low population states such as Alaska, Hawaii, Idaho, Iowa, Montana, Nevada, South Dakota, Utah, and Wyoming.) The total population served by the local police departments to be surveyed is slightly more than 60 million, or about a fourth of the U.S. population of 250 million. Prominently represented in the target population are states like California and Florida with large numbers of older residents.

A mail survey was carried out in several steps. First an introductory letter was sent to all NABI members in February 1990 describing the survey to be conducted in June 1990. The letter also asked NABI members to indicate the five most common types of confidence swindles affecting older consumers in the local area of jurisdiction for each respondent's department.

Three types of confidence swindles dominated the respondent's selections (the Pigeon Drop swindle, the Bank Examiner swindle, and Home Improvement/Repair swindles). These were the only ones checked by more than half of the respondents so it was decided to concentrate the mail survey study on these crimes.

The mail survey was constructed to secure information on these three crimes from NABI members employed at 391 local police departments. The questionnaire was pretested by NABI members and reviewed by a project advisory committee consisting of NABI officials as well as representatives of consumer and elder organizations with an interest in using the project findings for educational purposes. The pretest revealed that many of the target respondents did not have detailed records on confidence swindles available in their department files. This meant that survey questions could not be too fine-grained in character or responses would not be forthcoming.

The mail survey form was prepared using Dillman's Total Design Method (1978) as a guide. A 16-page form was mailed to the 391 NABI respondents in June 1990. Telephone calls and two additional follow-up mailings of the survey form were employed to encourage a high response rate. The result was an 85 percent response rate (331 returns from 39 states). Finally, it should be noted that 33 of the 331 were surveyed by mail a second time in an effort to secure information regarding the reliability of the questionnaire responses.

Results

Before examining the substantive results of the survey, we look at the findings for the 33 respondents who were tested twice in an effort to determine the reliability of the survey questions. A total of 97 multiple-choice opinion questions on confidence swindles was asked in the survey. For each of these questions a determination was made of the percentage of respondents answering in the same way for both survey administrations. The results were encouraging in that a mean value of 81 percent was found for the 97 questions, and statistical analysis revealed that 96 of the 97 percentage values were significantly above chance expectations.

Several propositions suggested by the survey findings are as follows:

1. Elder victims of confidence swindles, are more likely to be female rather than male, young-old rather than old-old, White rather than non-White, not married rather than married, and not employed outside the home as compared to employed outside the home.

2. Elders with certain characteristics are likely to attract confidence swindlers looking for victims. Particularly prominent among these characteristics are friendliness to strangers and visible signs of financial assets on one's person. Also prominent for Home Improvement/Repair swindles are

apparent problems with vision, hearing, or mobility.

3. Swindler teams committing crimes against elders are likely to contain more than one member, with two being the most common size. Teams are likely to consist of all younger members (under age 50), although many teams are believed to include members both under and over age 50. Teams with all-White members and all-male members are likely to be found for Bank Examiner and Home Improvement/Repair swindles, while mixed teams, with White and non-White members as well as male and female members, are likely to be found for Pigeon Drop swindles.

4. The tactical approach taken by confidence swindlers who target elders can be expected to vary by type of swindle with a "soft approach" likely for Pigeon Drop and Bank Examiner swindles and a combined ("soft" and "hard") approach likely for Home Improvement/Repair swindles. Also varying by type of swindle is place of initial contact, with stores and shopping malls being likely for Pigeon Drop swindles, and the victim's home being likely for Bank Examiner and Home Improvement/Repair swindles. All three swindles are likely to occur in the morning or afternoon, rather than the evening; on weekdays rather than weekends; and in the spring or summer, rather than the fall or winter.

5. Home Improvement/Repair swindles of older consumers are likely to occur in middle-class neighborhoods, and a driveway or roofing problem is a likely focus of these swindles.

6. Confidence swindles of elder consumers often result in substantial financial losses for their victims with $1,000 to $5,000 being likely for Pigeon Drop, Bank Examiner, and Home Improvement/Repair swindles. Moreover, few reported cases of these three types of swindles are solved, with "suspended or inactive" as a likely outcome for these cases.

7. It appears likely that confidence swindles of elders have increased in number or stayed the same over the past five years, and it also seems likely (assuming the reasonableness of the respondents' predictions), that more problems of this sort will be experienced by elders in the next ten years. Over the past five years, it appears likely too that there have been changes in the relative frequency of the three types of confidence swindles most commonly affecting elders, with Bank Examiner swindles having experienced the most favorable change (smallest increase or largest decrease) and Home Improvement/Repair swindles the least favorable change (largest increase or smallest decrease).

Discussion

If these seven groups of statements tell us what is suggested by expert opinion on confidence swindles affecting older citizens, what, one may ask, are their implications for public policy? In particular, what can one learn from what the study has revealed (or not revealed) which will help alleviate the problem? Several observations seem in order here. First, as an initial research effort addressing a very large and complex problem area, the study has probably raised more questions than it has answered. More research is needed to secure reliable and valid information on confidence swindles affecting elders, and such research should address a larger number of confidence swindle types than the three dealt with herein. Particularly important with regard to the latter point is the inclusion of regionally common swindles such as the Jamaican Switch and Latin Charity swindles frequently practiced in areas with large Hispanic populations.

Second, before the needed research can be performed, it may well be necessary to establish a nationwide recordkeeping system which will note the incidence and particulars of confidence swindles on an ongoing basis for the country as a whole. Such a system would permit future research and public policy decisions to be based on filed reports of confidence swindles with local, state, and federal law enforcement agencies, and this would constitute a big improvement over the expert opinion drawn upon in the present study. The results of the present study indicate that the respondents strongly favor the establishment of such a system, with many noting their willingness to work on its development and implementation.

A third observation deals with the need to improve current practices used to prevent confidence swindles of elders. Although not specifically

addressed in this study, many respondents made a point of stressing the importance of devoting more resources to the education of elders. Also important is doing more to train law enforcement personnel to recognize and effectively deal with confidence swindles, and to sensitize bank officials to the need to work cooperatively with police departments to prevent older consumers from being duped into withdrawing large sums of cash which end up in the hands of swindlers. The present study offers much useful information to guide such preventive efforts. While the study is no substitute for a nationwide reporting system which would provide timely and objective information on an ongoing basis, its results may represent the best source of information currently available for such preventive purposes.

A final observation considers the matter of unreported swindles. While this seems likely to constitute a major problem for the forseeable future, educational efforts aimed at elders and at law enforcement officials may help to reduce its magnitude. While elders need to know more about confidence swindles and how to avoid them, they also need to know that once they are victimized by swindles, they have a responsibility to report the particulars to the police. Moreover, once such reports are made to the police, it is important that the officers contacted recognize their seriousness and take appropriate action.

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Deregulation, Market Concentration, and the Demand for Air Travel

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An analysis of travel to 19 destination airports indicates that in 1983 and 1987 round-trip coach airfares did not increase in response to higher industry concentration. In addition, the demand for air travel became more price elastic in this time period, insulating consumers from large swings in consumer welfare gains or losses.

From the onset, airline deregulation has been associated with declines in in-flight service, baggage handling, and on-time arrival performance (Dempsey, 1990; Moore, 1986; Trapani and Olson, 1982). Most recently, reports of growing market concentration, both within various market segments and across the airline market as a whole, have been used as evidence of deregulation-induced troubles (Mead, 1989; McGinley, 1991). Some policy makers, alarmed at the rising concentration figures, are even going so far as to propose that regulatory measures be re-introduced into the airline market (McGinley 1989; Nomani and Barrett, 1990).

Yet observing a change in market concentration should not automatically lead to the conclusion that airline deregulation has failed. A decline in the number of carriers nationally may not translate into a decline in the number of carriers competing for a specific route. If the competition on specific routes remains higher than in the regulatory era (i.e., more than two carriers on a route) despite a decline in the number of airlines, then it may be incorrect to conclude that deregulation has failed. However, if route specific competition drops off, then one must examine how this decline affects the fares charged and the demand for air travel. Only then can one begin to assess whether rising market concentration means that deregulation has jeopardized consumers' welfare in this market.

The relationships between national concentration trends, local market concentration levels, airfares, and number of airline trips are estimated at two different points in time in this paper. The first set of estimates is based on data from 1983, a time when many new carriers were entering the interstate airline market. The second set of estimates is based on data from 1987, a time when the increase in overall market concentration was becoming evident. Indeed, by 1987, nine of the seventeen post-deregulation market entrants had failed and four of the remaining eight had been acquired by other airlines (Congressional Budget Office, 1988). The comparative estimates provide insights into the extent to which rising overall market concentration can be used as an indicator of deregulatory troubles.

Literature Review

Some scholars (Baumol, Panzar, and Willig, 1982; Kahn, 1988; Morrison and Winston, 1989) argue that although the airline market is not (and has never been) characterized by a large number of firms, competitive fares may prevail because the market is generally contestable. That is, information is readily available, no (or few) barriers to entry or exit exist, and economies of scale are not present in this market. As a result, the threat of entry leads firms to price fares at a competitive level despite the fact that the actual number of carriers is quite small.

Others (Borenstein, 1989; Fawcett and Farris, 1989) argue that while the deregulated airline market may have initially been contestable, over time the major airlines have developed effective entry barriers. These barriers include control of gates at congested airports, frequent flyer programs, and computerized reservation systems. With such barriers in place, airlines in relatively concentrated markets can raise fares above competitive levels with little threat of new airlines entering the market to capitalize on the excess profits.

If the airline market is

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The research reported here was supported in part by a grant from the University of Utah Research Committee. David Huth provided valuable computer programming and Paul Childs gave excellent research assistance to this project.

contestable, then market concentration levels should have little or no relationship to fares. Alternatively, if the market is not contestable, then as the concentration level increases or decreases so should fares.

Evidence on the relationship between market concentration and fares is mixed. Aggregate trend analyses generally reveal that both the number of carriers and the average fare charged have shown downward trends since 1984 (Congressional Budget Office, 1988; Ogur, Wagner, and Vita, 1988; Schwieterman, 1985). One exception in these aggregate time-series analyses is the work of Dempsey (1990) who, using national data on fuel-adjusted airfares, reports that fares have risen as the industry has become more concentrated.

In contrast to research based on aggregate data, studies using origin or destination specific measures of concentration generally note a positive relationship between concentration and yield (i.e., the fare paid per mile traveled)(Department of Transportation, 1990; Mead, 1989; Morrison and Winston, 1990). An exception is Borenstein's 1989; 1990; 1991) work whose findings are mixed. For example, in his examination of dominant firm advantage (1991) he finds that in 1986, average price is not significantly related to a carrier's market share at the origin airport, but the degree of origin airport dominance is positively related to route shares.

It would appear that while there is some consensus regarding the decline in the hypothetical contestability of the airline market, there is little consensus about the relationship between market concentration and airfares. In part, the equivocal results across studies may be a function of operational differences in the measurement of market concentration and prices. In some studies (e.g., Congressional Budget Office, 1988) market concentration is tracked at the national level while in other studies (e.g., Borenstein, 1989) it is measured at an origin and/or destination-specific level. There is also substantial variation with respect to how fares are measured across these studies. In addition, although most of the studies make use of the Department of Transportation's Data Bank 1A in their empirical work, differences in sampling restrictions may also play a role in explaining the range of results.

While the studies vary in their sampling and measurement choices, they are consistent in their use of airfares as the outcome measure of interest. Yet, from the consumer's perspective, an assessment of deregulation's impact does not stop there. For consumers, the consequences of rising prices depend on the price elasticity of demand. To date, only two studies have estimated price elasticities of demand for airline travel. Morrison and Winston (1986) use a discrete travel mode choice model to estimate cost elasticities for air travel in 1977. They find that both business and pleasure travel are price inelastic, with business travel being more price inelastic than pleasure travel. In contrast, Joesch and Zick (1991) estimate the price elasticities of demand for round-trip coach air travel to various cities and find that demand is generally price elastic and that it is becoming more so over time.

In sum, while the rhetoric regarding possible re-regulation of the airline industry continues to grow, the empirical evidence regarding the need for re-regulation is generally inconclusive. In this paper we will address two policy relevant questions. First, what role does market concentration play in the setting of airline fares? And second, does the price elasticity of demand for airline travel vary by concentration level?

The Model

Most estimated airline price equations are implicitly based on a profit maximization framework. In these formulations, airfares tend to be posited as a function of miles traveled (Morrison and Winston, 1986; 1989), fuel and labor costs (Dempsey, 1990; Morrison and Winston, 1986), flight frequency (Borenstein, 1989; Morrison and Winston, 1986), and/or number of flight segments (Borenstein, 1989). Market concentration effects are tested by adding one or more concentration measures to the set of regressors.

We begin with a simple model of an oligopolistic market for air travel. To the extent that most people derive utility from getting to a particular destination and not from flying per se, air transportation is an intermediate good. Taking a trip to destination A is consequently a different good than taking a trip to destination B, regardless of the trip origin. As a result, there are as many different markets for air travel as there are destinations.

In each of these oligopolistic markets, it is assumed that all firms face the same cost and production constraints and that collusion is possible. The firms identify the

quantity that would maximize profits and set the price at a level that will generate the profit maximizing quantity. The profit maximizing quantity is thus a function of cost and production constraints and the market demand curve. As a result, quantity and price are simultaneously determined.

Past analyses have generally not controlled for quantity in the estimated price equations--the one exception is Borenstein (1989). If the airline market is an oligopoly where firms can set the price based, in part, on information from the demand curve, then previous price analyses that have neglected to control for quantity suffer from omitted variable bias.

In this formulation, careful attention must be given to the context in which concentration is hypothesized to matter. Specifically, does a decline in the number of domestic airlines portend that fares should rise? Or must route-specific concentration increase before fares go up? If a decline in market contestability comes about because of the implementation of origin- or destination-specific barriers, then it may be origin- or destination-specific concentration that matters. However, if the barriers are industry-wide, then the appropriate measure may be overall market concentration. To allow for both possibilities, multiple measures of concentration will be included in the estimation that follows.

The Data

The specification of the empirical price and demand equations is constrained by the availability of data. The primary source of data for the following estimates is the Department of Transportation's third quarter Data Bank 1A for 1983 and 1987 (U.S. Department of Transportation, 1987). Data Bank 1A provides information on the number of round trips taken from different airports, the cost and length of these trips, and the number of trip segments traveled for a ten percent random sample of all commercial airplane trips originating in the United States. Data from the third quarter 1983 are chosen to represent a time when the number of national carriers was increasing. Conversely, the third quarter 1987 reflects a time when many of the national carriers were merging with other carriers or were leaving the industry altogether. Flights to destinations located outside the continental United States, one-way trips and first-class trips within the U.S. are excluded from the analysis done here. In addition, all trips of less than 300 miles one way are eliminated because they are likely to have viable transportation substitutes (e.g., train, bus, car) that we cannot control for in our analyses.

Information on income and preference shifters has to be matched to Data Bank 1A origin city data. These data are obtained from the Bureau of the Census' 1985 County and City Data Book (U.S. Department of Commerce, 1986). For the purpose of this analysis, an origin area is defined as a fifty mile radius around the airport at which a round-trip started.

The Empirical Model

Price and demand equations are estimated for 19 different destination airports to investigate whether concentration and price elasticity effects vary across airport type. The 19 destination airports are selected to maximize comparability with previous studies and to represent long-standing hubs, relatively new hubs and non-hubs. Long-standing hubs are defined as airports where one or more airlines had a hub by 1979, while new hubs are airports where one or more airlines set up hub operations between 1979 and 1983.

For each of the 19 price equations, the price of a plane trip is measured by the average round-trip coach airfare paid from origin city $\underline{i}$ to destination airport $\underline{j}$. Recall that the average fare charged (p_{ij}) is posited to be a function of input cost factors, production inputs, concentration factors, and number of trips. We assume that in the cross-section input cost factors (e.g., fuel prices, labor costs) are constant across all origin-destination pairs and hence, do not include them in the estimating equations.

Production factors are captured by the average number of trip segments (S_{ij}) and trip length (D_{ij}). As segments and trip length increase, a greater amount of travel is produced which implies that segments and trip length are positively related to airfare, ceteris paribus. Effects of concentration on airfares are addressed with two different measures. The first, less traditional measure, is a dummy variable that takes on a value of "1" if there is another commercial airport within the origin city area, "0" otherwise (M_{ij}). The presence of another airport in the area is hypothesized to reduce the effective concentration in the origin market and thus decrease fares, ceteris paribus. The second, more traditional measure,

is the Herfindahl-Hirschman Index (HHI_i) calculated for all tickets originating at airport i, regardless of the domestic destination. If there are origin-specific barriers to entry then an increase in the HHI should lead to an increase in the average fare, ceteris paribus.

The quantity of airline trips is measured by the number of round trip coach tickets purchased to a particular destination from an originating airport at least 300 miles away. (Limited numbers of observations prohibited the estimation of the markets for one-way travel, or first-class travel). If the oligopolists face a downward sloping market demand curve, then lower airfares should be associated with a larger number of airline trips, holding other factors in the equation constant.

The empirical market demand equation specifies the number of round trip coach tickets from origin airport i to destination airport j as a function of the average ticket price, income, and the number of people over 25 years of age in the origin airport area. Economic theory predicts that the number of plane trips taken will decrease if ticket prices increase, holding other factors constant. Here, ticket price will be measured by the average round-trip fare described earlier.

In the system outlined above, both the market demand and airfare equations are overidentified. As a result, two-stage least squares is used to estimate each equation. This approach is selected because it is tractable and because it results in consistent estimates of the coefficients. The one disadvantage of using two-stage least squares is that the estimator does not incorporate the possible correlation of the disturbance terms across the equations and hence is not asymptotically efficient (Kmenta, 1986).

The Empirical Results

Descriptive information on destination and origin airport concentration levels, number of origin airports, and mean airfares in both years are shown in Table 1. The descriptive information indicates that concentration levels rose somewhat between 1983 and 1987 for four out of the five long-standing hub airports. However, the pattern of concentration change was much more mixed for new hubs and non-hub airports. Regardless of hub classification, between 1983 and 1987 real airfares fell and the average number of round-trip tickets and the number of origin airports in Data Bank 1A increased. These findings are consistent with reports from the Department of Transportation (1990).

The Price Equations. Estimates of the price equations for each year are presented in Tables 2 and 3. The estimates indicate that there was little change in pricing for these 19 markets between 1983 and 1987. In both years the estimated coefficients associated with the HHI, the multiple airport dummy, and the quantity of tickets are statistically insignificant in the vast majority of cases. The two

Table 1.
Descriptive Information

	Herfindahl-Hirschman Index						Mean Number of Round-Trip Tickets			
	Destination Airport		Mean for All Origin Airports		Mean Air Fares[a]		From Each Origin Airport		Number of Origin Airports	
Destination Airport	1983	1987	1983	1987	1983	1987	1983	1987	1983	1987
Long-Standing Hubs										
Chicago-O'Hare IL	.194	.223	.630	.578	373	320	256	295	266	318
Minn/St.Paul MN	.329	.475	.583	.546	395	315	106	132	240	299
Denver CO	.273	.317	.615	.568	374	296	131	184	264	311
Dallas/Ft.Worth TX	.387	.315	.610	.546	406	315	154	210	261	294
Atlanta GA	.467	.485	.594	.538	388	317	142	210	248	286
New Hubs										
Detroit MI	.135	.218	.593	.543	354	281	108	150	243	295
Washington DC-Dulles	.282	.180	.473	.455	435	292	42	56	92	219
Cleveland OH	.258	.139	.553	.521	367	287	69	79	208	271
Charleston WV	.609	.416	.431	.394	373	332	13	12	104	152
Salt Lake City UT	.329	.318	.562	.482	439	348	52	80	218	238
Charlotte NC	.344	.494	.537	.470	387	324	41	73	197	220
Non-Hubs										
Omaha NE	.237	.148	.530	.480	371	306	26	38	202	224
Sacramento CA	.189	.234	.518	.446	456	359	31	53	184	207
Fargo ND	.407	.549	.400	.371	438	312	11	14	114	140
Jackson MS	.794	.536	.413	.368	432	353	20	24	124	144
Rochester MN	.430	.726	.427	.334	415	329	8	8	135	125
Wausau/Central WI	1.00	.531	.317	.312	420	378	6	7	78	103
Durango CO	.983	.471	.354	.287	413	373	5	10	64	85
Jacksonville NC	1.00	1.00	.381	.311	346	267	4	7	80	90

[a] All air fares are expressed in 1987 dollars.

exceptions for both years are the equations for Chicago's O'Hare and Atlanta's Hartsfield Airports.

In virtually all of the price equations the primary determinants of the fare charged appear to be distance traveled and number of flight segments. In both years airfares to all of the 19 airports increase with distance traveled, but typically at a declining rate. In addition, as the number of

Table 2.
Two-Stage Least Squares Parameter Estimates of the 1983 Price Equation[a]

	Coefficients						
Destination Airport	Constant	HHI	M	D	D^2	S	$\ln(\hat{Q})$
Long-Standing Hubs							
Chicago-O'Hare IL	3.82**	0.32*	-0.12**	0.001**	-3.95x10^{-7}**	0.20**	0.11*
Minn/St.Paul MN	4.07**	0.21	-0.08	0.002**	-6.88x10^{-7}**	0.17	0.07
Denver CO	4.75**	0.13	0.002	0.001**	-4.45X10^{-7}**	0.035	0.02
Dallas/Ft.Worth TX	3.42**	0.38**	0.049	0.002**	-8.03X10^{-7}**	0.16*	0.09**
Atlanta GA	2.89**	0.73**	-0.003	0.001**	-2.98X10^{-7}**	0.33	0.24**
New Hubs							
Detroit MI	4.46**	0.23	0.02	0.001**	-3.34X10^{-7}**	0.12	0.05
Washington DC-Dulles	5.40**	0.17	0.02	0.001**	-1.94X10^{-7}**	-0.07	-0.08
Cleveland OH	5.54**	-0.08	-0.013	0.001**	-3.12X10^{-7}**	-0.04	-0.08
Charleston WVA	4.63**	-0.002	-0.07	0.001**	-3.29X10^{-7}**	0.80**	0.05
Salt Lake City UT	4.82**	0.06*	-0.008	6.9X10^{-4}**	-1.49X10^{-7}**	0.11**	0.04*
Charlotte NC	1.23	1.49*	-0.17	0.001**	-3.69X10^{-7}**	0.51**	0.51*
Non-Hubs							
Omaha NE	5.04**	-0.35**	0.13	0.002**	-1.02X10^{-6}**	0.04*	-0.15
Sacramento CA	4.18**	0.35*	-0.03	0.001**	-3.03X10^{-7}**	0.06*	0.06
Fargo ND	4.41**	0.12	0.003	0.002**	-7.13X10^{-7}**	0.10**	0.02
Jackson MS	3.14**	0.88	-0.20	0.001**	-3.57X10^{-7}**	0.31	0.27
Rochester MN	5.54**	-0.10	0.03	0.002**	-6.09X10^{-7}**	-0.10**	-0.16
Wausau/Central WI	3.06**	0.04*	-0.35	0.002**	-9.74X10^{-7}**	0.38**	0.39*
Durango CO	2.94**	0.50*	-0.09	0.002**	-5.39X10^{-7}**	0.22**	0.38**
Jacksonville NC	5.78**	-0.30	0.21	0.002**	-4.36X10^{-7}**	-0.19	-0.45**

* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the average coach fare. Adjusted R^2s range from .46 to .74. The overall F-statistic is significant in all of the equations with a range of 7.3 to 128.0.

Table 3.
Two-Stage Least Squares Parameter Estimates of the 1987 Price Equation[a]

	Coefficients						
Destination Airport	Constant	HHI	M	D	D^2	S	$\ln(\hat{Q})$
Long-Standing Hubs							
Chicago-O'Hare IL	4.59**	0.58**	-0.16**	1.92x10^{-4}	1.04x10^{-8}	0.08	0.11*
Minn/St.Paul MN	5.05**	0.004	0.08	7.26x10^{-4}**	-3.28x10^{-7}**	0.09	-6.00x10^{-4}
Denver CO	4.74**	0.20	0.02	3.01x10^{-4}	-2.80x10^{-8}	0.11	0.04
Dallas/Ft.Worth TX	4.28**	0.05*	0.08	0.002**	-6.47x10^{-7}**	0.04**	0.008**
Atlanta GA	3.99**	0.52*	-0.46	6.32x10^{-4}**	-1.37x10^{-7}**	0.17**	0.12**
New Hubs							
Detroit MI	5.86**	-0.35	0.03	6.86x10^{-4}**	-2.02x10^{-7}**	-0.04	-0.11*
Washington DC-Dulles	5.58**	-0.39	0.11	0.001**	-2.73x10^{-7}**	-0.075	-0.16*
Cleveland OH	6.08**	-0.18	0.05	5.27x10^{-4}**	-1.13x10^{-7}**	-0.12	-0.11
Charleston WVA	5.19**	-0.05	0.11	0.001**	-2.69x10^{-7}**	0.02	-0.10
Salt Lake City UT	4.98**	0.12	0.04	3.43x10^{-4}*	-2.95x10^{-8}	0.08	0.01
Charlotte NC	6.50**	-0.85	0.26	0.001**	-3.20x10^{-7}**	-0.09	-0.26
Non-Hubs							
Omaha NE	4.81**	-0.04	0.11	9.55x10^{-4}**	-4.92x10^{-7}**	0.14**	-0.04
Sacramento CA	4.61**	0.28	-0.01	3.75x10^{-4}**	-4.76x10^{-8}	0.13*	0.02
Fargo ND	4.57**	0.09	-0.03	5.45x10^{-4}*	-2.64x10^{-7}**	0.17	0.08**
Jackson MS	2.88**	0.74	-0.65**	7.09x10^{-4}**	-1.78x10^{-7}	0.36**	0.30**
Rochester MN	4.00**	0.28	-0.29**	7.02x10^{-4}	-1.69x10^{-7}	0.18**	0.03
Wausau/Central WI	5.11**	0.16	-0.02	3.72x10^{-4}	-1.17x10^{-7}	0.11	0.03
Durango CO	4.46**	0.29	0.05	0.02**	-5.83x10^{-7}**	0.005	-0.04
Jacksonville NC	5.12**	-0.30	0.12	8.27x10^{-4}**	-9.01x10^{-8}	-0.009	-0.2

* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the average coach fare. Adjusted R^2s range from .08 to .66. The overall F-statistic is significant in all of the equations with a range of 2.5 to 62.0.

travel segments increases, so do fares, although in 1987 only four of these segment coefficients are statistically significant. Both distance and segment coefficients are consistent with the a priori hypotheses.

The absence of significant coefficients for the market concentration measures along with the relatively consistent significance of the production-related measures suggests that there is no support for the contention that as concentration levels increase, barriers to entry rise that allow airlines to increase fares without the fear of enticing other firms to enter the market. Furthermore, there is little evidence that airlines in these markets identify the profit maximizing demand and then set fares at a level that would generate that demand. Instead, the price equations indicate that fares in these markets are driven primarily by production concerns--as would be expected in contestable markets.

Table 4.
Two-Stage Least Squares Parameter Estimates of the 1983 Demand Equation[a]

	Coefficients			
Destination Airport	Constant	$\ln(\hat{P})$	ln(Y)	POP25
Long-Standing Hubs				
Chicago-O'Hare IL	-18.74**	-1.65**	3.45*	3.09x10^{-7}**
Minn/St.Paul MN	-29.97**	-1.32**	4.42**	1.91x10^{-7}**
Denver CO	-31.45**	-1.36**	4.62**	2.30x10^{-7}**
Dallas/Ft.Worth TX	-20.11**	-3.01**	4.43**	3.14x10^{-7}**
Atlanta GA	-23.83**	-3.21**	4.97**	1.57x10^{-7}**
New Hubs				
Detroit MI	-24.55**	-0.62	3.35**	1.82x10^{-7}**
Washington DC-Dulles	-27.59**	0.09	3.14**	1.65x10^{-7}**
Cleveland OH	-39.70**	-0.309**	4.76**	1.86x10^{-7}**
Charleston WVA	-35.22**	-0.83**	4.48**	-2.86x10^{-9}
Salt Lake City UT	-30.77**	-1.96**	4.84**	2.44x10^{-7}**
Charlotte NC	-16.71**	-1.72**	3.12**	1.38x10^{-7}**
Non-Hubs				
Omaha NE	-28.19**	-0.74**	3.72**	1.24x10^{-7}**
Sacramento CA	-19.85**	-0.75**	2.82**	2.41x10^{-7}**
Fargo ND	-20.59**	-1.63**	3.40**	5.12x10^{-8}
Jackson MS	-21.15**	-1.69**	3.60**	1.54x10^{-7}**
Rochester MN	-26.43**	-0.53**	3.33**	4.85x10^{-9}
Wausau/Central WI	-12.66**	-1.48**	2.41**	8.89x10^{-8}
Durango CO	-22.93**	-0.78	3.07*	-1.58x10^{-8}
Jacksonville NC	-9.98	-0.36	1.37	1.53x10^{-7}**

* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the number of coach tickets. Adjusted R^2s range from .14 to .46. The overall F-statistic is significant in all of the equations with a range of 4.4 to 71.0.

The Demand Equations. The parameter estimates of the 1983 and 1987 demand equations are shown in Tables 4 and 5. Travel to all 19 airports appears to be quite income elastic. The coefficients suggest that in both years travel to long-standing hubs tends to be more income elastic than travel to new hubs and non-hub airports. Consumers apparently view travel to hub cities to be more of a luxury good (less of a necessity) than travel to smaller, non-hub cities.

Table 5.
Two-Stage Least Squares Parameter Estimates of the 1987 Demand Equation[a]

	Coefficients			
Destination Airport	Constant	$\ln(\hat{P})$	ln(Y)	POP25
Long-Standing Hubs				
Chicago-O'Hare IL	3.91**	-5.82**	3.55**	3.95x10^{-7}**
Minn/St.Paul MN	-14.99**	-3.00**	3.81**	2.40x10^{-7}**
Denver CO	-5.60**	-5.24**	4.17**	3.00x10^{-7}**
Dallas/Ft.Worth TX	-16.04**	-2.67**	3.74**	2.86x10^{-7}**
Atlanta GA	-19.98**	-4.45**	5.25**	1.80x10^{-7}**
New Hubs				
Detroit MI	-6.57**	-2.85**	2.76**	2.02x10^{-7}**
Washington DC-Dulles	-28.97**	-0.42**	3.65**	1.42x10^{-7}**
Cleveland OH	-19.26**	-1.65**	3.36**	1.42x10^{-7}**
Charleston WVA	-22.20**	-0.74**	3.02**	6.41x10^{-8}
Salt Lake City UT	-19.58**	-3.52**	4.62**	1.50x10^{-7}**
Charlotte NC	-17.74**	-2.25**	3.60**	4.18x10^{-8}
Non-Hubs				
Omaha NE	0.83**	-4.67**	3.02**	1.49x10^{-7}**
Sacramento CA	-15.63**	-2.17**	3.31**	1.76x10^{-7}**
Fargo ND	-.72**	-4.31**	1.76**	2.13x10^{-7}**
Jackson MS	-14.09**	-4.56**	4.59**	1.17x10^{-7}**
Rochester MN	-10.93	-2.63*	2.95**	1.39x10^{-7}**
Wausau/Central WI	-15.3	-1.51**	2.72**	7.40x10^{-8}
Durango CO	-9.95**	-2.18**	2.54**	6.50x10^{-8}
Jacksonville NC	-20.66**	-0.58**	2.68**	8.23x10^{-8}

* statistically significant at <.10
** statistically significant at <.05
[a] The dependent variable is the log of the number of coach tickets. Adjusted R^2s range from .20 to .48. The overall F-statistic is significant in all of the equations with a range of 11.8 to 69.1.

In both years, fares tend to be most price elastic for travel to long-standing hub airports, followed by new hubs, and then non-hubs. These differences are likely to exist because of differences in the availability of consumption and/or production substitutes across airport types. In the case of consumption substitutes, the consumer's underlying preference structure may be such that travel to a smaller, non-hub city is viewed as a unique good with no close substitutes (e.g., grandmother lives in Sacramento, CA and if you want to visit her, you must go to Sacramento). Whereas travel to a large city may be seen as having many close substitutes (e.g., if the airfare from Chicago to Miami is too high you decide instead to fly to Phoenix for your winter vacation).

In the case of production substitutes, people traveling to smaller, non-hub cities may have few alternatives to traveling by air. In contrast, people traveling to larger, hub cities generally have greater access to relatively convenient transportation substitutes (e.g., express bus or train service). Operating singly or in combination,

both of these effects would lead to price elasticity patterns across destination airports like the ones found here.

A comparison of price elasticity coefficients across the two years reveals that in virtually all cases air travel becomes more price elastic during the mid 1980s. In part, this shift may be attributable to the increasing number of price sensitive leisure travelers who entered the airline market during the mid 1980s. In addition, the mid 1980s saw a change in the availability of production substitutes for business travelers. Between 1983 and 1987, firms began to use tele-conferences, conference phone calls, and express mail to conduct business that once had to be done in person. These technological shifts along with the increase in the number of pleasure travelers could explain why travel became more price elastic during this period.

Discussion and Conclusions

Nineteen-eighty-three was the first year of complete economic deregulation of commercial air travel in the US. It was the end of a transition period during which both fares and concentration levels had generally declined. Between 1983 and 1987, fares continued their downward trend, but overall market concentration increased. Despite these shifts, it appears that markets for air travel remained relatively contestable between 1983 and 1987. Evidence of this contestability is gathered from the 1983 and 1987 fare equations estimated with data on round-trip coach fares. If contestability declined during this period, then one would expect to see quantity, origin airport concentration, and (perhaps) the existence of another origin airport playing a significant role in the setting of airfares by 1987. Instead, the analyses indicate that these factors played a small role in the setting of airfares in either year.

It is noteworthy that the two markets with consistent evidence of oligopolistic pricing behavior (i.e., Chicago and Atlanta) are also two of the largest markets for air travel in the current study (see Table 1). As such, both Chicago's O'Hare and Atlanta's Hartsfield Airports may serve as leading indicators of what lies ahead in air travel markets. Alternatively, they could be some of the last remaining examples of relatively uncontestable markets that may have characterized the early deregulatory era.

While there is little evidence that the 19 sample markets declined in contestability between 1983 and 1987, the analyses reveal considerable evidence that consumer demand became more price elastic during this period. Such changes in price elasticities have direct implications for consumer welfare. In general, the more price elastic the demand, the smaller the welfare loss (gain) implied by a price increase (decrease). Thus, it would appear that during the mid 1980s, consumers became increasingly insulated from both increases and decreases in airfares--especially if they were travelling to long-standing hub airports.

Deregulation of the commercial airline industry precipitated numerous changes in air travel markets by the mid 1980s. However, the analyses presented here suggest that full deregulation was not associated with an increase in airlines' market power during that period. Are these conclusions inconsistent with the work of others? It is difficult to say.

Previous studies that find a positive relationship between concentration and airfares have generally taken a very different approach than the one used here. Often times the empirical work used aggregate and/or bivariate data (Air Transport Association, 1989; Congressional Budget Office, 1988; Dempsey, 1990; Office of the Secretary of Transportation, 1990). If multivariate modelling was based on more micro-level data, the findings on the relationship between concentration levels and airfares were either equivocal (Borenstein, 1989; 1990) or quite small (Bailey, Graham, and Kaplan, 1985).

Admittedly, to draw confident conclusions about the relationship between market concentration and airlines' pricing behavior, the current study should be extended to include more recent data. Deregulation skeptics caution that recent growth in frequent flyer programs, computer reservation systems, and gate controls at congested airports create effective barriers to entry in most air travel markets. Furthermore, the number of carriers in the US commercial airline market continues to shrink, suggesting that the national market is likely becoming more oligopolistic. Data Bank 1A tapes for the third quarter 1990 have just been released by the Department of Transportation. Our next task is to use these data to generate estimates that reflect more recent market experiences.

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Local Airport Concentration and Consumer Views of the Need for Airline Reregulation

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This paper reports on a three-city study of consumer perceptions of airline deregulation. Using computer-assisted telephone interview techniques, a random sample of Salt Lake County, Denver County, and Multnomah County (Portland, Oregon) residents were asked about various regulatory proposals. The study's key findings are that (1) support for renewed regulation of prices does not necessarily correspond with support for reregulation of routes, and (2) support for reregulation is strongest among less affluent respondents, members of the Democratic Party, and people who see a deterioration in either airline safety or fares for people with flexible travel schedules. In addition, residents of Salt Lake County are less likely to favor the re-regulation of fares than are residents of Denver or Multnomah counties.

The deregulation of the airline industry, begun in 1978, was one of the first major experiments in economic deregulation in the United States. Initial assessments of airline deregulation by economists were glowing, with most finding that deregulation had stimulated competition and substantially reduced prices without sacrificing quality or safety.

While economists raved about airline deregulation, air travellers began to equate it with more crowded planes, more frequent delays and cancellations, more capricious fares, and more near-collisions in the air. Cartoonists, columnists, and editorial writers had a field day criticizing airline travel, and many consumers began to lodge complaints with government officials.

By the end of the 1980s, some public officials were calling for re-regulation of the airline industry, although not necessarily to the extent of the pre-deregulation era (Dempsey, 1990; McGinley, 1989; Karr and McQueen, 1989; Weiner, 1990). As in the early days of airline deregulation, debate focused on concentration ratios and airline fares. With the exception of a few superficial opinion polls, no one analyzed consumer views of airline deregulation and what, if anything, needed to be done about it. Yet, the findings of such a study could make a unique contribution to the on-going debate regarding the de/re-regulation of the airline industry.

The authors of this paper are currently studying consumer opinion toward airline deregulation in three large western cities--Salt Lake City, Denver, and Portland.

Literature Review

Public policy makers, whether elected or appointed, frequently base their decisions on the results of two different types of studies--economic studies of quantifiable costs and benefits and public opinion studies of people's perception of these costs and benefits. In the case of airline deregulation, studies of the first type have far outnumbered studies of the second type.

Economic Studies

The Airline Deregulation Act of 1978 precipitated the phased withdrawal of federal government regulation so that, by 1983, airlines were free to decide which routes to serve and what prices to charge. The economic studies that appeared in the mid-1980s generally concluded that airline deregulation was working well. That is, it had increased competition and improved consumer welfare (Bailey, Graham, and Kaplan, 1986; Moore, 1986; Morrison and Winston, 1986; Trapani and Olson, 1982). Even as the 1980s came to a close, studies continued to appear documenting the net benefits of airline deregulation. A Federal Trade Commission study found that average prices fell, although mostly on long distance routes and in large city

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The authors wish to acknowledge grants from their department and, the University of Utah Research Committee for the purpose of collecting the data reported herein. In addition Drs. Ken Smith and Lois Haggard gave valuable input into the construction of the study questionnaire.

markets (Ogur, Curtis, and Wagner, 1988). A U.S. Department of Transportation (1990) study also reported that travelers benefitted by receiving more service at a lower cost. The Air Transportation Association (1989) concluded that the degree of competition in the airline industry had increased substantially since airline deregulation. Surveying the evidence, Alfred Kahn (1990), the architect of airline deregulation affirmed the continued success of deregulation despite the federal government's failure to monitor airline mergers adequately.

The scientific support for airline deregulation was not unanimous, however. Several researchers began to question whether consumer welfare was being well served in an increasingly oligopolistic market (Bailey and Williams, 1988; Mead, 1989; Karr and McQueen 1989; McGinley 1989). An Economic Policy Institute study released in 1990 claimed that routes had become more circuitous, service had deteriorated in quality, and the margin of safety had narrowed under deregulation (Dempsey, 1990). A second study found that deregulation's effect on consumer welfare was mixed (Joesch and Zick, 1991a, 1991b). Estimates of changes in consumer welfare varied depending on the concentration level of the origin and destination airports as well as the time period being analyzed.

The evidence most commonly used to indict airline deregulation was rising market concentration. Researchers and politicians alike cited the rash of airline mergers in the 1980s and the resulting increase in market concentration, especially in some hub cities. Whereas 14 carriers accounted for 90 percent of domestic commercial air travel in 1984, by 1988 that number had dropped to 8 carriers. At the local market level, no hub airport in 1984 had one airline accounting for more than 75 percent of the domestic traffic; however, by 1988, there were six such airports traffic (McGinley, 1989). Advocates of deregulation countered that increased market concentration reflected economies of scale and that market performance (i.e., prices and quality) was more relevant than market structure for judging deregulation (Kahn, 1990).

Opinion Studies

The mass media reported on, and probably amplified, public dissatisfaction with the results of airline deregulation. In addition to documenting the increasing number of consumer complaints lodged with airlines and government agencies (Dahl, 1990), major media companies sponsored public opinion polls to gauge public sentiment regarding airline deregulation.

Throughout most of the 1980s, the media-sponsored polls suggested that the public felt that airline deregulation's effects had been salutary, except with respect to airline safety (ABC News/Washington Post, 1987; Harris, 1988; Roper, 1986). By the end of the decade, however, public opinion soured regarding the non-safety effects of airline deregulation as well. A 1989 poll conducted for the Wall Street Journal reported that 43 percent of a national sample named the airline industry (from a list of 22 industries) as the one in which they had the least confidence. In addition, a third of those polled indicated that their esteem for airlines had fallen "dramatically" during the last five years (Winans and Dahl, 1989).

When asked what actions the government should take concerning deregulation, members of the general public have consistently supported more action to insure airline safety. But there has been more ambivalence regarding regulation of the economic aspects of the industry. A Roper (1986) poll reported that about half of the respondents thought there should be more controls on safety, but only 4% wanted more controls of prices and only 2% thought there should be more control of the quality of air service. Similarly, a CBS News/New York Times (1987) poll reported that 38% of the respondents thought the government should be responsible for regulating airline prices and schedules, but 54% thought the government should not.

In sum, results from opinion polls indicate that people separate deregulation's direct effects on competition and prices from its (perceived) indirect effects on safety. Until very recently at least, the general public has approved of deregulation's effect on prices and service, and has not seen the need for renewed government regulation. With respect to safety, in contrast, survey respondents have consistently reported a lack of confidence in the airlines and favor an expanded government safety role.

Despite the information generated by public opinion polls, there have been no studies that analyze the bases of public sentiment regarding airline deregulation. Not only are results presented in the aggregate without attention to individual differences by income, region of the country, or

flight experience, there also have been no attempts to relate public perceptions to the degree of competition in the airport(s) that serve them.

Methods

Research Design and Data Collection

The model underlying this three-city study is one in which public perceptions of the need for reregulation are a function of respondent characteristics as well as the nature of airline competition in his/her local market. The factors hypothesized to influence consumer attitudes toward airline regulation are: socio-demographic characteristics (i.e., education level, political affiliation, and household income), flight experience (i.e., number of flight taken in the past twelve months), and respondent assessment of price and safety trends in the airline market during the past three years.

The sample for this study was drawn from the residents of Salt Lake County, Utah, Denver County, Colorado, and Multnomah County, Oregon. Salt Lake County is served by Salt Lake International Airport, a hub airport where Delta Airlines accounted for 80% of the 5.2 million enplanements in 1989 (Federal Aviation Administration, 1989). Denver County is served by Stapleton International Airport where two airlines accounted for 85% (Continental 41% and United 44% of the market) of the 12.3 million enplanements in 1989 (Federal Aviation Administration, 1989). Multnomah County (which includes the city of Portland) is served by Portland International Airport where no one or two carriers accounted for more than 25% of the 3.0 million enplaning passengers in 1989 (Federal Aviation Administration, 1989). Portland International is not considered a hub for any major airline.

In this study, the effect of local market concentration on opinions regarding price and quality trends as well as opinions regarding airline regulation was tested. The data were obtained by telephone survey of 881 randomly sampled respondents in Salt Lake County, 399 randomly sampled respondents in Denver County, and 405 randomly sampled respondents in Multnomah County. The total sample size was 1685. Interviews were done in April and May 1991 in Salt Lake County and from early September to early October in Denver and Multnomah counties. The representative samples were drawn using random digit dialing. This method of sample selection obviously excludes households without telephones, but such households usually only constitute 2-3% of a state's population. The response rate was 78% for Salt Lake County and 76% for Denver and Multnomah counties.

Measures

The dependent variables in this study represent consumer opinions of what actions government should take regarding the regulation of the airline industry. Specifically, consumers were asked about the extent to which the government should be involved with setting airline fares and routes.

The independent variables used in this analysis were limited to those that could be asked of all respondents, regardless of whether they had flown in the recent past, plus the respondent's county of residence. It was assumed that even people who had not flown recently would have opinions about airline prices and safety. For example, respondents may have chosen not to fly precisely because they believe prices were too high and/or safety precautions were inadequate. Moreover, experiences as a flyer are not the only source of information about the airline industry. Newspapers, television, radio, and even social conversations often contain news about local air travel issues. Thus, the opinions of non-flyers were gathered along with those of recent flyers, if for no other reason than both types of people have input into policy decisions on airline regulation.

For the purposes of this study, a variety of variables were measured that could conceivably affect opinions regarding the need for reregulation of the airline industry. One set of variables consists of socioeconomic and demographic characteristics: household income, educational attainment, and political affiliation, of the respondent. Along with these background variables, another question gauged the number of times, if any, the respondent had flown out of the three airports in his/her county during the previous twelve months. A final set of variables measured perceptions of trends over the last three years in airline prices (for travellers with flexible and inflexible schedules) and airline safety.

Results

The analyses presented in this section were based on the 1685 respondents who provided complete information on all relevant survey questions. Fifty-two percent of these respondents were female. Respondents

averaged 42 years of age, had 13.8 years of formal schooling, and had a mean household income of $29,461. During the previous twelve months, 48% of the respondents had flown on a regularly scheduled commercial airline flight. Of those who had flown, approximately two-thirds had taken only one or two flights out of their respective airports.

Table 1 presents frequency distributions for the attitudinal variables that are used in the analysis. The table reveals substantial diversity in public opinion regarding safety and price trends. In addition, a number of people felt they were not knowledgeable enough to comment on either price or safety trends.

Table 1.
Frequency Distributions on Attitudinal Variables (N=1685)[a]

Question: During the past three years, would you say that airline fares in and out of Salt Lake have become cheaper, stayed the same, or become more expensive for people with flexible travel schedules? (Flexible meaning one can choose travel time, such as staying over a Saturday night to get a lower fare.)

	Salt Lake	Denver	Portland	Row Percent Totals
Cheaper	13.1%	12.8%	15.3%	13.5%
Stayed about the same	17.9	18.8	16.8	17.8
More expensive	48.6	57.6	53.6	51.9
Don't Know	20.5	10.8	14.3	16.7

Question: For people with inflexible travel schedules, have fares become cheaper, stayed about the same, or become more expensive?

	Salt Lake	Denver	Portland	Row Percent Totals
Cheaper	2.3%	1.5%	2.0%	2.0%
Stayed about the same	11.9	12.8	10.9	11.9
More expensive	62.8	68.7	70.6	66.1
Don't know	23.0	17.0	16.5	20.1

Question: In the nation as a whole, what has happened to airline safety compared to three years ago -- has commercial airline safety become better, stayed the same, or become worse?

	Salt Lake	Denver	Portland	Row Percent Totals
Better	21.7%	21.6%	23.7%	22.1%
Stayed the same	33.7	37.8	35.8	35.2
Worse	36.1	34.3	32.3	34.8
Don't know	8.5	6.3	8.1	7.9

[a]Sub-sample sizes were Salt Lake = 881, Denver = 399, and Portland = 405.

In an attempt to identify the factors that may influence public opinion regarding reregulation, two multivariate analyses were undertaken. The first equation focused on opinions regarding the reregulation of fares while the second examined opinions regarding the reregulation of routes. In each equation the independent variables included measures of the respondent's socioeconomic characteristics (i.e., education level, political party affiliation, and total household income), flight experience (i.e., number of flights taken during the past twelve months), and his/her assessment of price and safety trends in the airline market during the past three years.[4] Attitudes about price and safety trends were transformed into a series of dummy variables. The omitted category in each of these series was composed of those respondents who reported thinking that prices (or safety) had remained the same or become cheaper (or improved) during the past three years.

There are several ways in which the dependent variables could have been coded. Under one possible coding scheme, only those respondents who answered "yes" or "no" to the reregulation questions would be analyzed. If this were done, information on the 19 percent of the survey respondents who answered "don't know" to either one or both of the reregulation questions would have been lost. To avoid eliminating such a potentially important subset of the survey sample, a more complicated coding scheme was adopted where a respondent answering "no" was coded as a 1, someone answering "don't know" was coded as a 2, and someone answering "yes" was coded as a 3. This arrangement assumed that "don't know" respondents fell into a "middle ground" somewhere between those respondents who opposed reregulation and those respondents who favored it.

The ordinal nature of the dependent variables in the price and route reregulation equations meant they both violate the assumptions needed to use ordinary least squares regression analysis (Blalock, 1979). Two limited dependent variable estimation techniques, discriminant analysis and logistic regression, are often used in research that deals with ordinal dependent variables. For this investigation, logistic regression was selected over discriminant analysis because it requires fewer estimating assumptions (Press and Wilson, 1978). Specifically, given these three-point opinion scales, it was most appropriate to estimate each equation using an

[4] The original estimating equation also included the respondent's age and a variable that measured who had paid for the ticket. However, initial estimations revealed that these variables were not significant and thus they were dropped for reasons of parsimony.

ordered logit program (Maddala, 1983).[5]

The estimates of the ordered logit equations appear in Table 2. As one examines the coefficients, it is important to note that an ordered logit coefficient is interpreted as the change in the log of the odds ratio of moving from one level to the next (e.g., from saying "no," the government should not get involved in airline route regulation again, to saying "I don't know"), given a one unit change in an independent variable, holding all other independent variables in the equation constant (McKelvey and Zavoina, 1975).

Table 2.
Parameter Estimates of the Ordered Logit Equations (t-ratios in parentheses)

Independent Variables	Dependent Variables[a] Reregulation of Fares?	Reregulation of Routes?
Constant	-.196 (-.575)	-.505 (-1.48)
Respondent's Flight Frequency (number/yr)	-.002 (-0.215)	-.010 (-.762)
Respondent's Education (yrs)	-.039 (-1.61)	-.029 (-1.20)
Household Income ($/yr)	-.000 (-2.74)**	-.000 (-1.20)
Democrat[b] (1=yes; 0=otherwise)	.451 (3.63)**	.331 (2.63)**
Independent[b] (1=yes; 0=otherwise)	.202 (1.64)	.106 (.856)
Fares More Expensive for Inflex Traveler[c] (1=yes; 0=otherwise)	-.221 (-1.50)	-.235 (-1.58)
Fares DK for Inflexible Traveler[c] (1=yes; 0=otherwise)	-.643 (-2.89)**	-.401 (-1.85)*
Fares More Expensive for Flexible Traveler[d] (1=yes; 0=otherwise)	.757 (6.51)**	.339 (2.94)**
Fares DK for Flexible Traveler[d] (1=yes; 0=otherwise)	.734 (3.47)**	.513 (2.54)**
Safety Worse[e] (1=yes; 0=otherwise)	.725 (7.00)**	.658 (6.20)**
Safety DK[e] (1=yes; 0=otherwise)	.478 (2.25)**	.544 (2.55)**
Denver County Residents[f]	.043 (0.34)	.276 (2.18)**
Portland County Residents[f]	.109 (0.88)	.467 (3.78)**
Alpha(1)[g]	.392 (12.51)**	.438 (13.12)**

** statistically significant at .05
* statistically significant at .10

[a] In both cases, the dependent variable can take on three different values: 1 = no, 2 = DK, and 3 = yes. The overall χ^2s for each equation was 136.38 and 91.36 respectively. Both χ^2s are statistically significant at the .05 level.

[b] The omitted category for this group of dummy variables is composed of those respondents who identified themselves as Republicans.

[c] The omitted category for this group of dummy variables is composed of those respondents who said they believed that airline fares had become cheaper or remained the same for people with inflexible travel schedules during the past three years.

[d] The omitted category for this group of dummy variables is composed of those respondents who said they believed that airline fares had become cheaper or remained the same for people with flexible travel schedules during the past three years.

[e] The omitted category for this group of dummy variables is composed of those respondents who said they believed that safety had remained the same or improved during the past three years.

[f] The omitted category for this group of dummy variables is composed of those respondents who were Salt Lake County residents.

[g] Alpha(1) is a level-specific intercept shifter estimated in the ordered logit program.

The results indicate that two socioeconomic variables--household income and political party affiliation--influenced attitudes regarding reregulation of the airline industry. Respondents from higher income households were less likely to favor reregulation of airline fares, holding other factors constant, but household income did not appear to influence a respondent's opinion regarding route reregulation. Respondents who identified themselves as Democrats were more likely to favor both route and fare reregulation than were Republican respondents (the omitted dummy variable category). There were no significant differences in opinion between Independents and Republicans. Together, the results are in keeping with the notion that lower income, politically liberal individuals are particularly likely to favor government intervention in the marketplace.

Public opinion regarding reregulation of airline fares and routes did not vary with the respondent's education level or flight frequency. The lack of association between flight frequency and one's opinion about reregulation is particularly interesting. If deregulation has led to a categorical expansion of routes and a general reduction in fares, then frequent flyers should have a stronger vested interest in maintaining the deregulated market than those individuals who fly infrequently. If deregulation has led to a substantial decline in routes serviced and a general increase in fares, then frequent flyers should be more likely than infrequent flyers to voice support for government

[5] It can be argued that opinions regarding the reregulation of fares and opinions regarding the reregulation of routes are simultaneously determined. If this is true, then the two equations should be estimated simultaneously. (The data had a simple correlation of .43 between the two variables.) However, an investigation of several statistical software programs, including SAS, LIMDEP, and SPSSX, revealed that none of them had the capacity to estimate simultaneous ordered probits. As a result, estimation of each equation was done separately.

intervention in this market. Either way, a relationship between flight frequency and opinion regarding reregulation would have been expected. The absence of such a relationship may indicate that flyers' experiences with fares and routing vary considerably from trip to trip or that there are distinct subsets of flyers (e.g., business travelers and pleasures travelers) whose opinions counterbalance each other.

Compared to the two other cities in the study, Salt Lake respondents were significantly more inclined to oppose reregulation of routes than Denver and Portland respondents. This may reflect some of the unique aspects of the Salt Lake City market. During the initial years of deregulation, Western Airlines made Salt Lake City one of its new hub airports, increasing route service between Salt Lake and other cities. In the mid 1980s, Delta Airlines bought out Western Airlines and continued the expansion of the number of "spoke" cities serviced by the "hub" airport in Salt Lake City. In short, the residents of Salt Lake County have seen a substantial increase in the number of destination cities serviced by direct flights from the Salt Lake Airport since airline deregulation was initiated in the late 1970s. Thus, the substantial opposition to the reregulation of routes voiced by survey respondents may be attributable to their perception that any reregulation of airline routes would lead to a reduction in direct-flight service at the Salt Lake City Airport.

Attitudes about recent pricing trends for the flexible traveler were a strong predictor of public opinion regarding airline reregulation in the current analysis. Specifically, people who believed that fares had become more expensive for flexible travelers were significantly more likely to favor government re-intervention in the setting of both fares and routes than were people who believed that fares have remained the same or gotten cheaper for flexible travelers during the past three years, ceteris paribus In contrast, the relationship between attitudes about recent pricing trends for inflexible travelers and opinions regarding reregulation were generally insignificant (and opposite in sign in the one instance where the coefficient was significant at the .10 level).[6]

One possible explanation for this pattern of results is that the public is unsympathetic to the plight of the inflexible flyer. The inflexible flyers appears to be unwilling to adjust their flight schedules to reduce the airfare or are people whose travel is paid for by an employer. In contrast, the flexible travelers may be thought of as "meeting the airlines half way" by purchasing their tickets well in advance, staying over a Saturday night, and/or traveling only on certain days/routes. If a respondent perceives that flexible flyers' fares are rising despite these concessions, then he/she may be more likely to believe that reregulation might be called for. Conversely, if a person perceives that flexible travelers are being rewarded with lower fares in exchange for these ticket restrictions, then favoring the current non-regulatory policy seems a more likely response.

Finally, an examination of the coefficients associated with the safety dummy variables shows that respondents who believed safety had declined during the past three years were more likely to support the reregulation of both fares and routes than were respondents who believed safety has remained the same or improved, ceteris paribus. Similarly, those who reported that they were unsure about safety trends were also more likely to support reregulation.

The relationship between negative attitudes about airline safety trends and support for reregulation of the airline industry is especially interesting in light of two facts. First, while the 1978 Airline Deregulation Act phased out government controls on commercial air fares and routes, it did not alter the government's role in the regulation of airline safety. Second, the airline accident rate has shown a general decline since the early 1980s when the phasing in of economic deregulation was completed (Winans and Dahl, 1989). Thus, there is neither a statutory nor an evidentiary link between safety and route/fare deregulation in the commercial airline market. Nevertheless, those respondents who (incorrectly) perceive air safety to be on the decline were more likely to be favorably disposed to government's reregulation of this industry.

Discussion and Conclusions

This papers reports results from a three-city study of public perceptions of airline deregulation. A non-hub city, Portland, a long-standing hub city with two major carriers, Denver,

[6] While the frequency distributions on these two attitudinal measures were quite similar (see Table 1), their simple correlation is only .18, suggesting that those respondents who believe fares have increased (decreased) for the flexible traveler are not generally the same respondents who believe fares have increased (decreased) for the inflexible traveler.

and a recently created hub city with one dominant carrier, Salt Lake City, were compared.

Given the limits of a three-city study, what can be said about public preference for airline reregulation? Public opinion appears to be complex. Opinions about fare reregulation are quite independent of opinions about route reregulation. Thus, it cannot be said that consumers hold simple, undifferentiated views regarding the need for airline deregulation.

It is important to recognize that the vast majority of consumers favored neither reregulation of fares nor reregulation of routes. In contrast, a large majority of the sample members (60.2%) believed that federal regulations regarding airline safety are not strict enough (data not reported in tables). Only 1.4% of the respondents felt that government safety regulation was too strict. While respondents who believed that safety had deteriorated with deregulation were more inclined to favor reregulation of fares and routes, the overall pattern of results suggest that people differentially assess the various aspects of airline deregulation.

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Households and Workers Engaged in Homebased Employment

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Households with homebased work had at least one member working for pay at least one day per week with no other office and have been in business six months. Farming did not qualify. Most households were located in cities; others were evenly divided between small towns and rural nonfarm areas. The overwhelming majority were homeowners and the majority had been in the same location for at least ten years. The majority were married; the majority had children; the majority consisted of only parents and children.

This workshop presents preliminary results from USDA-CSRS regional research project NE167, "At-Home Income Generation: Impact on Management, Productivity, and Stability in Rural/Urban Families." At-home income generation was defined as working for pay at or from home and having no other office for conducting this work. To qualify, at least one household member had to have been earning income at home for at least six months and working at the activity for at least eight hours per week. Farming did not qualify, but activities such as roadside markets did.

Telephone interviews were conducted in nine states -- Hawaii, Iowa, Michigan, Missouri, Ohio, Pennsylvania, New York, Utah, and Vermont -- by the Iowa Statistical Laboratory. Each state was divided into urban and rural areas by designating counties containing at least one city with a population of 25,000 or more as urban and the remaining as rural. New York City, Philadelphia and Detroit were excluded.

Survey Sampling, Inc. provided the sampling frame from their lists of household telephones. Because households generating income at home are a rare population, a pilot study was conducted to estimate the incidence of working numbers on the list and eligible households in each stratum. Seventy households in each area of each state except Hawaii were called. The proportion of households eligible ranged from 5.6 percent in urban Ohio, to 12.8 percent in rural Vermont. The total questionnaires completed was one less than the target of 900, and the distribution between the urban and rural strata was reasonably on target -- 373 urban compared with the target 360 and 526 rural compared with the target 540.

The households in each stratum represent different numbers of households in the population; consequently, the results presented in these papers are based on weighted data. Sample observations were weighted up to the total number of households in the stratum. For this purpose, the numbers of households in 1985 as estimated by the Bureau of the Census were used. An additional adjustment for nonresponse was made.

Table 1
Households With Homebased Work

Characteristic	Percent
Location	
City	53.9
Small town	19.4
Rural nonfarm	19.7
Farm	7.0
Home ownership	
Owners	87.3
Renters	12.7
Years in location	
5 Years or less	20.1
6-10 Years	16.6
11-20 Years	25.4
21 Years or more	37.4
Household Structure	
Single person	7.9
Two+ single people	3.9
Couple	22.5
Couple & others	12.0
Parent & children	2.2
Parent, children & others	.5
Couples & children	41.4
Couple, children, & others	9.6

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Working At Home: Who Is and At What?

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This paper provides descriptive results from a nine state regional research project, NE-167, funded by the Agricultural Experiment Stations of the participating states. Information was gathered in spring 1989 through a telephone survey utilizing 899 household managers in households where at least one person was engaged in generating income at home. Results are based on data weighted to represent the rural-urban nature of the combined state populations.

Demographic Characteristics of the Workers

About 58 percent of the workers were men, and 85 percent were married. Their years of education ranged from 6 to 20, with about two-thirds being high school graduates (33%) or having some college (30%). The median years of education was 13, and the median age of the workers was 41. More than one-half (56%) were in the 25-44 age bracket and one-fifth were 55 years or older.

Worker - Work Characteristics

Almost one-half of the workers (48%) had been engaged in work at home for five years or less compared to more than one-fourth who had worked at home for 10 years or more. The median number of hours worked at home was 1125. This is equivalent to 28 weeks, working 40 hours each week or 50 weeks, working 22.5 hours. Most of the homebased jobs were not seasonal (88%). Some of the workers (26%) also had jobs that were not homebased.

The occupational category represented by 24 percent of the workers was marketing-sales. This was followed (in descending order) by contractors (15%), mechanical-transportation (13%), and services (12%).

Data from the survey included information on income received in 1988 attributable to the homebased work. This income ranged from -$12,374 to $150,000. (The negative income figures are associated with business owners who operated at a loss in 1988). Mean home-based work income was $17,922 and the median was $11,000.

The majority of the workers (75%) were also owners of the businesses in which they worked. Only 25 percent were employees.

Description of Owned Business

Eighty-two percent of the businesses were held as sole ownerships in contrast to partnerships or corporations. The number of employees hired by owners varied from none (31%) to 16 or more (3%). Only 33 percent of the owners with paid employees hired their own household members.

The occupations most represented by the owner-workers were contractors (19%), crafts-artisans (17%), services (15%), mechanical-transportation (14%), and marketing-sales (13%).

The income range for owners was -$12,374 to $150,000. The mean income was $15,702, and the median income was $9,890.

Description of Employees

Employees had various bases for being paid. More than one-third were paid an hourly wage or salary (35%), in contrast to only 6 percent who were paid on a piece work basis.

Marketing-sales was the most likely occupational category for employees (51%) followed by professional-technical (15%) and clerical-administrative (12%).

The income range for employees was $0 to $110,000. The mean income for employees was $24,426, and the median income was $20,000.

This data, collected specifically from households where paid work occurs, gives the project investigators an opportunity to answer some of the questions which have recently been raised about home based work. What effects does it have on family life? What products and services are sold by these businesses? What are the economic impacts on local communities? To what extent are family members' "free" labor subsidizing these businesses? Efforts are on-going to answer these and many other questions.

Homebased Work and Management Practices

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In this regional research, one purpose was to study management in households where paid productive activities were based. In these households, employment as well as family activities might be a little more precise, clearly defined and recognizable to the person or persons involved. This analysis only involved homebased workers who were also managers of their households. Both the notion of manager and homebased worker were consistently defined within the sample group. The Deacon and Firebaugh management framework was utilized to formulate questions that were phrased and directed toward only the homebased paid work activity.

This subsample homebased workers who were also household managers were 53.6% (weighted) of the total sample. Descriptive statistics showed that this group was predominantly married females, whose average age was 42 and educational level was 14 years. The predominant household was a three member household with no children under six years of age and homeowners having lived in the community almost 20 years. The households were slightly more predominantly in towns or cities greater than 2500. In terms of homebased work characteristics, there was an average 8 year history of homebased work. This homebased work was predominantly associated with a self-owned business that hired employees and services. The homebased work was often not seasonal and involved marketing and sales or service type work.

Ten questions representing manage concepts were asked about the homebased work that the manager was involved in. A five point scale of likeness was used for recording the responses. Confirmatory Factor Analysis (principal components with VARIMAX rotation) was used to analyze the responses to the ten management questions. Factor loadings greater than .3 are noted; however, only factor loadings greater than .5 (highlighted in bold type) were considered important enough to identify and name factors.

Through prescreening and various evaluations and reevaluations, the wording of each management question was honed. It should be noted that respondents to the questionnaire had no noticeable difficulty in answering these management questions/concepts. This may be related to the "visibility" of management behavior in homebased employment versus other activities.

The Factor Analysis did produced three identifiable factors shown and labeled in Table 1. Factor 1 represents both implementing and output concepts. Factor 2 predominantly consists of planning concepts with exception of actuating. And finally, Factor 3 includes concepts from input, throughout and output segments of the management model. While these identifiable factors were gleaned from this analysis, there appears to be some "lapping over" of loadings relative to the distinct segments of the management model. This may mean that while specific management concepts are identifiable and generally related to subprocesses within the management model such as planning, the actual subsections such as inputs, planning, implementing and outputs are not necessarily separable ideas to the homebased worker. Factor 3 is also interesting in that one major management concept from each subsection loads with this factor.

In conclusion, management concepts seem to be apparent to homebased workers as they go about their homebased work. While specific components/concepts of the overall management process are identified, subprocesses such as planning implementing are not clearly identifiable with these concepts as delineated by the traditional Deacon and Firebaugh family management model.

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Table 1:
Factor Analysis (using SAS principals components procedure with VARIMAX rotation and weighted data)

	Factor Loadings		
	Factor 1	Factor 2	Factor 3
Management Concepts	IMPLEMENTING/ OUTPUT	PLANNING	INPUT/OUTPUT
INPUT			
Goals			.74974
PLANNING			
Standard setting		.72908	
Demand clarification		.52306	.39633
Resource assessment	.34203	.68805	
Action sequencing		.35724	.61608
IMPLEMENTING			
Actuating		.53108	.37840
Checking	.60588		
Adjusting	.73511		
OUTPUT			
Demand responses	.70716		
Resources changes	.52006		.56869

Child Care and Homebased Employment

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For some households the availability of a homebased employment or business opportunities may serve as one solution to today's child care crisis. However, some homebased work households continue to need child care and may have special child care needs such as location, hours and space.

There is limited literature on family life and homebased employment. Completed studies have often concluded that due to flexibility of scheduling and the closeness of one's workplace, working at home enhances the quality of family life (Horvath, 1986). Beach (1985) found that workdays frequently were interrupted by child, family and household tasks. The homebased worker, especially the women in her sample, tended to adjust the demand of paid work to the needs of their families. This was viewed as a positive aspect of working at home. Earlier small sample studies found that a major motivation for women to work at home was to care for their children (Pratt, 1984). However, Christensen (1988) determined that working at home does not necessarily eliminate the need for outside child care but it can solve some short-term child care problems such as a sick child. When first counting homebased workers nationally in 1985 Department of Labor study, Horvath (1986) quickly hypothesized that women with young children could just work for pay at home and take care of the children. The purpose of this paper was to examine the factors associated with the use of child care by homebased workers.

Taken from NE-167 sample of homebased employed households, the sample used in this analysis were only households with children who needed care. The typical homebased worker in this analysis was a 36 year old male who was married with two children and had 14 years of education with $40,000 annual family income from all sources in 1988. This homebased worker had lived an average of 15 years in a small town or rural community. The typical homebased worker had been engaged in this type of work for 6 years and was more likely to be a nonseasonal self-employed business person who hired employees and other services.

The households with children who needed care constituted 41.5% of the original homebased employed households. Of this group approximately 38% use child care and the rest did not. The highest percentage of child care was used by homebased workers with children 2 and 3 years old. Logit analysis was used to test the effects of worker, household, and work characteristics on the use of child care. See Table 1.

Several conclusions may be reached. First, it appears that homebased work is used as coping strategy to ease child care need. Secondly, it is also clear that homebased working households use child care and that it is not simply that Mom and Dad can just stay home to work and take care of children at the same time. Finally, there may be special child care needs of homebased working households, because they are more likely to be located in small town or rural areas or farms, and have long hours with interesting intermixes of work and family.

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Table 1:
Logit Estimates of the Research Variables Associated with the Likelihood of Using Child Care (by Homebased Households Who Have Children Who Need Care)

Variables	Coefficient[a] (standard error)	t-statistic
WORKER CHARACTERISTICS		
Males	0.37723	52.04386***
	(0.00725)	
Age	-0.08625	-137.24438***
	(0.00063)	
Years of education	0.02451	13.73591***
	(0.00178)	
Singles	0.52841	31.78276***
	(0.01663)	
HOUSEHOLD CHARACTERISTICS		
Total income (annual $)	0.00001532	89.39256***
	(0.00000017)	
Non-homeowners	-0.33772	-29.67095***
	(0.01138)	
Towns <2500, rural areas & farms	-0.07077	-9.58831***
	(0.00738)	
Years lived in community	0.00313	9.270467***
	(0.00032)	
Child < 1 year	-0.54685	-41.02640***
	(0.01333)	
Child 1 year	-0.97684	-90.71171***
	(0.01077)	
Child 2 years	0.69538	67.49363***
	(0.01030)	
Child 3 years	0.36604	37.72563***
	(0.00970)	
Child 4 years	0.01212	1.28545
	(0.00942)	
Child 5 years	-0.03211	-3.10789***
	(0.01033)	
Child 6 years	-0.35692	-36.17447***
	(0.00987)	
Child 7 to 8 years	0.23356	29.45121***
	(0.00793)	
Child 9 to 10 years	-0.00952	-1.19838
	(0.00794)	
Child 11 to 12 years	-0.79932	-78.08387***
	(0.01024)	
Child 13 to 14 years	-0.38329	-33.86560***
	(0.01132)	
WORK CHARACTERISTICS		
Years engaged in	-0.00508	-6.44737***
	(0.00079)	
Seasonal	-0.51422	-44.42442***
	(0.01158)	
Owns business	0.01190	1.45250*
	(0.00819)	
Hires employees, services	0.35918	21.78625***
	(0.01649)	
Occupational rank	-0.08254	-49.71520***
	(0.00167)	
CONSTANT	1.70003	44.64719***
Log-likelihood = -267,736.45		
Chi square = 75,312.97***		
Number of observations = 460,317[a]		

* Significant at .10 level
** Significant at .05 level
*** Significant at .01 level
[a]weighted

Home Based Work and Family Functioning

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Though most studies of why persons chose at-home-income-generation point to family life as the reason for this decision, there has been a lack of research on the effects of work on the life of the family. NE-167 used measures of family affective functioning to determine to what extent the family's functioning style impacts on the manner in which the family does income production tasks at home.

Owen and Gray (1985) found evidence that some at home businesses are appropriate to certain family stages and composition. How the family relates to the outside world, allocates rsources and controls information, called the family functioning paradigm (Constantine, 1986), appears to have important implications for how a family combines generating income and a satisfying family life under one roof.

Measurement of Family Functioning Types

NE-167 sought to provide measures of multiple family concepts and issues to obtain specific information on the family/work interface. Besides life cycle measures, demographics and life satisfaction measures, the project included measures of family management, intrusion and family functioning in the questionnaire. This paper is limited to the confirmatory factor analysis of family functioning scales. Within the project these are used to study the relationships among management and work activities and environments within at-home-income-generating families.

Issues which restricted the items used to measure family functioning were: telephone interview with no open ended questions; quick execution; passable discrimination and understandibility; and noninvasive. Kantor and Lehr's (1975) family systems theory, as adapted by Constantine (1986) formed the basic premise for the family scale used in NE-167. NE-167 uses three family types estimated to represent more than ninety percent of families. These are arrayed over five dimensions considered to be discriminating (among the family types) and least invasive. The dimensions of family life represented are time, space, pattern, decision making style and business "fit."

Table 1.
Selected Factor Loadings

FAMILY ITEMS	I	II
RANDOM TIME	.70	-.16
RANDOM DECISION	.81	.08
CLOSED TIME	-.32	.51
OPEN DECISON	-.72	.35
OPEN TIME	-.49	.48
OPEN PATTERN	.06	.69
RELIABILITY	.72	.69

Factor Analysis

Factor analysis of the family functioning scale suggests that there are five identifiable factors. Considering the statistical evidence and the theoretical constructs, three factors do identify family functioning styles. However, the reliability for teh closed family factor(.34), is too low for use. Thus two factors are reported here (Table 1). The first has high scores corresponding to a random family type; the second factor is a close reverse of the first and represents a combination of an open and closed family at high scores.

Underlying factor I are three dimensions of the random style. Factor II combines four open family dimensions. The resultant scores of these items will be used to measure the degree to which a family welcomes change and intrusion as family theme.

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Consumer Choice Among Comprehensive Health Insurance Options

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Abstract

Health care choices of a random sample (n = 850) of employees were examined using Bashshur & Metzner's (1970) risk-vulnerability hypothesis and Engel, Blackwell, & Miniard's (1990) search model. The risk-vulnerability hypothesis was supported by multivariate analysis for HMO enrollment but not PPO enrollment. An expanded model produced mixed results. The search model provided a weak explanation of the amount of external search done by employers.

Introduction

In the United States, there has been an increased reliance on the market forces to contain health care costs. These market-based strategies include two broad approaches. The first approach concentrates on increasing competition. The second approach emphasizes cost sharing by increasing front-end deductibles and coinsurance to encourage consumer cost-sensitivity and provider price competition (Seidman 1980; Feldstein 1981).

One result of these efforts is that employers are offering employees revised, flexible, "innovative" health plans. Most employees must choose between at least two health care plans (Garland, Hoerr, Galen, Hawkins, DeGeorge, Mallory, and Levine 1989). Enrollees are assumed to select insurance plans in a rational manner, according to the best interest of themselves and their families (Schuttinga, Falik, and Steinwald 1986).

Purpose

The first goal of this research was to replicate studies concerning consumer decision-making when individuals are faced with several health insurance alternatives. Part A of Hypothesis One was a univariate analysis of the risk-vulnerability hypothesis, with the expectation that the risk-vulnerability hypothesis would be rejected. Part B of Hypothesis One was a multivariate analysis of the risk-vulnerability hypothesis using a slightly expanded equation. The second goal of the research study was to formulate a more comprehensive equation to provide a better explanation, than in Part B of Hypothesis One, of the enrollment decision. Hypothesis 3 was a test of the search component of the Engel, Blackwell, and Miniard (1990) model. It was hypothesized that the amount an enrollee searches for information in the context of choice of comprehensive health insurance could be predicted by the variables in the model.

Literature Review

It is presumed that individuals will rank the available options (perhaps implicitly) according to their own financial circumstances, expected need for medical care, uncertainty regarding medical expenditures, aversion to risk of financial loss, and their beliefs about medical practice (Schuttinga, Falik, and Steinwald 1986; Berki and Ashcraft 1980). When the choice includes health maintenance organizations (HMOs), the financial characteristics change. Traditionally, HMO premiums are higher, coverage is more extensive, and copayments for services are nominal. In addition, features of the delivery system are affected. HMO members are required to use plan physicians and facilities, and access to special care is controlled through a referral process. The family's attitude toward preferences for different delivery system characteristics now enter into the decision process (Berki and Ashcraft 1980).

Studies of enrollment choice attempt to determine individual and family characteristics that differentiate those who select an HMO from those who do not, and to differentiate between those who select a prepaid group practice or close-panel HMO and those who choose an individual practice association (IPA) or open-panel HMO (Berki and Ashcraft 1980).

There is a sizable body of literature on the correlates of the health insurance enrollment decision. Two excellent reviews of this literature have been offered by Acito (1978) and Berki and Ashcraft (1980). Most of this research has investigated

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determinants of choice in terms of services and cost (i.e., features) of the plans.

Some of these efforts have employed the "risk-vulnerability hypothesis" first described by Bashshur and Metzner (1970) and elaborated upon by a number of other investigators (Bice 1975; Tessler and Mechanic 1975; Berki et al. 1978; Scitovsky, Mc Call, and Benham 1978; Juba, Lave, and Shaddy 1980; Grazier, Richardson, Martin, and Diehr 1986; Merrill, Jackson, and Reuter 1986; Welch and Frank 1986). The risk-vulnerability hypothesis consolidates economic and medical considerations to posit that those who feel themselves to be more vulnerable, either economically or medically, are the ones most likely to enroll in an HMO (Berki et al. 1978).

The evidence of the tenability of the risk-vulnerability hypothesis has been mixed (Berki et al. 1978). Some studies confirm that enrolles in HMO-type plans tend to be married, older, sicker, and higher users of health services (Metzner and Bashshur 1967; Moustafa, Hopkins, and Kline 1971). Other studies, however, find no support, equivocal support, or tend to contradict the hypothesis (Bice 1975; Tessler and Mechanic 1975; Berki et al. 1978; Juba, Lave, and Shaddy 1980; Merrill, Jackson, and Reuter 1986).

An extensive literature review identified additional variables which should provide a better explanation of the enrollment choice. Other variables found by researchers to be important in the enrollment decision were comprehensiveness of coverage, experience and satisfaction with previous plans, claims processing, propensity to use medical care services, and prepaid group plan market share.

The success of competition based cost-containment strategies hinges on the ability of consumers to make informed choices (Hibbard and Weeks 1987). A consumer orientation implies that health care users take an active role in assessing the relative cost and quality of alternative source of care, and make informed choices in the use of health services. Consumers must also choose the health insurance plan which will best meet their anticipated financial and health circumstances (Hibbard and Weeks 1988). When one assumes that consumers are making a rational decision, the decision process can be examined in the context of consumer behavior models.

Engel, Blackwell, and Miniard (1990) define problem solving as reasoned action undertaken to bring about a need satisfaction. The Extended Problem Solving process (an actively reasoned decision) is most likely to occur when there is high involvement, brand differentiation, and absence of time pressure. The EPS process proposed by Engel, Blackwell, and Miniard (1990) is composed of five phases, not necessarily followed in any precise order: 1) need recognition; 2) search for information; 3) alternative evaluation; 4) purchase/choice; and 5) outcomes.

Search for information, as defined by Engel, Blackwell, and Miniard (1990), is as follows: The consumer searches for information stored in memory (internal search) or acquires decision relevant information from the environment (external search). An indepth discussion of the search component can be found in the sixth edition of Consumer Behavior (Engel, Blackwell, and Miniard 1990).

According to Engel, Blackwell, and Miniard (1990), a variety of factors influence search. These factors include situational characteristics (i.e, availability and quantity of information in the marketplace, format of the information (Russo 1977; Russo, Kreiser, Myashita 1975), and time pressures (Beatty and Smith 1987; Moore and Lehmann 1980); marketplace characteristics (i.e., features of the product including product differentiation and stability of a product category); and consumer characteristics (knowledge, consumer involvement, consumer's attitudes toward shopping, consumer's belief toward perception of costs versus benefits of search, and demographic characteristics (i.e., age, income, education)).

Search for potential need satisfiers will occur following need recognition. If an internal search of memory provides a satisfactory solution to the consumption problem, then it will be unnecessary for consumers to seek information from their environment. Often, however, some degree of external search will be necessary. Just how much search behavior will occur varies across consumers and depends on a host of situational, marketplace, and consumer characteristics (Engel, Blackwell, and Miniard 1990).

Methodology

In April 1989, a random sample of two thousand employees of a large

midwestern university were mailed a sixteen item questionnaire concerning their November, 1988 enrollment decision among four comprehensive health insurance plans. The options available included a self-insured fee-for-service plan, a preferred provider organization (PPO), and two health maintenance organizations (HMO). One thousand, three hundred and forty eight surveys were returned for a response rate of 67.4%. Eight hundred and fifty surveys had complete information for eligible respondents who enrolled in one of the health insurance plans resulting in a useable response rate of 42.55%. The sample was representative of the entire employee population based on job status. Of the 850 employees, 180 (21.2%) enrolled in the fee-for-service plan, 252 (29.6%) enrolled in the preferred provider organization, and 418 (49.2%) employees enrolled in one of the two health maintenance organizations.

Descriptive statistics were used to segment the three enrollee groups along sociodemographic variables and health-status indicators. In Part A of Hypothesis One, One-way Anovas were performed to determine if enrollees of the HMO's were significantly different from the fee-for-service or preferred provider enrollees in the vulnerability characteristics. Logistic regression was used in Part B of Hypothesis One and Hypothesis Two to accommodate dichotomous dependent variables and both continuous and categorical explanatory variables. The dependent variables in both Part B of Hypothesis One and Hypothesis Two were the probability of joining either an HMO, a fee-for-service, or a PPO. Multiple regression analysis was used to test the influence of the independent variables in predicting the dependent variable external search in Hypothesis Three.

Findings

Hypothesis One

Variables used to test Part A of Hypothesis One included four measures of health status, family income, and family life stage risk. Based on the univariate analysis used in testing Part A, the risk-vulnerability hypothesis set forth by Bashshur and Metzner (1970), was rejected. HMO enrollees reported themselves and their families healthier than fee-for-service enrollees on all four measures. And HMO enrollees reported lower income, inconsistent with Bashshur & Metzner's hypothesis. PPO enrollees were significantly different from HMO enrollees on only two of the six variables. They were more likely to report a chronic health condition and higher income than the HMO enrollees.

Whereas the univariate analysis rejected the risk-vulnerability hypothesis, the multivariate analysis (Part B, Hypothesis One) supported it. The model used in Part B can be found in Figure 1.

Figure 1. Model - Hypothesis One, Part B

Health Plan = f(health status and prior utilization, family life stage, education, relation to provider, access to care)

The multivariate testing of the risk-vulnerability hypothesis was found to provide a good explanation of the choice among the HMO enrollee group, with six of the twelve variables significant and in the expected direction. The model did not provide an adequate explanation of the PPO enrollee decision. Only two of the twelve variables were significant; both were measures of access.

Hypothesis Two

It was hypothesized that the model in Hypothesis Two would provide a better explanation of the choice when an employee is offered two or more health insurance options. Figure 2 shows the model used in testing Hypothesis Two.

Figure 2. Model - Hypothesis Two

Health Plan = f(health status and prior utilization, family income levels, family life stage, education, relation to provider, access to care, comprehensiveness of coverage, experience and satisfaction with source of care, claims processing, propensity to use medical care services, out-of-pocket costs, extended travel, dependents not living in the area)

Hypothesis Two was rejected for the HMO enrollee group. Although thirteen of the nineteen independent variables had the expected sign, most were not significant. Five variables were significant, but three of those had signs that were not as expected. Hypothesis Two was neither rejected nor accepted for the fee-for-service group, and was accepted for the PPO enrollee group. Nine of the nineteen signs on the beta coefficients were correct when predicting enrollment in the PPO; five variables were significant. The model used in testing Hypothesis Two gave a different explanation of the enrollment decision, not necessarily a better one.

Hypothesis Three

It was hypothesized that the amount an enrollee searches for

external information in the context of health insurance choice could be predicted by the variables set forth in the search component of the Engel, Blackwell, and Miniard Model (1990).

Figure 3. Model - Hypothesis Three

Search = f(knowledge, product differentiation, product involvement, attitude toward shopping, stability of product category, age, income, education)

Hypothesis Three was rejected based on the fact that the regression equation accounted for only 22.86% of the variation in the dependent variable. A rule-of-thumb is that greater than 50% of the variance should be explained by the independent variables to have much confidence in the model (Brooks and Arnold 1985). Four of the eleven variables were statistically significant: internal search, perception of out-of-pocket costs, premium, and education.

Implications

For Research

Further research in the area of consumer choice among health insurance alternatives is needed, specifically those concerning choice of Preferred Provider Organizations. A better explanation of the PPO enrollee needs to be formulated. Along this line, a study which compares the PPO and HMO enrollee exclusively needs to be conducted. In the rapidly changing health care marketplace of the 1980's, the growth of PPOs is unparalleled (Gabel, Jajich-Toth, Williams, Loughran, and Haugh 1987). Enrollment grew from only 1.3 million Americans in health plans eligible to use PPO services in December, 1984 to 16.5 million in July, 1986 (Gabel, and Erman 1985; de Lissovoy, Rice, Gabel, and Gelzer 1987).

Although the sociodemographic characteristics were significant only for the HMO enrollee group in Part B of Hypothesis One, further research could segment the enrollees along different dimensions than the ones used in this study. Segmentation of the market by gender (male versus female), marital status (single versus married), or income (high versus low) may prove fruitful. Urban and rural measures may also be important given the significance of physical access in the present study.

Finally, a model needs to be designed which captures the essence of consumer behavior in a service-oriented area.

For Practitioners

The fact that the sociodemographic variables were not found to be significant in the logit equations has a huge impact on the way marketers need to segment their market in predicting enrollment. Although there were marked differences among the three groups (fee-for-service, HMO, and PPO) along these lines, other variables were more important in the decision(s). This demonstrates the need for industry and government health care plan designers to know the value potential enrollees place on various plan features and the way these enrollees gather and evaluate information in making their enrollment choice.

Mechanic (1989) states that the premise underlying the medical marketplace is that consumers make rational choices among alternatives. For this statement to be correct, employers need to transform employees into prudent purchasers of comprehensive health insurance plans. Stone (1986) states that educational programs need to 1) provide general knowledge about the economics of health care; 2) promote consumer responsibility for informed decision making self-care; 3) enhance patient-provider communication; 4) improve understanding of group health benefits and their cost management features; and 5) promote awareness of alternative delivery systems. Education is necessary to ensure the success of the regulatory and market-oriented options that have been proposed to control the rising cost of health care in the United States.

A public policy task force has proposed regaining control over United States national health care costs in a "distinctly American" fashion by restoring the power of health care consumers to choose among competing options in a free market economy (Knowles 1990). The task force states that if supply and demand and competitive forces allocate resources, the destiny of the health care system would be determined by consumer preference and individual choice. The data in this study have shown that consumer preference and individual choice in the context of comprehensive health insurance is a very complex phenomena. Different models yielded different explanations. Different statistical analyses yielded different results. Careful consideration is necessary by policymakers, marketers, and educators as they approach their policy, marketing, and education decisions.

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Household Credit Card Choice and Usage

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The purpose of this research is to study household credit card choice and usage behavior. The model for the credit card choice behavior is a discrete choice model under the assumption that the multiple aspects of credit cards influence the choice through three sequential steps. And the model for the credit card usage behavior was developed using a neoclassical intertemporal utility maximization framework under the assumption that with a credit card bundle owned the household faces a credit card choice decision for the different usages.

Introduction

Recent studies show that credit cards appear to be playing a greater role in consumer debts than they had previously. And, the number of credit cards held by each consumer, as well as, the number of consumers holding credit cards are increasing (Canner and Cyrnak 1985, 1986). The bank credit card industry has expanded rapidly in recent years, and it competes with non-bank general purpose cards such as retailer credit cards and travel-entertainment cards (T&E cards). The retailers solicit their own credit cards and provide revolving credits. The T&E cards were originally intended for use at the travel and entertainment oriented retailers, but are rapidly becoming more acceptable at a wide variety of stores.

This phenomenon has been accelerated by several factors. Credit card issuers have been lowering the standard of eligibility for ownership and marketing to a new segment of cardholders. Many states have joined in enacting legislation that bans surcharges on payments through credit cards. New legislation has been introduced in Congress to limit credit card interest rates and require issuers to prominently disclose card terms and conditions. This environment is very different from the credit card market in the 1970s.

Under these circumstances, consumers confront difficult decisions concerning credit cards: first, consumers need to choose the cards they will hold in their credit card portpolio, and second, consumers need to decide which card(s) in their credit card bundle will be the best choice for a particular purchase. Despite the growth of credit cards during the past two decades and the above decisions consumers confront, there has been relatively little effort devoted to the formal development of models of household credit card choice and isage activities.

Therefore, the objectives were the following: (1) to develop an economic model that identifies the determinants of the consumer's possession of an additional credit card and to estimate the size and direction of the effects of those factors, (2) to determine the factors influencing usage of credit cards relative to the characteristics of cards owned and purchases, and (3) to use the above results to critique credit card policy and to suggest future policy options.

Review of Literature

The following factors were hypothesized by previous researchers to affect credit card choice and holdings: bank accounts, residential area, attitude toward credit cards, mortgage or rent payments, installment debt, perceived price of card, income, occupation, race, sex, age, and employment status. Previous researchers have been consistent on documenting a positive relationship between the probability of holding credit cards and income (Curtin and Neubig 1979, 1980; Hirschman 1979; Mandell 1972; and Heck 1984), as well as with the level of education (Awh and Waters 1974; and Curtin and Neubig 1979, 1980).

The major limitations of this body of research are (1) inadquate measures of the dependent variable (=ownership) and (2) disregard for the role of the existing credit card bundle in influencing current credit card ownership. Generally, there are two kinds of measures of credit card ownership. First, researchers have used 'holding credit card or not' as the measure of credit card ownership

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(Mandell 1972; Russell 1975; Hirschman and Goldstucker 1978; and Heck 1984). Another measure is the total number of credit cards owned (Kinsey 1978; and McAlister and Kinsey 1979). The problem with the first measure is that it is not relevant any more since most families currently possess at least one credit card. The problem with the second measure is that researchers assumed that the characteristics of all credit cards are the same. Therefore, this study is unique in that it analyzed the probability of acquiring a new credit card with the control of expected convenience, perceived cost, and the existing credit card bundle.

For credit card usage, comparisions among different types of transaction vehicles were performed: user/nonuser of credit cards; active user/inactive user; installment/ convenience user; and use of credit card/check. But, none of them consider the aspects of the type of purchase.

Theoretical Model

Credit Card Acquisition

Credit cards produce convenience by reducing transaction costs and facilitating transactions. They allow the household to buy goods without having funds available at the time of purchase and help to link purchasing and financing decisions. To obtain these benefits, households will pay some costs, such as membership fees and transaction fees. Thus, a household is confronted with the task of maximizing its utility from purchasing goods including credit cards and leisure subject to income and time constraints.

But, the continuous demand function from the conventional utility maximizing model which assumes that at the margin the utility from a good is the same cannot be used here. The utility from all types of credit cards is not same since credit cards are not homogeneous. Each credit card has distinguishable characteristics such as differences in membership fees, interest rates, and credit limits. These multiple aspects of credit card choice and multi-dimensional costs of credit cards influence the choice of credit cards. Thus, the demand for heterogeneous or qualitative goods such as credit cards is not only influenced by price but also by quality. To examine the utility from credit cards using the above perspective, the utility from each credit card is allowed to vary according to the characteristics of the credit card.

Also, credit card choice is to be seen as a three step process. The first step is the decision to acquire a card. The second step is the choice between types of cards, and the third step is the choice of a specific card in the type chosen. Suppose that a household has a set of characteristics, Z_i, that makes card acquisition more or less likely. The selection of card type depends upon a vector of factors Y_{ij}. And once a type of card has been selected, the individual will look into the options between different cards within card type. These are characterized by a vector X_{ijk}.

To capture the above structure more formally, we can model a card as having characteristics Q_{ijk}. Then we can think of household H as having a utility, V_{ijk} from card type Q_{ijk} of the form:

$$V^h_{ijk} = v \ (\ Q_{ijk}, \ H \ )$$

This capture the utility of an individual expost, or in a world of perfect certainty. But, the credit card market is informationally imperfect due to limited accessability of information. This imperfect information may result in price and quality dispersion in the credit card market. With the existence of these imperfections and randomness, the stochastic indirect utility function is defined:

$$W^h_{ijk} = V^h_{ijk} + \varepsilon_{ijk}$$

$$= v \ (\ X^h_{ijk}, \ Y^h_{ij}, \ Z^h_i \ ) + \varepsilon_{ijk}$$

where ε_{ijk} is a random term that captures the imperfections in perception and maximization. We can then think of the card that this household will select as C_{ijk}, where this is selected if it yields the greatest value of W_{ijk}. Therefore,

$$C^*_{ijk} = c \ (\ Q_{ijk}, \ H, \ \varepsilon_{ijk} \ )$$

The utility maximization choice C^*_{ijk} depends on the characteristics of credit card from each decision-making step, the characteristics of the household, and ε_{ijk}, imperfection in maximization.

Credit Card Usage

The theoretical model to analyze credit card usage behavior is based within a neoclassical intertemporal utility maximization framework. Household decisions relating to the timing of purchases and choice of transaction vehicles involve many difficult and important choices. To choose an appropriate transaction vehicle, the household has to compare the opportunity costs and benefits of each available choice. In this

research, the case that a credit card was chosen as transaction vehicle is considered, and it assumes that a household has a credit card bundle at least one credit card from each credit card group. The household faces different budget constraints for each alternative with respect to three credit card characteristics, grace period, credit line, and interest rate. Thus, the household will choose the credit card which maximizes its intertemporal utility which is depending upon the characteristics of credit cards and the household.

But, there are several sources of variation in credit card choice with regard to the characteristics of the credit card, the purchase, and the household. With the existence of these imperfections and randomness, a stochastic choice function is defined. Thus, a credit card choice for usage is depending upon the characteristics of a household's credit card bundle, the purchase and the household's characteristics as well as a residual imperfections.

Data and Empirical Model

Recent information on the attitudes and behavior of credit cardholders was available from the survey "Study of Consumer's Card Behavior and Preference" collected in 1986 by Pament System's Inc. This survey is a nationally representative sample of the United States, excluding income groups below $10,000 and consists of 1,495 valid mail surveys.

Since the data set does not contain a sufficient number of observations for each of the k's, the kind of credit cards in each credit card group, the third-level of decision-making in the credit card choice model cannot be empirically analyzed.

For credit card usage model, three different usage behaviors were specified, the card used most often, the card used for the greatest total dollar amount of charges, and the card used for travel outside the local area.

The dependent variables in both models have discrete values such as choosing a bank credit card, retail store card, or T&E card. The observed discrete values are just realizations of a process with probabilities varying from alternative to alternative. Thus, this study uses the multinomial logit model considered by McFadden (1982) for estimation among typical quantal choice models.

Variables

Credit Card Characteristics: Z_i is defined as the vector of explanatory variables which can distinguish people who will choose any credit card. It consist of two factors, the level of expected convenience from a credit card and the level of perceived cost of acquiring a credit card. They are measured by six attitude variables as seen in the table. And, Y_{ij} is the difference across credit card groups, and it consists of differences in membership fees and fianacial charges in each credit card group.

Household Characteristics: there are two kinds of household characteristics, demographic variables and credit card bundle. Demographic variables are: annual household income, family life cycle, home ownership, employment status, household education level, and market size of the residential area. Credit card bundle is measured by the number and types of credit cards that a household previously obtained.

Consumer Attitudes on Credit Cards: these variables can be theoretically justified as the residuals due to imperfections in preferences and maximization, and they are represented by six different factors: Convenience User, Multiple Credit Cards Holder, Cost Awareness, Information Overload, Brand Loyalty, and Card Indifference.

Analysis and Results

Credit Card Aquisition

To analyze the first-step of credit card choice behavior, a dichotomous logit analysis is chosen because the dependent variable has two categories of observations, choose/or not choose. To analyze the second step of credit card choice behavior, the probability of choosing each group of credit cards among those choosing any card is estimated by multinomial logit analysis.

The results of the logistic estimates of factors influencing the first credit card choice decision are shown in the Table 1. All three group of factors were significant.

Among household characteristics, the level of education and the household age had positive effects on the probability of choosing an additional card, but the size of the household influenced negatively. Those positive effects show the supply-side effect of the perceived credit worthiness of highly educated and older consumers.

Table 1
Multinomial Logit Analysis of Credit Card Choice: Choose or Not Choose

Number of Cases in each choice class:
= 2 if not choose 315
= 1 if choose 782

VARIABLES	BETA	T-STAT
Constant	0.865	1.713*
Household Characteristics		
Family Annual Income		
=1 if $20,000-$29,999	-0.084	-0.326
=1 if $30,000-$44,999	-0.022	-0.092
=1 if $45,000 & over	0.158	0.632
Household Designation		
=1 if married couple	0.069	0.277
Home Ownership		
=1 if own	0.108	0.513
Employment of Household		
=1 if two full-times	-0.073	-0.347
=1 if both retired	-0.003	-0.012
Education		
=1 if some college	0.355	2.016**
=1 if > college	0.500	2.451**
Market Size		
=1 if 50,000-499,999	0.345	1.553
=1 if 500,000-1,999,999	0.188	0.923
=1 if 2,000,000 & over	0.058	0.275
Size of Household	-0.131	-1.838*
Household Age		
=1 if 40=< age =<59	0.388	2.030**
=1 if 60 years & over	0.498	2.081**
Credit Card Bundle		
# of Bank C.C. held	0.325	3.929***
# of T&E C.C. held	0.885	4.061***
# of Store C.C. held	-0.059	-1.917*
Expected Convenience & Perceived Cost		
Not hesitate to apply out of state	-0.167	-1.500
Willing to pay more for higher credit limit	0.032	0.291
Can't evaluate which cards to apply	0.003	0.025
Credit card interest rate are too high	-0.038	-0.299
Annual fees are too high	0.189	1.571
Have had problems resolving errors	-0.378	-3.323***

Model Chi-Square = 110.408 with d.f.=24
Log Likelihood = -602.531

* significant at 0.10 with the critical value = 1.645
** significant at 0.05 with the critical value = 1.960
*** significant at .01 with the critical value = 2.576

Among the expected convenience and perceived cost variables, when the household had problems resolving errors in credit card statements, it would be less likely to obtain an additional credit card.

Among the credit card bundle, the number of bank credit card held and the T&E card held had positive effects, but the number of store card held had negative effects. When the number of total credit card held was used instead of these three variables, the probability of acquiring new credit card was positively related.

A positive income effect was expected because households with high time values would be most likely to have credit card in order to increase the marginal productivity of shopping time, but in this research the effect of income was insignificant.

The results of the effects of the variables on the probability of choosing a new card from each credit card group were derived by trichotomous multinomial logit as in Table 2. The parameters of the third case, that is, choosing store card, were normalized to zero, and BETA1 tells the effects of variables on the probability of choosing the first group of cards, that is, the bank credit card, for the next new card relative to the probability of choosing a store card.

The probability of choosing a bank card rather than a retail store card was affected by the level of family income, the household age, the number of bank card held, the number of store card held, the relative interest rate, the relative membership fee, and the card preference.

Surprisingly, only one variable, the relative membership fee, is statistically significant in influencing the probability of choosing a T&E card rather than a store card.

Credit Card Usage

As the first step, the logit analysis on the pooled sample of all three usages with usage dummy variables are done and reported in Table 3. The usage variables are statistically significant and show that the usage makes a difference in the probability of using T&E cards rather than bank credit cards. In addition to the usage variables, market size, attitude factors, and credit card bundle variables are statistically significant.

The probability of choosing T&E card as the most often used card was

Table 2
Multinomial Logit Analysis of Credit Card Group Choice

Number of cases in each choice class: =1 if bank c.c. chosen (562 cases); =2 if T&E c.c. chosen (56 cases); =3 if retail store c. chosen (116 cases)

VARIABLES	BETA1	T-STAT	BETA2	TSTAT
Constant	2.3653	2.2388**	-1.4733	-0.0413
Household Characteristics				
Family Annual Income				
= 1 if $20,000 - $29,999	-0.0251	-0.0549	-2.2550	-0.1145
= 1 if $30,000 - $44,999	1.0314	2.2716**	-2.7078	-0.2079
= 1 if $45,000 and over	0.5081	1.0714	-0.9892	-0.0743
Marriage (= 1 if married)	-0.4888	-1.0713	0.6250	0.0986
Home Ownership (= 1 if own)	0.1493	0.3815	4.5204	0.2663
Employment of Household				
= 1 if two full-times	-0.1076	-0.2836	-4.0871	-0.2019
= 1 if both retired	-0.0163	-0.0344	-9.3317	-1.0860
Education				
= 1 if some college	-0.0618	-0.1816	-0.7287	-0.0431
= 1 if > college graduate	-0.2605	-0.6759	5.1811	0.4038
Market Size				
= 1 if 50,000-499,999	0.2007	0.5123	-3.2396	-0.2160
= 1 if 500,000-1,999,999	0.5752	1.5423	-0.9816	-0.0615
= 1 if 2,000,000 and over	0.2862	0.7342	3.4857	0.2443
Size of Household	-0.0596	-0.4311	0.5155	0.1263
Household Age				
= 1 if 40=< age =< 59	0.9065	2.6344***	-2.4920	-0.1886
= 1 if 60 years and over	0.7340	1.6229	2.550	0.2805
Attitude Factors				
Convenience User	-0.0846	-0.2637	-6.0926	-0.4985
Multiple Cards Holder	0.3073	0.9997	-5.7818	-0.5111
Cost Awareness	0.0388	0.1375	-3.4621	-0.3282
Information Overload	-0.0080	-0.0243	-0.3606	-0.0357
Brand Loyalty	0.3688	1.3690	3.5958	0.5156
Card Preference	-0.7372	-2.6948***	-1.8516	-0.2343
Credit Card Bundle				
# of bank credit card held	0.3246	2.0085**	0.7883	0.2307
# of T&E credit card held	-0.1638	-0.6072	0.7324	0.1168
# of retail store card held	0.1644	2.6269***	1.6723	1.0679
Credit Card Characteristics				
Differences in Int. Rate	-0.2492	-8.8675***	-0.0308	-0.0486
Differences in Fee	0.0254	5.5995***	0.1440	2.8213***

Model Chi-Square = 611.16 with d.f. = 52; Log Likelihood = -202.58
Note: The parameters of the third category are normalized to zero.

* significant at 0.10 with the critical value = 1.645
** significant at 0.05 with the critical value = 1.960
*** significant at .01 with the critical value = 2.576

Table 3
Logit Analysis of Factors Influencing Credit Choice for Different Usages

Number of cases (N = 488):
= 0 if bank c.c. chosen (265)
= 1 if T&E c.c. chosen (223)

VARIABLES	BETA	P
Intercept	0.353	0.708
Family Annual Income		
=1 if $30,000-$44,999	0.108	0.809
=1 if $45,000 and over	0.645	0.131
Household Designation		
=1 if married couple	-0.369	0.144
Education		
=1 if some college	-0.407	0.251
=1 if > college	-0.005	0.989
Market Size		
=1 if 50,000-499,999	-0.864	0.055
=1 if 500,000-1,999,999	-0.105	0.801
=1 if >= 2,000,000	-0.235	0.539
Attitude Factors		
Convenience User	-0.244	0.348
Multiple Cards Holder	0.123	0.667
Cost Awareness	0.091	0.735
Card Preference	-0.429	0.097
Credit Card Bundle		
# of Bank c.c. held	-0.199	0.004
# of T&E c.c. held	0.360	0.062
Usages		
=1 if for BIGCHARGE	-0.037	0.881
=1 if for TRAVEL	2.154	0.000

Model Chi-Square = 123.88 with d.f.=16
P = 0.0000 R = 0.370

higher: when the number of T&E card held is bigger, and when the household does not know the actual interest rate. The probability of choosing T&E card for the biggest charges was influenced by whether the household knows the membership fee and the interest rate of credit card. The probability of choosing T&E cards for travelling was positively related with the level of income and the fact of whether the household knows the membership of card used, and it had a negative relationship with the card preference and the fact of whether the household knows the interest rates.

Different variables showed up as significant factors for three usages and the sizes of their effects were different also.

Conclusions and Implications

According to the above results, the following implications are made. The data used in this research were limited to the relatively high income consumers compared to the national sample, thus, this data limitation must be recognized by not over-generalizing the applicability of the estimates made.

In this research, the household who had experienced problems in resolving credit card billing errors was less willing to get another card. It means that more households would enjoy the benefits of credit cards, if those problems were prevented earlier. Thus, the consumer educators need to develop education packages to increase credit card management skills: 'How to be protected from credit card fraud,' or 'How to deal with an error in your credit card statement.'

The effect of the credit card bundle on the probability of choosing an additional card have interesting implications to the credit card marketing. In this research, the number of bank credit card held and the T&E card held have positive effects on the probability of choosing an additional card, while the number of store care held has a negative effect. It means that the acquirers of new additional credit cards are not new customers to the credit card market, but old and existing credit card customers. Thus, even when the credit card market is saturated such as now, there remain potential buyers of additional credit cards.

This research showed that the consumer decisions are influenced by the credit card characteristics. There were two significant choice-based characteristics for the choice of the credit card group, the membership fee and the interest rate. But, up to now, such information was disclosed after the application for a specific credit card was processed. Thus, it supports the enforcement of disclosure requirements on credit cards which have recently been revised in a few states. With early disclosure, the credit card information will be provided in time to be helpful to a household searching for a credit card best suited to its needs.

The following implications for future research are made. First, generally, positive relationship between income and the ownership of credit card was found. But, in this research, effects of income variables are insignificant. This means that although others find that the income

variable affects ownership of credit cards, it may have little influences when the effect of credit card bundle is controlled for. Thus, the positive income effects often found could reflect the effect of the credit card bundle indirectly, and instead of the income variable, the credit card bundle should be emphasized in the future research. Second, it is not right to measure credit card holdings by the total number of credit cards owned, which was used typically. This research indicates that the total number of credit cards held, regardless to the kind of credit card, is an inaccurate measure, and the types of credit card owned influence the credit card decision differently.

In conclusion, through this research, the characteristics that distinguish credit card choosers and users were identified. Since credit cards represent a large and growing component of the whole economy, it will be important to do more research related to this study.

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Older Consumers and Pet Ownership

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This paper presents an empirical study of dog and cat ownership among households with heads 45 years old or older. Consumer choice is among household production frontiers. The empirical approach is multinomial logit. The analysis deals with older singles and older couples separately. There are general results, but some stereotypes fail to show in the results. There are definite species differences.

I. Objectives

This paper presents a large-scale empirical study of the ownership of dogs and cats among U.S. households with heads 45 years old or older and with no resident children less than 18 years old. The study uses an economic paradigm. While we cannot be sure that future older households will behave like those of today, we have no reason to believe they will be very different. Thus, the study yields some valuable lessons for anticipating the future of older persons and their pets.

II. Relevance of Pets to Older Consumers

Our discussion is confined to dogs and cats. These are the predominant "pet" or "companion" species, and they are of the greatest economic importance.

The research literature to date deals primarily with two general questions:

(1) In advanced, affluent, largely urbanized societies people choose to be intimately associated with animals. What are the benefits that people seek through this association? Why do we own pets?

(2) What can we learn about individuals, households, or the interactions among people from the ways they interact with pets? Research has taken a variety of approaches, including the biomedical. By far, however, the dominant approaches have been psychological, sociological, or some combination of those approaches. Few studies have included an economic perspective, and these have been entirely descriptive (for example, Franti, et al., 1980).[2]

One work of particular note is the monograph edited by Sussman (1985) which collects various research around its significance for our knowledge of pets and the family. A sampling of the literature suggests that pets are used to achieve some intangible benefit for consumers. Our discussion and model will incorporate this general presumption.

III. The Model and the Data

The theoretical model is that of household production from economics. From the vast household production literature, we point out only the seminal article by Becker and his subsequent book-length treatment (1965, 1981) and the consumer economics text treatment by Eastwood (1985, pp. 50-53). The essential features of the model are:

(1) The household is assumed to maximize its collective welfare through the choice whether to own dogs, cats, both, some other type of animal, or no animals.

(2) Pet ownership is taken to be a decision, while other aspects of the household like type of housing, the number of human household members, income, and work patterns are taken to be given or fixed in the period under consideration.

(3) The focus is on whether the household owns some combination of dogs and cats rather than how many pets of any type it owns.

(4) Pets are durable goods. This means that a cross-section of data, such as we have, cannot completely reflect the decision process of pet ownership in its time dimension. It can yield some useful insights.

Our empirical model is the multinomial logit formulation:

$$\text{Prob}(j) = e^{XBj} / (e^{XB0}+e^{XB1}+e^{XB2}+e^{XB3}+e^{XB4})$$

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[2] An extensive bibliography is available from the author.

where X= a vector of household characteristics that are hypothesized to determine the choice of pet ownership and Bj is a vector of coefficients that reflect the importance of each variable to each category j. In the case we analyze, the household can fall into one of five categories: nonowners [j=0], owners of dog(s) but not cat(s) [j=1], owners of cat(s) but not dog(s) [j=2], owners of both dog(s) and cat(s) [j=3], or owners of some other pet animal but no dogs or cats [j=4]. Owners of both dogs and cats are called "dual owners."

The probability that a household will be in a specific category [j=i] is proportional to a weighted combination of variables describing that household, XBi, relative to the sum of weighted combinations of those variables for all categories (the denominator of the model). The variables describing the household are the same for each ownership category, but the weights attached to the variables depend on the category under consideration.

The model is implemented through maximum likelihood estimation of the weights, Bj, for each category, with the normalization B0=0 imposed. Thus, the model output comprises estimates of the B weights for the explanatory variables for all categories except the "base" category of nonowners.

Normalization of the model by B0=0 is necessary for estimation and loses no information. Since probabilities of the five ownership categories for each household must sum to one, there are only four independent probabilities. Setting B0=0 makes $e^{XB0}=1$. The relative odds of the other four categories to the nonowner category are given by the ratios $P(j=i)/P(j=0)=e^{XBi}/1$ for i=1,2,3,4. Multinomial logit estimates the B vectors for these relative odds equations. It is simple to calculate the estimated probabilities of all ownership categories for any household characteristics, X. Five probabilities are to be calculated. There are four equations for relative odds and one equation setting the sum of the five probabilities to one. The five equations give the five estimated probabilities.

The household explanatory variables used in this study were:

1. A constant.
2. Age of the household head.
3. Years of education of the household head.
4. Income per person in the household.
5. A dummy variable for small or moderately large metropolitan areas.
6. A dummy variable for very large metropolitan areas.
7. Total discretionary hours (hours not working, with an allowance for sleeping) of the household head and spouse, if present.
8. A dummy variable for renting the dwelling.
9. A dummy variable for living in an apartment or similar dwelling, which may be owned or rented.

The analysis is conducted separately for couples with a household head 45 years or older and single persons 45 or older. Only households with no members less than 18 years old are included, thus excluding the current acquisition of a pet for children.

When the couples are analyzed, variables are included for the number of persons in the household. When the older singles are analyzed, a dummy variable is included for males. The base group in either analysis owns and resides in a single-family dwelling in a nonmetropolitan area. Estimation was performed using the LIMDEP™ computer program by Bill Greene of NYU.

Data are from a cross-section sample of 20,000 U.S. households maintained on a panel by National Family Opinion. The survey was conducted in 1983, and 13,506 households responded. There were 4,391 households in the couples sample and 1,646 in the sample of older singles. For details, see Wise and Kushman (1985).

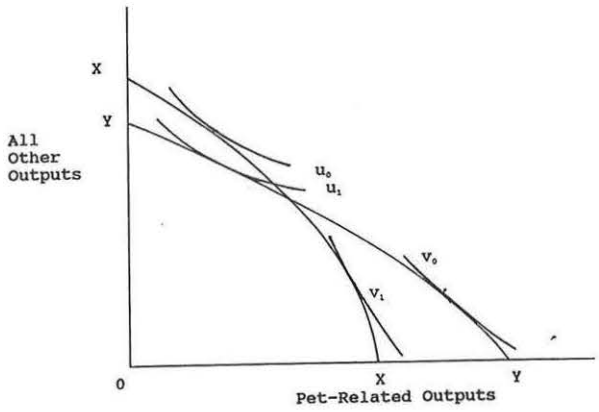
IV. Ownership as Discrete Choice of Household Production Possibilities

The household uses pets to produce such intangible benefits as companionship, social facilitation, and general attachment and dependency relationships. Figure 1 illustrates the connection between ownership and the multinomial logit model. Figure 1 is for the choice between owning a cat or owning a dog. The other three ownership categories in the empirical work are omitted for clarity in this illustration. Likewise, the discussion invokes stereotypes of dogs and cats and does not necessarily represent facts.

In Figure 1, assume that the household lives in an apartment.

Assume that XX is the production possibility frontier if it owns a cat, and that YY is the frontier if it owns a dog. The vertical intercept is lower on YY, because dog ownership requires larger expenditures of money and space just for maintenance. The dog eats more, requires more space indoors for sleeping, and must be taken for walks. Assume that the horizontal intercept of YY is farther right, because the dog produces more pet-related outputs (sociability, companionship, play) if the same, relatively large, amount of time and money is used with each pet.

Figure 1
Production Possibilities Frontiers and Indifference Curves for Households in Apartment-Type Dwellings



Indifference curves u_0 and u_1 are members of a family of indifference curves for apartment household C. This household is better off owning a cat rather than a dog. It chooses XX over YY in order to reach u_0. In contrast, apartment household D has indifference curves v_0 and v_1. Household D is better off with a dog and frontier YY. By choosing the dog, household D can reach indifference curve v_0. If there are many households, each with its own indifference map, the best description of all choices is the proportions of households taking each alternative. Another way to describe the proportions is the relative odds of dogs and cats being chosen.

If the households lived in detached single family homes, the choice proportions would be different. Indoor space for the dog will impinge less on space for other activities. Rather than being taken for regular walks, the dog may run loose in the yard. YY will shift up and out. These effects of a housing change will be less for a cat. XX will shift, but less than YY. Frontier YY will dominate XX over a larger range of pet and nonpet outputs. All households will find new optimal combinations of pet and nonpet outputs. More households will find their best combination on the dog production possibilities frontier. A higher proportion of households will choose to own a dog.

Drawing on gross stereotypes and only two ownership categories, Figure 1 illustrates discrete choices in pet ownership. Household choices depend on production constraints imposed by housing and other characteristics. These observable household characteristics are represented by our explanatory variables. Choices also depend on the distribution of indifference maps among households. This distribution is not directly observable. It is indirectly represented in the empirical model by the estimated odds of different ownership choices for given household characteristics.

Some of the variables in the model have relatively clear implications. Metropolitan residence, especially in very large metropolitan areas, is likely to be associated with less access to open spaces and lower pet ownership. Metropolitan residence is likely to have a greater impact on owning pets that require more outdoor space. Renting a dwelling or living in an apartment-type structure seems likely to be associated with lower rates of ownership because of physical and legal constraints. Again, the impacts are likely to be larger for pets that require more space or that produce more frictions with neighbors or landlords.

The potential implications of other variables, like income and education, for pet ownership are not so clear. We do not know enough about alternative opportunities to produce intangible benefits to predict relationships of these variables to pet ownership. For instance, as a person ages their ability to care for pets may decline, tending to reduce ownership overall, or the comparative advantage of pets as a source of intangible benefits may increase, tending to increase ownership. There is a general presumption that cats are less demanding and might be easier to maintain, but this is not known to be true, nor is it clear how "productive" cats are relative to dogs in terms of the intangibles. There is a general presumption that dogs are more companionable than cats, but one study found that dog and cat owners where equally attached to their pets (Voith

1985). On one hand, this could mean that dogs and cats are equally companionable. On the other hand, it could simply show that people in the Voith study had self-selected into those who bonded more readily with each species. Greater per-person income increases the "affordability" of pets, but it may have offsetting effects on the affordability of alternative means of achieving the intangibles. The relationships of ownership to most variables is unclear, and any relationships to the odds of various types of ownership are less clear. The household production model and the multinomial logit technique are, however, a useful way to conceptualize, estimate, and interpret the choice process.

V. Findings

Table 1 gives the multinomial logit coefficients for the various categories of ownership for couples 45 or older. The coefficients directly as relate the odds of a type of ownership to nonownership (the base group). It is possible to infer qualitative relationships between variables and the relative odds of various types of ownership directly from the signs and relative sizes of coefficients in the category equations. The logit formula above gives estimates of quantitative effects. A few findings are discussed here.

Table 1
Multinomial Logit Coefficients and T-Statistics For Older Couples
Ownership Category
Coefficient
(T-Statistic)

Variable	Dog Only	Cat Only	Dual	Other
Constant	2.737	-1.745	1.619	0.665
	(5.76)	(2.73)	(2.78)	(0.33)
Age of	-0.526	-0.005	-0.042	-0.074
Head	(9.73)	(0.62)	(6.41)	(3.34)
Years of	-0.019	0.084	0.002	-0.165
Education	(1.15)	(3.87)	(0.10)	(2.17)
Income Per	-0.001	-0.001	-0.002	-0.002
Person	(1.75)	(1.53)	(1.84)	(0.54)
Smaller	0.071	-0.117	-0.742	-0.002
Metro Area	(0.75)	(0.91)	(6.74)	(0.01)
Very Large	-0.102	-0.264	-0.979	0.552
Metro Area	(0.92)	(1.76)	(7.13)	(1.25)
Discretionary	-0.003	-0.006	-0.003	0.006
Hours	(2.65)	(4.40)	(2.32)	(1.09)
Persons in	0.287	0.292	0.416	0.346
Household	(4.13)	(3.08)	(5.19)	(1.41)
Renting	-0.404	-0.293	-0.210	0.740
Dwelling	(2.07)	(1.17)	(0.86)	(1.22)
Apartment-	-0.450	-0.150	-0.875	-0.303
Type Dwelling	(2.95)	(0.77)	(3.95)	(1.11)

The samples of older consumers are likely to have a carryover of pets that were acquired when children were present. This is an inevitable drawback of the cross-section nature of the data. It will bias coefficients of the age variable negatively. It also may bias the coefficient for number of persons in the household positively. Additional persons may be older children, which will correlate with past presence of children in the household.

Table 1 gives estimates of the logit model for ownership categories and older couples. Almost one-half of the older couples owned a dog or cat or both. In light of the probable negative bias on the age coefficient from "carryover" pets, it is striking that the cat-only coefficient on age is not significantly negative. The probabilities for dog or dual ownership did, however, decline with age in the sample. As age of the household head increased, the relative odds of cat-only ownership versus no pets show no significant change. The odds of cat-only ownership improved against ownership categories involving dogs.[3]

An example of the potential complexity of ownership effects is the relationships of ownership to discretionary hours. Discretionary hours are presumably required to enjoy the benefits of a pet in producing intangibles. Pet ownership might be higher among households with more discretionary hours. However, it was households with fewer discretionary hours that had higher probabilities of all types of dog and cat ownership. Perhaps pets are a way to intensify the enjoyment of discretionary hours.

Living in a metropolitan area was associated with a lower probability of dual ownership, but it did not have a statistically significant relationship with owning dogs or cats alone. This somewhat narrow impact of metro residence on ownership is surprising. It may indicate relatively successful accommodation to pet ownership. For instance, metro areas can plan in green space, and pet owners can choose breeds and species according to their neighborhood.

[3] Interpreting the relative sizes of coefficients for a variable across equations requires a special assumption. That assumption is that the equations, excluding the term for the coefficients in question, have the same values. This is not equivalent to the assumption that the other variables have the same values in all equations, since the variables have different coefficients in the different equations. This context applies to all statements comparing coefficients across equations.

As expected, renting or living in an apartment-type dwelling relates negatively with pet ownership. Cat ownership was less sensitive than dog or dual ownership to the housing situation. This agrees with the stereotype that cats require less space and are less troublesome with neighbors and landlords than dogs. Such an explanation is, however, tentative.

The results for renting do not parallel those for apartment-type dwellings. Renting and dwelling type have sufficiently little correlation in the sample to estimate their effects separately. The coefficients suggest that renting is associated negatively with dog and cat ownership, but the only coefficient that is statistically significant is for "dog only." If landlords are more likely to prohibit dogs than cats, we also would expect a significant negative coefficient in the "dual" equation. There may have been too few cases in some categories to find this effect. Including an interaction term between dwelling type and rent/own also might specify the model better.

Table 2
Multinomial Logit Coefficients and T-Statistics For Older Singles
Ownership Category
Coefficient
(T-Statistic)

Variable	Dog Only	Cat Only	Dual	Other
Constant	3.769	0.089	1.912	-7.613
	(4.90)	(0.09)	(1.81)	(0.64)
Age of	-0.062	-0.030	-0.055	-0.086
Head	(5.72)	(2.25)	(3.66)	(2.25)
Years of	-0.062	0.085	-0.081	0.112
Education	(2.03)	(2.28)	(1.93)	(1.12)
Income	-0.001	-0.001	0.001	-0.006
Per Person	(1.12)	(0.53)	(0.91)	(1.55)
Smaller	-0.065	-0.153	0.162	6.616
Metro Area	(0.37)	(0.69)	(0.71)	(0.57)
Very Large	0.087	-0.204	-0.735	7.060
Metro Area	(0.43)	(0.78)	(2.14)	(0.60)
Discretionary	0.001	-0.008	0.008	0.016
Hours	(0.23)	(1.15)	(1.10)	(0.81)
Male	-0.162	-0.102	-0.672	-0.065
	(0.70)	(0.38)	(1.83)	(0.09)
Renting	-0.754	-0.786	-0.767	0.476
Dwelling	(3.15)	(2.47)	(2.14)	(0.67)
Apartment-	-0.612	-0.624	-0.724	-0.002
Type Dwelling	(2.86)	(2.21)	(2.33)	(0.01)

Table 2 gives the estimated coefficients for older singles. Less than one-third of older singles owned any pets. Older ages have a statistically significant negative relationship to all types of ownership. In view of the documented positive effects of pets on the morale of older persons, especially older singles, it would be useful to investigate the relative importance of voluntary versus involuntary (for instance, disability) factors in the decline of ownership with age. The relative size of the age coefficients indicates that cat ownership is least associated with age, but the direction of the relationship is still obviously negative. If this association of age and ownership is largely involuntary, some facilitation of ownership might be warranted. The relative advantage of cat ownership in this data suggests that dog owners might be assisted in a shift to cats, which may have an increasing comparative advantage at older ages.

There is a dramatic negative effect of renting and/or apartment-type dwellings among older singles on all categories of dog and cat ownership. The coefficients for renting and for apartment-type dwellings are large relative to those for most other dummy variables. Again, this magnitude suggests that it would be useful to investigate voluntary and involuntary factors.

Gender might be thought to relate to pet ownership, and the coefficients for "male" are negative in all equations. These coefficients suggest that males are less likely to own pets overall. However, none of the coefficients are statistically significant at 5% in the category equations. This suggests that gender differences are not present with regard to the type of pet owned when older singles are considered.

VI. Conclusions

The household production model provides a useful way to conceptualize the pet ownership decision. The conceptual framework relates directly to empirical discrete choice models in general and multinomial logit in particular. The empirical findings, when interpreted through the household production model, raise questions and suggest hypotheses that are directly relevant to policy.

By analyzing pet ownership by category, the present study makes it clear that all pets are not created equal. Research which treats "pets" as a generic commodity is likely to confound valid conclusions with regard to one species with inconclusive or opposing effects for another species. For instance, the results on years of education in this study are quite different for dog and cat ownership. The study also casts doubt on some stereotypes. It is usually thought that all dog and cat ownership is reduced by metropolitan residence. This study suggests otherwise for older households. There is a stereotype that older males are "dog people" while

older females are "cat people." This may be true only in novels.

Finally, the decline of ownership with increases in age, residence in apartment-type dwellings, and renting deserve further investigation. Involuntary reductions in ownership and undesirably low levels of ownership may characterize older ages.

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Infrequent and Seasonal Purchasing Behavior for Houseplants and Cut Flowers

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In this study, three limited dependent variables models--the Tobit, Cragg's double-hurdle and the purchasing infrequency model were specified, estimated, and their ability to explain the probability and magnitude of making houseplant and cut flower purchases compared. The results of the preferred models indicate that seasonality, monthly grocery expenditures, home ownership, education, and regional factors have significant impacts on houseplant and cut flower expenditures. Among holidays, Mother's Day most impacted houseplant and cut flower expenditures.

Introduction

Plants and flowers play an important part in the social and the aesthetic life of people. Seasonal factors are considered as a major determinant of households' purchasing patterns for flowers and plants. Within recent years, sales of houseplants and cut flowers have grown rapidly. According to the USDA Floriculture Crops 1988 Summary, the total wholesale value of sales for the reported crops (cut flowers, potted flowering plants and foliage) was 1.4 billion dollars in 1988. Recently, self-service supermarkets display flowers and plants so as to attract customer attention and consequently increase the purchases of flowers and plants.

The principal focus of this empirical analysis is to explain household expenditures for houseplants and cut flowers as a group. It is unlikely that the determinants of demand for each of these goods are identical. Cut flowers tend to be primarily purchased for special occasions (holidays, parties, weddings, anniversaries, funerals) and are typically perishable. Houseplants may also be purchased as gifts for certain occasions (Mother's day, Christmas, birthdays) yet they may be considered as semi-durable. In this regard they may be used by the purchaser as decorations for living quarters. To appropriately model demand for the aggregate of cut flowers and houseplants it is necessary to address the features relating to perishability, seasonality and purchasing patterns and purchaser characteristics for the separate categories. One common element is that both goods are typically purchased infrequently; though for cut flowers this can be more closely related to special occasions and for houseplants this feature may be more closely related to their durability.

A problem with this study is that the survey data shows that 90.68% of the households reported no expenditures on cut flowers and houseplants over the survey period. In this case, the Ordinary Least Squares regression method gives biased and inconsistent estimates (McDonald and Moffit 1980; Maddala 1983, p. 2; Cox, Ziemer, and Chavas 1984). For this reason, the Tobit and related models are often used to analyze this kind of problem. In order to obtain better explanations for the occurrence of zero expenditures and to improve model specification, the use of three limited dependent variables models--the Tobit, Cragg's double-hurdle and the purchasing infrequency model--was investigated.

The purpose of this study is to estimate the influence of seasonal factors, socioeconomic factors, and household characteristics on houseplant and cut flower expenditures, and to investigate how to econometrically model the large number of zero expenditures by households with special emphasis on how corner solutions, hurdles and infrequent purchasing affect model specification.

Model Specification

The Tobit Model

The Tobit model was originally developed by Tobin (1958). The Tobit model is a one-step decision method. In other words, it assumes that the

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decision to consume a certain good and the quantity to consume are decided at the same time. The Tobit model is defined as follows:

$$\begin{aligned} y_i^* &= x_i\beta + \epsilon_i \qquad \epsilon_i \sim N(0, \sigma^2) \\ y_i &= y_i^* \qquad \text{if } y_i^* > 0 \\ &= 0 \qquad \text{otherwise} \end{aligned} \tag{1}$$

where y_i is the ith individual household's observed expenditure on houseplants and cut flowers and y_i^* is the ith household's desired or optimal expenditure and can be the solution of the utility maximization subject to household budget. The vector x_i consists of explanatory variables, β is a vector of unknown coefficients, and ϵ_i is a vector of independently and normally distributed random variables with mean zero and variance σ^2.

Due to perishability, cut flowers purchased during the survey period are presumed to be consumed during this period. In the case of houseplants, consumption is ongoing since the aesthetic services of houseplants are not presumed to be short lived. Thus for the ith household it is known that if $y_i > 0$ then $y_i^* > 0$, however it is possible that $y_i = 0$ and $y_i^* > 0$ for houseplants purchased prior to the survey period. Finally it is presumed that if $y_i^* = 0$ then $y_i = 0$.

Given (1) the probability of zero observations ($y_i = 0$) is $P[y_i = 0] = 1 - \Phi_i$, where Φ_i is the distribution function of a standard normal random variable evaluated at $x_i\beta/\sigma$ (Maddala 1983, p. 152).

Then we can form the log-likelihood function as

$$\ln L_T = \Sigma_0 \ln(1-\Phi(x_i\beta/\sigma)) + \Sigma_1[-\ln\sigma + \ln\phi((y_i - x_i\beta)/\sigma)] \tag{2}$$

where the summation Σ_0 is over the number of observations for which $y_i = 0$, the summation Σ_1 is over the number of observations for which $y_i > 0$, N_1 is the number of observations for which $y_i > 0$, and ϕ is the standard normal density function. The maximum likelihood estimates of σ^2 and β can be obtained by maximizing equation (2).

Cragg's Double-Hurdle Model

Cragg (1971) developed several generalizations of the Tobit model that allow the decision to consume and the quantity of the consumption to be separate but related consumption decisions by introducing a binary decision variable D_i (the "hurdle") that takes on the value 1 when $y_i > 0$. Assuming that the process generating D_i, say,

$$D_i = z_i\alpha + \omega_i \qquad \omega_i \sim N(0,1), \tag{3}$$

is independent of y_i conditional on x_i then the probability of purchasing is given by $\Phi(z_i\alpha)$.

In Cragg's model, a decision D_i on whether to purchase has to be made first. Then a decision y_i^* on how much to purchase is made. This model requires that the "hurdle" $D_i > 0$ must be surpassed. Also, in this model, it is to assume that the observed variable follows a different distribution e.g. y_i is specified as log expenditure to restrict the value of y_i to non-negative levels.

$$\ln y_i = x_i\beta + \epsilon_i \tag{4}$$

where ϵ_i is i.i.d., given that y_i is non-zero.

Hence, the probability that y_i is zero is the probability that D_i is non-positive:

$$P[y_i = 0] = P[D_i \le 0] = 1 - \Phi(z_i\alpha) \tag{5}$$

And the probability of y_i that is non-zero is given by

$$\begin{aligned} &P[D_i > 0] \cdot P[\ln y_i > 0] \\ &\quad = \Phi(z_i\alpha) \cdot \{1/(\sigma^2 2\pi)^{\frac{1}{2}}\} \cdot (y_i)^{-1} \cdot \\ &\qquad \exp\{-(1/2\sigma^2)(\ln y_i - x_i\beta)^2\} \end{aligned} \tag{6}$$

Thus the log-likelihood function for Cragg's model is

$$\ln L_C = \Sigma_0 \ln\{1-\Phi(z_i\alpha)\} + \Sigma_1\{\ln\phi((\ln y_i - x_i\beta)/\sigma) - \ln\sigma + \ln\Phi(z_i\alpha) - \ln y_i\} \tag{7}$$

The Purchasing Infrequency Model

The purchasing infrequency model is adopted from Blundell and Meghir (1987). They discussed several models that can be applied to a non-perishable commodity. Both the Tobit and Cragg's model assume that observed positive expenditures are identical to the unobserved consumption levels. But the purchasing infrequency model assumes that observed positive expenditure may not include the purchases outside the survey period or they misreport actual consumption. Since houseplants are likely to be consumed over longer periods than two weeks and the data are generated in a two week period, one can expect that the occurrence of numerous zero expenditures may result from infrequent purchases.

Again, define y_i to be the observed expenditures and y_i^* to be the

unobserved consumption levels. Let $D_i(=z_i\alpha + \omega_i ; \omega_i \sim N(0,1))$ represent the ith household's decision to purchase. It is assumed that $D_i > 0$ if and only if $y_i > 0$, and let P_i be the probability of purchase. Also we assume $E[y_i] = E[y_i^*]$. Hence, it is assumed that $E[y_i] = E[y_i^*] = P_i \cdot E[y_i|D_i>0]$. P_i is less than unity and can represent a specific depreciation rate for the non-perishable. $E[y_i]$ implies that when observed expenditure is positive it will exceed the services consumed if $P_i < 1$. We rewrite the relationship between y_i and y_i^* as

$$P_i y_i = y_i^* + v_i \qquad (8)$$

where v_i represents the random discrepancies in the process linking the observable dependent variable y_i with the corresponding latent variable y_i^*.

In order to transform non-positive observations on y_i, y_i^* is specified as log dependent variable and is simplified as

$$\ln y_i^* = x_i\beta + e_i \qquad (9)$$

Under this specification, we rewrite the relationship between y_i and y_i^* as

$$y_i = (y_i^*/P_i)\cdot \exp(v_i) \qquad (10)$$

Then, defining $u_i = v_i + e_i$ and $P_i = \Phi(z_i\alpha)$ and given that

$$\ln y_i = x_i\beta - \ln\Phi(z_i\alpha) + u_i, \quad \text{for } y_i > 0 \qquad (11)$$

The log-likelihood function for the purchasing infrequency model is given by

$$\ln L_I = \Sigma_0 \ln\{1-\Phi(z_i\alpha)\} + \Sigma_1\{\ln\phi((\ln y_i + \ln\Phi(z_i\alpha) - x_i\beta)/\sigma) - \ln\sigma + \ln\Phi(z_i\alpha) - \ln y_i\} \qquad (12)$$

Model Selection Tests

Since the relationships among these three models are non-nested, this study applied Vuong's (1989) test to conduct the model selection tests. Vuong's tests are based on likelihood ratio (LR) statistics. Vuong proposed to test the null hypothesis that the competing models are equally close to the true data generating process against the alternative hypothesis that one model is closer.

Given two strictly non-nested models F_θ and G_γ (iff $F_\theta \cap G_\gamma = \varnothing$), the null hypothesis means that F_θ and G_γ are equivalent, where the statistic $(n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n)$ of the competing models is distributed as standard normal distribution.

Under 10% significant level, if the value of the statistic $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ is higher than the positive critical value then one rejects the null hypothesis that the models are equivalent in favor of F_θ being better than G_γ. If $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ is smaller than the negative critical value then one rejects the null hypothesis in favor of G_γ being better than F_θ.

The normalization $n^{1/2}\omega_n$ is obtained from the sum of squared deviations of $m_i \equiv (\ln f(Y_i|X_i;\theta_n) - \ln g(Y_i|X_i;\gamma_n))$ from its sample mean which is equal to $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$. Vuong (1989) pointed out that $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ is numerically equal to the usual t statistic on the coefficient of m_i in a linear regression of 1 on m_i.

The linear regression of m_i can be defined as

$$Z_i = m_i\delta + \mu_i \qquad (13)$$

where Z_i is a n X 1 vector of 1, m_i is the difference of ith maximum log-likelihood values between two models F_θ and G_γ, δ is a vector of unknown coefficient and μ is an error term. From the above regression, we can obtain the t statistic and the $n^{-1/2} LR_n(\theta_n, \gamma_n)/\omega_n$ statistic. Then, we can test the hypothesis. Generally if m_i is equal to zero, then there is no difference between F_θ and G_γ. If m_i is significantly positive, then δ $(=(m'm)^{-1}m'Z)$ also is significantly positive. One can conclude that F_θ is better than G_γ. Similarly, if m_i is significantly negative, then δ also is significantly negative. One can conclude that F_θ is worse than G_γ.

The Data

The present study used the data from the 1986 diary survey of the Consumer Expenditure Survey. About 8% of all households participated only one week. In this study, biweekly expenditures on houseplants and flowers were used rather than single weekly expenditures. In addition, those households which contained incomplete information such as missing value on monthly grocery expenditures and survey date were also deleted. The resulting sample consisted of 5384 households (observations). Of these, 4882 (90.68%) reported no houseplant and cut flower expenditures.

Household expenditure on houseplants and cut flowers served as

Table 1. Definition of Variables for CEX Data, 1986.

Variables	Mean	Definitions
Dependent variable	1.5300	Biweekly indoor plants and fresh flowers expenditures (in dollars)
Age	45.9170	Age of reference person (RP)
Family Size	2.6597	Numbers of members in the household
Monthly Grocery	287.6003	Monthly expenditure for grocery store
Occupation		
White Collar	0.2561	Omitted Base Group
Blue Collar	0.4662	= 1 if RP is a bluecollarite
Others	0.2777	= 1 if RP's occupation is armed forces, not working, retired, other (including not reported)
Education	0.7559	= 1 if reference person completed high school
Sex	0.6647	= 1 if reference person is male
Ownership	0.4016	= 1 if household owns the house
Region		
Rural	0.1231	Omitted base group
Northeast	0.1841	= 1 if household resides in the Northeastern urban areas
Midwest	0.2301	= 1 if household resides in the Midwestern urban areas
South	0.2402	= 1 if household resides in the Southern urban areas
West	0.2225	= 1 if household resides in the Western urban areas
Seasonal		
Ordinary Day	0.6888	Omitted base group (if household was surveyed during the week of other than the below holidays)
Valentine	0.0321	= 1 if household was surveyed during the week of Valentine's Day
Easter	0.0303	= 1 if household was surveyed during the week of Easter
Mother	0.0308	= 1 if household was surveyed during the week of Mother's Day
Memorial	0.0321	= 1 if household was surveyed during the week of Memorial Day
Winter Holidays	0.1859	= 1 if household was surveyed during the period from the week of Thanksgiving to the week of Christmas.

Source: U.S. Dept. of Labor, Bureau of Labor Statistics, 1986.

the dependent variable. The variables used to explain houseplants and cut flowers consumption included the monthly grocery expenditures, age, sex, family size, occupation, education, ownership of the house, region and holiday seasons. The dependent and explanatory variables are defined in Table 1.

In this study, monthly grocery expenditure was substituted for household income. Monthly grocery expenditure, in comparison to household income, provides a larger number of observations because many households did not report income.

Family size was introduced to consider the economies of scale. That means household preferences may be affected by the family size. The variable representing the educational level of the reference person was measured in two levels: education less than high school (including not completed high school) and education at least completed high school. The three classifications of race used were white, black and non-white/non-black. Five classifications of region were specified--Rural, Northeast, Midwest, South, West. As described before, the demand for plants and flowers is greatly seasonal. Hence, five holidays were selected: Valentine's Day, Easter, Mother's Day, Memorial Day, and Winter Holiday Season (Thanksgiving till Christmas).

Results

Presented in Table 2 are the results of the Tobit, Cragg's double-hurdle (Cragg's) and the purchasing infrequency (Infre) model. The GAUSS application program--MAXLIK was used to conduct the estimation. As mentioned above, in the Tobit model β reflects

Table 2. The Estimated Tobit, Cragg's Double-Hurdle, and the Purchasing Infrequency Model of Houseplants and Cut Flowers Expenditures.

Variable	Tobit	Cragg Double-Hurdle		Purchasing Infrequency	
	β_i	β_i	α_i	β_i	α_i
Constant	-98.510	1.824	-2.496	-2.634	-2.496
	(7.317)[a]	(0.353)	(0.167)	(0.464)	(0.165)
Age	2.299	0.008	0.056	0.104	0.057
	(0.696)	(0.039)	(0.018)	(0.050)	(0.018)
Family Size	0.844	0.059	0.025	-0.016	0.025
	(0.695)	(0.040)	(0.006)	(0.050)	(0.018)
Monthly Grocery	0.637	0.090	0.013	0.110	0.013
	(0.210)	(0.020)	(0.006)	(0.022)	(0.006)
Blue Collar	12.106	-0.001	0.328	0.564	0.328
	(2.965)	(0.156)	(0.077)	(0.208)	(0.076)
Other Occupations	3.344	-0.055	0.082	0.082	0.073
	(3.262)	(0.173)	(0.086)	(0.234)	(0.085)
Education	10.510	-0.141	0.288	0.399	0.284
	(2.719)	(0.157)	(0.071)	(0.206)	(0.070)
Sex	2.891	-0.022	0.072	0.103	0.070
	(2.192)	(0.119)	(0.057)	(0.156)	(0.057)
Ownership	7.439	0.223	0.193	0.104	0.190
	(2.057)	(0.106)	(0.054)	(0.140)	(0.054)
Northeast	10.119	0.414	0.218	0.789	0.212
	(3.725)	(0.203)	(0.097)	(0.268)	(0.096)
Midwest	10.158	0.047	0.257	0.503	0.268
	(3.595)	(0.193)	(0.093)	(0.255)	(0.092)
South	3.254	0.321	0.031	0.389	0.037
	(3.676)	(0.204)	(0.095)	(0.271)	(0.095)
West	9.459	0.135	0.206	0.512	0.215
	(3.609)	(0.196)	(0.093)	(0.259)	(0.093)
Valentine	9.855	0.305	0.234	0.658	0.214
	(4.895)	(0.244)	(0.130)	(0.320)	(0.130)
Easter	16.723	-0.062	0.455	0.709	0.467
	(4.739)	(0.221)	(0.125)	(0.286)	(0.124)
Mother	25.343	0.308	0.661	1.307	0.667
	(4.304)	(0.187)	(0.115)	(0.238)	(0.113)
Memorial	16.239	-0.075	0.489	0.701	0.117
	(4.514)	(0.205)	(0.118)	(0.265)	(0.482)
Winter Holidays	3.703	0.022	0.081	0.170	0.079
	(2.447)	(0.129)	(0.064)	(0.170)	(0.064)
Sigma	38.782	1.073		1.072	
	(1.443)	(0.034)		(0.034)	
Log Likelihood	-3065.865	-2966.369		-2965.617	

\a Standard errors are in parentheses.

the decision of whether to consume a certain good and the quantity to consume. In contrast, in the Cragg's double-hurdle models the decision of whether to purchase is captured in α, and the decision of how much to purchase is captured in β. About the purchasing infrequency model, α reflects the probability of infrequent purchases and β embodies the decision of how much to consume.

As described before, the Tobit model is a one-step decision method. Tobit censoring is controlled through the term $\Phi(x_i\beta/\sigma)$ such that if all households consume y_i^* then the probability of zero observations is negligible. And Cragg proposed that if the "hurdle", $D_i = z_i\alpha + \omega_i$; $\omega_i \sim N(0, 1)$, is independent of y_i conditional on x_i then the probability of purchasing is given by $\Phi(z_i\alpha)$. In the purchasing infrequency model, we define that P_i represents a specific depreciation rate. If it is specified that $P_i = \Phi(z_i\alpha)$, then the specification is restrictive in the sense that the depreciation rate is equated to the probability of observing a purchase.

Model Selection Tests

Given the results in the Table 2, comparisons among non-nested models were developed. First, using Vuong's test to compare the Tobit model with

the Cragg's and Infre model t statistic values -4.19236 and -4.23026 were obtained, respectively. From the calculated t statistic values, we can conclude that the Tobit model is worse than the Cragg's and Infre model.

Finally, we compared the remaining two models. The results (t statistic value = -0.60015) showed that two models (Cragg's and Infre) can not be discriminated from each other. From the above test results and the comparisons, we concluded that the Cragg's model and the purchasing infrequency model are the better models in terms of representing the data generating processes than the Tobit model.

Parameter Estimates

In the following, we concentrate on two preferred models to analyze the parameter estimates.

The results of the models (Cragg's and Infre model) are presented in Table 2. In Table 2, all the signs of the α coefficients are positive with the exception of the constant variable. But the signs of the β coefficients are not uniform in two models. For Cragg's model, a decision on whether to purchase first has to be decided. In Cragg's model, the significant coefficients include those for the age, family size, monthly grocery expenditure, blue collar occupations, education, ownership of the house, Northeast region, Midwest region, West region, Valentine's Day, Easter, Mother's day, and Memorial Day. Households' reference person who are blue collar occupation, high school graduates, own their house, larger family, Midwest resident, and higher monthly grocery expenditure tend to have a stronger purchasing intention on houseplants and cut flowers than others. The positive and significant monthly grocery expenditure coefficient is consistent with the expectation that households with higher monthly grocery expenditures tend to buy, and are likely to purchase more houseplants and cut flowers than those having lower monthly grocery expenditures. The α estimates for sex indicates that sex does not significantly affect the intention of purchasing houseplants and cut flowers. The α estimates for the regional dummy variables show that, relative to households located on rural areas, households located on urban areas are more likely to purchase, especially in the Northeast and Midwest areas. Seasonal factors are also very important determinants of houseplant and cut flower expenditures. The α estimates for seasonal dummy variables indicate that households buy houseplants and cut flowers at the holidays. Particularly during the Mother's Day, Memorial Day and Easter Day periods, households tend to be more likely to make a purchase. With regard to β estimates, the β estimates indicate that those households with higher monthly grocery expenditure, house ownership, Northeast locations and surveyed on the Mother's Day, tend to spend significantly more on houseplants and cut flowers than others.

The estimates for the Infre model are also shown in Table 2. In the Infre model, the significant coefficients include those for age, monthly grocery expenditure, blue collar occupations, education, ownership of the house, Northeast region, Midwest region, West region, Easter, and Mother's day. Households' reference person who are blue collar occupation, high school graduates, own a house in the Midwest, and having higher monthly grocery expenditure, tend to have a stronger purchasing probability on houseplants and cut flowers than others. As described before, seasonal factors are very important determinants of houseplant and cut flower expenditures. Particularly during the Mother's Day and Easter periods, households tend to be more likely to purchase houseplants and cut flowers. With regard to β estimates, the β estimates indicate that those households with older people, higher monthly grocery expenditure, ownership, in the Northeast and on the Mother's Day tend to spend significantly more on houseplants and cut flowers than others.

The results suggested that (1) the determinants of the decision of whether to consume and the decision of how much to purchase are often not the same, (2) the monthly grocery expenditure, education, ownership of the house, urban areas, and seasonal factors, especially on the Mother's Day and Ester, play an important and significant role to the household's consumption behavior relative to expenditures on houseplants and cut flowers.

Summary and Conclusions

After conducting the tests, the results suggested Cragg's and the purchasing infrequency models as being more consistent with the data generating process. Parameter estimates obtained from these two models were used to analyze the expected values and the elasticities of the explanatory variables.

The results of the preferred models indicate that monthly grocery expenditures, ownership of the house, education, region, and seasonal factors have significant impacts on houseplant and cut flower expenditures. Among holidays, Mother's Day did most impact houseplant and cut flower expenditures.

This study suggests that the Tobit method is not suitable to analyze expenditure patterns for the composite category of houseplants and cut flowers. Results found in this study suggest that it is important to consider the effects of the corner solutions, hurdles and purchase infrequency in modeling household expenditures for these items.

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Measuring Consumer Risk Perception of Pesticide Residues in Fresh Product

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The study analyzes consumer risk perception about pesticide residues in fresh produce by using household survey data. Consumer risk perception was measured by a Likert attitude scaling procedure. A two-limit Tobit model was used to investigate impacts of various exogenous variables on consumers' risk perception. The study concludes that consumers' risk perception about pesticide residues differs with respect to a number of factors and is not as negative as it is generally believed.

A National Academy of Sciences study on Environmental Protection Agency's (EPA) food regulation in 1987 revealed that many widely used pesticides have potential to cause cancer, and made startlingly high estimates of the potential cancer risks from 28 pesticide residues in fresh produce (Greene & Zepp, 1989). Then in early 1989 the two most widely publicized food safety incidents occurred: the case of Alar on apples, and the Chilean grape tampering scare. According to the Food Marketing Institute's (FMI) annual survey of consumer attitudes about supermarkets and food shopping concerns, more than 73 percent of the respondents consistently express apprehension over pesticide residues during the last six years. A 1988 survey conducted by the University of Florida in cooperation with ERS found out that pesticide residues are the most serious concern, followed by bacteria and additives (Smallwood, 1989). Similarly, in a national survey of adults taken by NEWSWEEK magazine in early 1989, 70 percent said fewer pesticides and chemicals should be used even if higher prices resulted. Obviously, consumers are increasingly concerned about pesticide residues in the food supply and want government to treat it as a high priority issue for ensuring the safety of the fresh food supply.

Responding to consumers' pesticide concerns, the government has empowered both EPA and FDA with new rules and methods to augment their ongoing regulatory and monitoring procedures. Several food safety legislation have been amended and many new bills have been introduced in the Congress in order to tighten the regulatory and monitoring procedures. These measures seek to provide sufficient and accurate information to the consumers, to foster dockside testing and private residue testing at retail, to bar use of certain controversial farm chemicals, and to encourage production of organically grown produce. An important aspect of the food safety issues dealing with how consumers perceive risk associated with chemical pesticide residues, however, has received little attention.

The purpose of this paper is to analyze consumers' responses to the use of pesticides in fresh produce production. More specifically, the study measures consumers' perception of risk about pesticide residues in fresh produce and examines the impacts of several hypothesized exogenous variables on consumers' risk perception. In what follows, the conceptual framework of the empirical approach is discussed first. The results of a consumer survey are reported next. A technique similar to Likert attitude scaling procedure is then used to measure consumers' risk perception about pesticide residues. Finally, a two-limit Tobit model is developed and estimated econometrically to quantify the impacts of several exogenous variables on consumers' risk perception.

The Conceptual Approach

Risk involved with pesticide residues in fresh produce is not only determined by the science of risk assessment but also influenced, to a great extent, by public perceptions. It is, therefore, important to assess not only how concerned the consumers are, but also how much health risk people would tolerate before it would influence their consumption habits. Previous research has indicated that perceptions and attitudes have an important influence on individual purchase strategies and decisions. Alexis and Wilson (1967) emphasized the importance of consumer perception along with problem recognition, search for

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perception and other food related health risks, four relative health concern questions were asked. If health risk involved with foods high in fats, sugar, salt, and cholesterol were ranked to be much lower or somewhat lower than pesticide residues in food, consumer's risk perception about pesticide residues was evaluated to be very high. No difference (between health risk of pesticide residues and fats, sugar, salt, and cholesterol), somewhat higher, and much higher health risks concern (for fats, sugar, salt, and cholesterol relative to pesticide residues) correspond to moderate, low, and no risk perceptions, respectively. The remaining question was an opinion statement concerning the use of man-made pesticides in growing fresh produce. A consumer suggesting to ban all pesticide uses, to ban some while imposing restrictions on the remaining pesticides, to increase testing and certification, and to do nothing was considered to possess high, moderate, low, and no pesticide risk perceptions, respectively.

In terms of item scores, "high risk" received 3 points, "moderate risk" received 2 points, "low risk" received 1 point, and "no risk" received 0 point. In calculating the total scale score for each respondent, item scores were summed. Since the highest possible score is 18, a score closer to 18 would be interpreted as a high risk perception. A moderate risk perception would result in a score close to 12, close to 6 for low risk perception, and close to zero for no risk perception.

It is important for all the above items to be measuring the same underlying variable (the psychological construct). Therefore, a reliability test of the risk perception scale was performed using an internal-consistency Cronbach alpha coefficient (α) (Kuder & Richardson, 1937; Cronbach, 1951). The reliability test is given by:

$$\alpha = (k/k-1) \times (1-\Sigma s_i^2/s_t^2)$$

Where, k is the number of test items, s_t^2 is the variance of total test scores, and s_i^2 is the variance of responses to the ith test item. As Muller (1986) explains, alpha treats each item as an alternate test form and establishes the consistency of measurement across forms. The resulting α coefficient for the constructed risk perception was .78, suggesting that the pool of questions used to measure are indeed measuring the same underlying psychological construct of risk perception 78 percent of the times.

The constructed risk perception scale indicates that less than one percent of the respondents from the panel perceive pesticide residues in fresh produce to pose no health risk. Approximately 36 percent of the respondents perceive riskiness of pesticide residues to be low and another 42 percent perceive it be moderate. Only about 22 percent perceive pesticide residues in fresh produce to be highly risky. This result indicates that Georgia consumers' risk perception about pesticide residues in fresh produce may not be as negative as various other consumer surveys seem to suggest.

Two-Limit Tobit Analysis

Estimation of the chemical pesticides risk perception model involves a dependent variable with observations limited at both high and low values necessitating the use of Two-Limit Tobit analysis (Maddala, 1983). The model underlying the Two-Limit Tobit analysis may be expressed as:

$$y_i^* = \beta X_i + u_i$$

Where y_i^* is the latent variable. If we denote by y_i the observed dependent variable,

$$\begin{aligned} y_i &= L_{1i} \quad \text{if} \quad y_i \le L_{1i} \\ &= y_i^* \quad \text{if} \quad L_{1i} < y_i^* < L_{2i} \\ &= L_{2i} \quad \text{if} \quad y_i^* \le L_{2i} \end{aligned}$$

Here L_{1i} and L_{2i} are, respectively, the lower and upper limits. The β coefficients are estimated by the method of maximum likelihood which assumes normality of the disturbance term.

The Empirical Model

Socioeconomic and demographic variables have long been recognized as crucial determinant factors in the analysis of consumer food purchasing decisions. Given that perception is a psychological construct, it is postulated that the socioeconomic and sociodemographic factors have influences on consumers' attitudes and perception as well.

To test the hypothesis that needs, motives, past experiences, mental readiness, ability to gathering and processing information, socioeconomic, and sociodemographic characteristics have an effect on consumers' risk perception, the following relationship is specified:

Table 1
Characteristics of Surveyed Households.

Items	European Origin	Afro. Origin	Spanish Origin	Other	Total
			percent		
SEX					
Male	24.8	5.7	0.5	0.8	31.8
Female	52.4	14.7	0.8	0.3	68.2
INCOME					
Less than 5,000	1.9	3.2	0.0	0.0	5.1
5,000-14,999	13.8	5.4	0.3	0.0	19.5
15,000-24,999	15.3	5.6	0.0	0.0	20.9
25,000-34,999	14.6	2.2	0.8	0.3	17.9
35,000 or more	32.0	3.5	0.3	0.8	36.6
AGE-GROUP (YRS)					
Less than 25	5.2	2.0	0.0	0.3	7.5
26-35	16.8	5.4	0.3	0.5	23.0
36-45	19.1	4.6	0.3	0.3	24.3
46-65	24.3	6.4	0.8	0.0	31.5
More than 65	11.9	1.8	0.0	0.0	13.7
HOUSEHOLD SIZE					
1 Person	17.3	5.7	0.3	0.0	23.3
2-4 Persons	52.4	11.9	1.0	0.8	66.1
5 or more	7.5	2.8	0.0	0.3	10.6
MARITAL STATUS					
Marries	52.5	8.4	0.5	1.1	62.5
Divorced/Sep.	7.6	4.8	0.5	0.0	12.9
Widowed	9.2	1.9	0.3	0.0	11.4
Single	8.4	4.8	0.0	0.0	13.2
RESIDENCE					
City	38.9	15.6	0.6	0.5	55.6
Non-city	38.1	5.0	0.8	0.5	44.4
EDUCATION (YRS)					
Up to 12	36.9	10.8	0.3	0.6	48.6
13-16	29.7	7.2	0.6	0.3	37.8
More than 16	11.9	0.8	0.6	0.3	13.6

A pool of six questions were used to quantify consumers' risk perception about pesticide residues. One survey question pertained to consumers' top three absolute food risk concerns. If foods grown using man-made pesticides was perceived as the number one, two, or three concern then consumers risk perception about pesticide residues was weighed to be high, moderate, or low, respectively. If foods grown using pesticides was not one of the top three concerns, no risk perception about pesticide residues was assumed. To facilitate a direct comparison between consumers' pesticide residues risk

information, information evaluation, and post-purchase evaluation in consumer decision-making process. Also, consumers' perceptions can significantly influence policy making because they are significant determinants of preferences for various public policies and behavioral responses (Lankford, 1985; Gould, Saupe & Klemme, 1989). Fisher (1985) suggested that public perceptions would be at least as important as predictions derived from economic theories.

While there is no total consensus among social scientists regarding the definition of perception, there is a substantial agreement among scientists that perception means becoming aware in one's mind - to understand and apprehend. Perceptions reflect an individual's subjective mental construct and, hence, they are dynamic in nature and can change significantly over time. Each individual's perception is greatly influenced by his internal as well as external determinants. Internal determinants such as needs, motives, past experiences, mental readiness, and information gathering and processing ability are some of the crucial factors affecting individual's perception. Equally important are the external or environmental determinants such as cultural, social and economic influences.

In terms of recent consumer risk perception about pesticide residues in fresh produce, it was assumed that there has been no change in consumers' needs or motives, i.e., consumers still desire a bountiful supply of safe, wholesome and nutritious fresh produce. But, recent widespread anti-chemical publicity may have induced a change in public perceptions concerning the riskiness of pesticide residues in fresh produce. This perception might have been further influenced by an individual's mental readiness, information gathering and processing ability, cultural, social and economic background.

The Household Food Safety Survey

During the spring of 1989 a mail survey entitled, "Preferences and buying habits of fresh produce in Georgia" was conducted among 580 households which participated in the Georgia Consumer Panel. The purpose of the survey was to assess and determine consumers' risk perceptions concerning use of pesticides in the production of fresh produce. The survey design and procedure followed the total design method recommended by Dillman (1979) to minimize nonresponse bias. The survey resulted in 389 returned questionnaires which represents a response rate of 67 percent. In the survey, panel members were asked a variety of questions concerning their fresh produce purchasing practices including factors that influence their purchase decisions, overall satisfaction with the quality of fresh produce available in the market, and their absolute concern for pesticide residues as well as relative to other health related food concerns.

Socioeconomic characteristics of the survey sample are given in Table 1. The sample tended to be demographically upscale with older, better educated, and higher income consumers slightly overrepresented in comparison to census statistics. The average household size is about 2.7 persons. Though the racial composition of the state is approximately 73% white (Georgia Statistical Abstract 1989-1990), whites represented 77% of the surveyed households.

Consumer Perception of Risk

Perception is a psychological and hypothetical construct that cannot be observed or measured directly. Therefore, it is necessary to construct consumers' risk perception scale by drawing inferences about their mental status and mental processes. As suggested by various methods of assessing psychological constructs, high reliability is achieved if multiple items rather than a single item are used in constructing a scale. Specifically, a single question regarding consumers' perception of pesticides use may not be able to measure their perception as adequately as a pool of questions relating to the subject (Muller, 1986; Kalton & Schuman, 1982). Furthermore, Muller (1986) points out that respondents usually evaluate the attitudinal objects within a relative context. Therefore, judgement of riskiness of chemical pesticides relative to the riskiness of other food items will help consumers to convey their perceptions more accurately. In this study, the procedure used to measure consumers' perception of risk about chemical residues in fresh produce is very similar to the Likert Attitude Scaling procedure.

PRP = f (RACE, URB, SEX, AGE, AGE^2, EDSCH, EDCOL, EDGRAD, AGE x EDU, IN1, IN2, IN3, CHILD5, CHILD12, SENIOR, SATISFY, UP, INFO)

Where,

PRP = risk perception scale divided by 18.

RACE = 1 for European origin, 0 otherwise.

URB = 1 for household living in an urban area, 0 otherwise.

SEX = 1 for male respondent, 0 otherwise.

AGE = age of the respondent in years.

AGE^2 = age of the respondent in years to the power of 2.

EDSCH = 1 for the respondent with less than or equal to 12 years of education, 0 otherwise.

EDCOL = 1 for the respondent with greater than 12 years but less than or equal to 16 years of education, 0 otherwise.

EDGRAD = 1 for the respondent with greater than 16 years of education, 0 otherwise.

AGExEDU = age of the respondent in years multiplied by education of the respondent in years.

IN1 = 1 for household annual income less than $25,000, 0 otherwise.

IN2 = 1 for household annual income greater than or equal to $25,000 but less than $35,000, 0 otherwise.

IN3 = 1 for household annual income greater than or equal to $35,000, 0 otherwise.

CHILD5 = 1 for household with children less than or equal to 5 years of age, 0 otherwise.

CHILD12 = 1 for household with children greater than 5 years of age but less than or equal to 12 years of age, 0 otherwise.

SENIOR = 1 for household with senior citizens (older than 65 years), 0 otherwise.

SATISFY = overall quality rating of the fresh fruits and vegetables bought in the past, 3 for very good, 2 for good, 1 for fair, and 0 for poor

UP = 1 for household who has used chemical pesticides in home garden, 0 otherwise.

INFO = 1 for respondent aware of the fact that even organically grown fresh produce may contain detectable pesticide residues, 0 otherwise.

The dependent variable was constructed by dividing the risk perception scale by the highest possible scale (18). The independent variables related to socioeconomic and demographic factors are observed on a binary basis except AGE, AGE^2, and AGE x EDU which were specified as continuous variables. Other environmental factors such as use of pesticides in home garden (UP) and past perception of the quality of fresh fruits and vegetables (SATISFY), were hypothesized to capture the effect of consumer's first hand experience with pesticides and post-purchase evaluation of the quality of fresh fruits and vegetables. In addition, available information regarding pesticide residues in fresh produce and individual's interpretation of the information are also expected to affect consumers' risk perception. Although the survey did not specifically measure this information variable, the respondents' awareness of the fact that even organically grown fresh produce may contain detectable pesticide residues was used as a proxy measure. No a priori expectations with regard to the sign and magnitude of the estimated coefficients were postulated due to lack of knowledge pertaining to consumers' risk perception regarding pesticide residues in fresh produce. Descriptive statistics of variables used in the Two-Limit Tobit model are given in Table 2.

Empirical Results and Discussion

As was indicated earlier, consumers formulate their perception from needs, motives, past experience, and available information in addition to personal characteristics, social and cultural background. The influences of these factors on risk perception with regard to use of chemical pesticides in fresh produce were estimated by Two-Limit Tobit analysis. The estimated coefficients, asymptotic t-ratios and their level of significance are presented in Table 3. Most of the socioeconomic and sociodemographic variables included in model are statistically significantly different from zero at the .15 significance level or less.

Table 2
Descriptive Statistics of Variables Used in the Two-Limit Tobit Analysis.

Variable	Mean	Standard Deviation	Min	Max
Risk Perception	.491	.234	0	1
Race	.804	.398	0	1
Urban	.536	.500	0	1
Sex	.352	.479	0	1
Age	42.772	13.773	18	80
Age^2	2018.400	1314.333	324	6400
Edsch	.444	.498	0	1
Edcol	.404	.492	0	1
Edgrad	.152	.359	0	1
Age* Education	571.480	197.060	90	1600
Income1	.384	.486	0	1
Income2	.184	.388	0	1
Income3	.432	.496	0	1
Child5	.164	.371	0	1
Child12	.240	.428	0	1
Senior	.112	.316	0	1
Satisfy	1.900	.610	0	3
Use pesticides	.256	.437	0	1
Info	.488	.501	0	1

Table 3
Statistics for Two-Limit Tobit Analysis of Consumers' Risk Perception About Pesticide Residues in Fresh Produce.

Variable	β	T-ratio	Level of Significance
RACE	.0696	1.775	0.076
URB	.0337	1.133	0.257
SEX	-.0406	-1.406	0.159
AGE	.0139	1.739	0.082
AGE^2	-.0001	-1.594	0.111
EDSCH	-.110	-1.663	0.096
EDCOL	-.077	-1.588	0.112
AGE*EDU	-.0001	-0.595	0.552
IN2	-.0831	-1.959	0.050
IN3	-.0694	-1.869	0.063
CHILD5	.0796	1.892	0.058
CHILD12	.0484	1.342	0.180
SENIOR	-.0882	-1.410	0.158
SATISFY	-.0034	0.141	0.888
UP	-.0383	-1.119	0.263
INFO	-.0350	-1.178	0.239
CONSTANT	.2939	1.750	0.080

Sample Size: 250
Wald Statistic: 1259.47

Results of this study indicate that consumers of European origin perceive the pesticide risk to be significantly higher than consumers of other races (Afro-Americans, Hispanic, and others). Male respondents and households with senior citizens have lower risk perception than female respondents and households without senior citizens. The results suggest that lower educational level tends to decrease the respondents' risk perception. The impact of differences in education level on risk perception are found to be statistically significant. Individuals with less than or equal to 12 years of education have lowest risk perception followed by individuals with more than 12 years but less than or equal to 16 years of education. Risk perception on the use of chemical pesticides in fresh produce is found to be the highest among individuals with more than 16 years of education. With respect to age, it was found that risk perception of respondents increases at a decreasing rate with the increase of age and reaches its maximum roughly at the age of 63[3]. This implies that, for consumers older than 63 years of age, risk perception of pesticide residues actually decreases with the increase of age. Although not statistically significant, the estimated coefficient for UP suggests that respondents who have used pesticides in their home garden perceive riskiness of chemical pesticides to be less than those who have no home gardens or have not used pesticides in their home gardens. Households with annual income less than $25,000 were found to perceive riskiness of chemical pesticides much higher than households with greater than or equal to $35,000 annual income. This is possibly because households in the higher income group consider organically grown produce, although expensive, to be a feasible alternative to conventionally produced fresh produce.

The presence of children less than 6 years of age was found to significantly increase consumers' risk perception about pesticides use in fresh produce. Increasing concern for children's health tend to explain these relationships. The variable, "INFO" was found to be negatively associated with pesticides risk perception. Although not statistically significant, this tends to support some of the scientists' view that lack of information and misinformation about pesticides use in fresh produce has contributed to increasing consumer risk perception about pesticide residues in fresh produce.

Conclusions

A hypothesis concerning consumers' risk perception about pesticide residues in fresh produce was

[3] Computed at the mean of education in years.

gathered from a survey conducted among participating members of a consumer panel in Georgia. Risk perception about pesticide residues in fresh produce was measured with the construction of a Likert scale. Impacts of various socioeconomic, demographic and environmental variables on risk perception were estimated from a Two-Limit Tobit model.

Based on the constructed risk perception scale, the study found that less than one fourth of the total respondents considered pesticide residues in fresh produce to be highly risky. The results also indicate that risk perception about pesticide residues differ significantly with respect to a number of factors. Notably, presence of children appears to increase consumers' risk perception of pesticide residues. Different levels of income and differences in household composition also contribute significantly to differences in risk perception.

The results of this study provide a basis for policy makers to evaluate and assess the impacts on risk perception due to differences in income and education levels among households with different socioeconomic profiles. Specifically, if effective consumer information/education programs are designed to correct information failure, different impacts of demographic and economic characteristics should be given due consideration. This study also provides an adaptation and an application of specific theoretical and statistical models to a consumer perception problem.

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Family Resource Management in Developing Countries: Future Directions

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This roundtable was designed to stimulate discussion about experiences using family resource management curriculum in developing countries. The facilitators provided information and shared support materials developed for a training they conducted as Technical Assistance Faculty to an USAID supported program at the University of West Indies, St. Augustine, Trinidad. Participants shared and raised issues for the development of materials in the future. Research needs were also raised.

Introduction

The roundtable facilitators shared with the group their experiences of training and preparing teaching materials developed to work with educators (frontline officers) in 8 east Caribbean states and Trinidad. The Home and Farm Management Program was a portion of the Agricultural Research and Extension Project for the east Caribbean states of Antiqua, Dominica, Grenada, Monserrat, St. Christopher/Nevis, St. Lucia, and St. Vincent and the Grenadines, and was sponsored by U.S. Agency for International Development.

The program was aimed at integrating the Home and Farm Management concepts and processes for persons who were working with the farmers and farm families. Challenges of preparing materials when the subject matter does not exist in the University providing support for the program were shared. Additional challenges expressed by the facilitators were the types of learning activities that were needed to assist the educators to use the concepts in working with the farmers. The need to be sensitive to cultural differences in management practices were expressed by many roundtable participants.

Issues Discussed

Many of the roundtable participants are being requested to assist in international education for developing countries, even though many have not been trained to work in these countries. How can we support each other in the development of concepts that are appropriate to assist others in relevant decisionmaking processes and other management concepts? How are the examples for learning derived given that we know our models are limited by our middle class culture of the U.S.?

Research is needed to assist in the future development of culturally relevant models to use in working internationally. Linking research with program development is clearly crucial. Helping others to learn about families they work with and/or the marketplaces is an asset that we can contribute to the total process.

Roundtable participants agreed that at issue is the development of appropriate materials to work in our filed in international settings. Sharing what is being done is vital and opportunities for collaboration and communication need to be increased. The facilitators shared that the USAID has an Request For Proposal for the Family and Development Initiative which will involve family resources in economic and social development programs. This is a change in the direction for the USAID program and provides more opportunities to help in developing nations.

[1]Associate Professor, Family Social Science

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Consumer Economic Graduate Study in the United States: Foreign Graduate Students' Perspectives

Robin A. Douthitt, University of Wisconsin, Madison[1]

Graduate students participating in the round table discussion include: Rajai Qusus, Ph.D., Jordan, OSU; Jinkook Lee, Ph.D., Korea, OSU; Karen Duncan, Ph.D., Canada, OSU; Yu-Chun Regina Chang, Ph.D., Taiwan, OSU; Xiaojing Fan, Ph.D., China, OSU; Jing-Jian Xias, Ph.D., China, Oregon State Univ.; Kefan Zhang, Ph.D., China, Univ. of Missouri, Columbia; Noriyuki, Nakano, M.S., Japan, Univ. of WI.-Madison; Carmen Andrades-Gary, Ph.D., Puerto Rico, The Ohio State University.

Most students undergraduate backgrounds were in areas of applied economics. A major reason cited by students for studying in the United States is to learn the most advanced research and statistical methods. Most students came to the United States open to learning about American families and consumers, thus they were not disappointed that other country specific behavioral theories were not covered. However, there was a sentiment expressed that more courses should be taught from a global perspective. Many students would have welcomed more personal contact with faculty immediately following their arrival in the U.S. About half of the students expected to return to their home countries to work. All agreed that ACCI conferences should afford a place and time on the program for foreign students to meet.

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[1]Associate Professor, Consumer/ Family Economics

Undergraduates Doing Research in Courses: Possibilities and Pitfalls

Hilary Wang, University of New Hampshire[1]
Elizabeth Dolan, University of New Hampshire[2]

The following incorporates discussion and suggestions made by the round table participants.

Factors to Consider

A. Students don't believe the amount of time and energy research takes. Early deadlines are critical.

B. For group projects, the size of the group should be kept small -- 2 or 3 students per group. Students may find it difficult to coordinate their schedules to work on the project. Fewer students in the group result in fewer complications.

C. Having students replicate research gives the neophyte researchers much needed help in getting started. The instructor can identify studies from journals, proceedings or national surveys (e.g., CFA or Harris Associates) which provide a lot of information on the methodology used, questions asked, etc. The students have a base upon which to start their review of literature and how to collect the data. Give students ample choices of projects -- perhaps twice as many projects as groups.

For a single class project, students can write short papers suggesting topics, methodologies, etc. The instructor then can make the final decision on topic, methodology, etc. from those suggested.

D. Human subjects review of the projects may be necessary. The process can be facilitated through a departmental review committee for student projects.

E. Group projects require frequent meetings with students outside of class at all stages of the process. This also requires a great deal of the instructor's time.

F. Data analysis may be the most difficult part for the students, and require the most input by the instructor. With group projects, each group can work with the instructor to plan and execute the analyses. Or, taking the entire class to a computer center for a "mass" data entry and analysis session also works. With a single class project, the analysis options and interpretation of the data can be a class discussion. Even students who have had a statistics course may find difficulty in interpreting the findings.

G. Students working in groups should present their findings to the class. With a single class project, the class can discuss the findings and results as a whole. A discussion of "what should we do next time" is often beneficial.

H. Encourage the students working in groups to hand in drafts of their write-up for comments at each stage of development. Some students find it difficult; the idea of using the instructor's comments to help improve their final product is quite foreign.

Each student in a group can submit a short paper summarizing his/her participation, and what s/he learned about research. Students perceive this as a way of letting the instructor know how hard they worked, and for making recommendations based on their own experiences. A final summary paper/ project abstract by each student also works well with a single class project.

What Is Learned

1. Students will not realize how much effort goes into a research project until they have completed one. And then they will complain that the instructor should have forced them to get started earlier! Although it is hard work, it is also interesting and exciting. They have a sense of real accomplishment.

2. Students have a new respect for those who do research and publish the results. They discover that it is not always easy to explain what you have done and what you have found, and to forget to explain some factor is easy.

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[1] Assistant Professor Family Studies

[2] Associate Professor Family Studies

Consumer Protection and The European Community

Monroe Friedman, Eastern Michigan University[1]

With 1992 signaling the opening of a single market for the 12 nations comprising the European Community (EC), it is appropriate to consider the current status of consumer protection in the EC and its likely future course. Given the limitations of time and space we briefly note some organizational characteristics of the EC and highlight some consumer policy initiatives.

The organization of the EC is large and complex, with six main units. Three of the six, corresponding roughly to the executive, legislative, and judicial branches of the American federal government are, respectively, the Commission, the Council of Ministers, and the Court of Justice.

EC consumer policy initiatives in the last 20 years include the following:

1. The establishment of the Environmental and Consumer Protection Service in the Commission. In 1989 the consumer arm of this government unit was given autonomous status, as the Consumer Policy Service.

2. The launching of the Consumers' Consultative Committee (CCC) consisting of experts and members of European associations representing consumer interests. To make it more representative and effective the CCC was reorganized in 1989 into the Consumers' Consultative Council; many of its 39 members represent national consumer organizations.

3. The adoption in 1975 and 1981 of programs declaring basic consumer rights and stressing their importance to the EC.

4. The landmark decision of the Court of Justice in the Cassis de Dijon case in 1979. This decision established the principle that a product legally manufactured and sold in one member state should have access to any other, unless different standards could be justified on the grounds of health or safety.

5. The EC adoption of the Single European Act in 1986, a measure which provides the legislative foundations for eliminating the last roadblocks to free trade in consumer commodities between EC countries.

6. The establishment of a three-year plan (1990-1992) for EC consumer policy. The plan includes initiatives relating to consumer representation, information, safety, contracts, and comparative testing.

With regard to the future of consumer protection in the EC, consumer advocates appear to be of two minds. On the one hand, the newly established Consumer Policy Service, CCC, and three-year plan are seen as encouraging steps. On the other hand, there is concern that the goals of EC-wide consumer choice and consumer protection may not be realized soon. The threat to consumer choice, according to Jim Murray, a leading European consumer advocate, is that "the single market will be more theoretical than real and that in practical terms, the market will continue to be segmented, whether by private enterprises, by public or administrative action or for other reasons." The threat to EC-wide consumer protection, according to this same advocate, concerns the need for passage and enforcement of appropriate EC laws and regulations, and for a regulatory system capable of reacting promptly and flexibly to new developments. According to Murray, "there are far too many consumer protection directives which have yet to be implemented by at least some member states and it is doubtful also if the enforcement machinery in member states is geared to enforcement in the new context of the single market."

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[1]Professor of Psychology

The Role of Litigation in Consumer Protection

Alan Morrison, Public Citizen Litigation Group

Alan Morrison, considered the most effective consumer litigator in the U.S. today, was selected to present the Colston E. Warne Lecture at the 1991 Annual ACCI Conference. Mr. Morrison has been director of the Public Citizen Litigation Group for almost 20 years, and has served on the Board of Governors of the Washington D.C. Bar, the President's Commission on a National Agenda for the 1980's, the Administrative Conference of the United States, the Advisory Committee on Procedures for the D.C. Circuit Report, the Advisory Committee on Exempt Organizations to Commissioner of the I.R.S., and the American Bar Association Committee to Improve the Tort Liability System and to Study the Role of the Federal Trade Commission and the Initiative Process.

In 1833, Karl Von Clausewitz said "War is not merely a political act, but also a political instrument, a continuation of political relations, a carrying out of the same by other means". That is true of litigation also. Why is either war or litigation necessary? While this presentation deals with litigation and not war, there are some similarities between the two.

This paper covers consumer litigation; not such litigation as between Texaco and Penzoil, or between A.T.&T. and N.C.R., or stockholder lawsuits against companies, or employment discrimination or other kinds of discrimination cases. Those lawsuits are very important, and they present a number of problems to society, but they involve different kinds of relationships and different principles in many ways than consumer litigation.

What will be covered is what many people think of as the typical consumer case: a class action kind of litigation that seeks money damages, typically in small amounts for injuries to individual consumers where the total is large. As soon as those kinds of cases are brought, the first reaction is "Why are you causing us all this trouble? Why are there all these lawsuits? It must be the lawyers out there trying to enrich themselves and take profits away from the companies. Please leave us alone."

Because generalities are rather difficult and specifics help put some flesh on to the meaning of litigation, consumer lawsuits that our office has been involved in over the years will be described, starting with two cases involving the same industry in the same part of the country.

The first case is a case with which I have great familiarity since I was the consumer. The case involved the Riggs National Bank in Washington, D.C. When I came to Washington in 1972, I opened a bank account at the bank around the corner from my house, with another branch around the corner from where my office was going to be. In the bank, I saw a sign that said "Interest deposited in the first 10 days of the quarter earns interest from the first day of the quarter." However, at the end of the first quarter, I got a statement which showed no interest earned. I pursued it with the bank, and finally found out that if I looked on the back of the form that they had provided, in paragraph Q in very very small type, it said "Money deposited during the first 10 days of the quarter earns interest from the first day of the quarter. Money deposited after that earns interest from beginning of the next quarter." Reading further, I discovered that if I had taken my money out before the end of the next quarter, I'd have earned interest on the lowest daily balance in the account during the quarter. I figured out that I could have money in the bank for 170 days in a 6 month period, but if they were the wrong 170 days (i.e. deposits on the 11th and withdrawals just before the end of the quarter), I wouldn't get a nickel's worth of interest. That didn't seem quite right to me, and it didn't seem fair, the kind of thing that the bank ought not to be doing.

Eventually it turned out that when I wrote them and explained how unreasonable it was, they saw that I was an attorney, and that I worked for Public Citizen, and decided that they would make a special exception in my case. Since I didn't get this incomprehensible and illegible form until after the account had been opened, there had been technical violation of their rules, and so they would give me my $3.17 for the first quarter so would I please go away. While I had to go away as far as I was concerned, I didn't have to go away as far as other people were concerned. I thought that this was an extraordinarily unfair practice. There were numerous people in similar situations, each with small amounts of money so they would not likely go to the trouble to change banks. The banks count on this. Most people don't notice or don't care, and those that do aren't able to do anything about it. The ones hurt most are not lawyers and professionals, but the small savers, the people who can only put a very little bit of money in a savings account and hope to earn a little bit of interest.

We requested names of consumers from the Legal Services Office in the District of Columbia; i.e. people such as a woman who was

not on welfare, had very little money of which some was deposited in the bank. We wrote the Riggs Bank one last time to tell them that their practices were deceptive and unfair, and they should change them immediately. We always write letters like this at the end in an effort to have the matter taken care of, most of the time it doesn't work. However, the day or two before we were ready to file, Riggs Bank came out with a new announcement that they were changing their policy and that they were going to start paying interest from the day of deposit to the day of withdrawal. They weren't going to pay back all the people who had not received interest before, but in our scheme of priorities we decided it wasn't worth it to sue the bank. It is absolutely clear to me that the bank would never have changed this practice without at least the threat of litigation by somebody they knew would be prepared to carry it out.

The second case also involves the banking industry in the District of Columbia. It involves a man named Adam Yarmolinsky who had sold his house, and bought a new house; both with mortgages, and at a simultaneous closing involving different lending institutions. Immediately he started getting charged interest on the new mortgage, but it was 10 days to two weeks before they stopped charging him interest on the old mortgage. I investigated, and found out that this was a fairly common practice in the District of Columbia, and that it applied not simply to this particular lender, but to virtually every lender in the District. And it applied even if money was borrowed for the old mortgage and the new mortgage from the same bank. They were charging double interest. The bank said it was necessary because it takes time to do the paperwork and to clear the mortgage and file the things in escrow and so forth. And we said, "No". Even with the exorbitant prices of houses in the District of Columbia, and the resulting high mortgages, we are not talking about a lot of money; only a couple of hundred dollars, which is deductible, and so people generally aren't concerned. It's the kind of transaction where you say to yourself, "in the scheme of things, do I really want to get myself aggravated about all this, about a bank that I am now leaving behind." But Mr. Yarmolinsky, to his credit, said, "No", and came to us for help.

We saw this as consumer abuse, something that the marketplace was not taking care of on its own. Consumers do not shop around for a bank based on what they do at a closing. Banks do this as a way to make additional money. Banks, particularly the lender on the way out, know that the consumer is unlikely to be there again, and is unlikely going to fight the matter. It was, therefore, necessary for us to go to court. We sued both banks involved in the closing. The reactions were quite different. The new lender said, "We charged interest from the date that you closed on the house. We were loaning you money to pay off the sale of house, we were entitled to interest. However, we agree that we are not entitled to keep money outstanding on houses sold. It will now be our policy, and we will so instruct our closing attorneys, to stop charging interest from the date of the closing." We said, "Fine.", and let them out of the lawsuit.

The other lender was rather different. It resisted and said, "No, what we are doing is right". We had brought this as a class action, and the lender opposed on the grounds that everybody was not in the same class since the mortgages are different. We responded that "All the papers are the same, all the practices are the same." The judge threw us out, said it was not a class action. At that point, because we didn't have a class action, the claim that Mr. Yarmolinsky had was for about $350. Cases for $350 filed in the Superior Court get moved to the small claims court, where you cannot get any discovery, you cannot take an appeal if you lose, and the decisions are informal and non-precedential in nature. Another thing that happens is that a case like this will take one hour of a lawyer's time which will eat up the entire $350, and so the bank simply will pay you off, it isn't worth their time, and they can more easily get rid of you and the problem all at once. Unfortunately, our appeal was not successful. The court decision made it virtually impossible for consumer class actions to proceed in the District of Columbia, creating, in effect, a license to steal small.

While we had not been able to get our case going forward on the merits, we don't stop at that point. There was a lot of publicity about the lawsuit. Mr. Yarmolinsky was a good friend of a City Council member at the time who was outraged. We began working with the City Council staff and pretty soon we had a statute, which changed the rule. It's called the "wet settlement" statute, and requires that the money be transferred back to the consumer within 24 hours. Financial institutions must now, by statute, complete the whole transaction within 24 hours.

The third case involves attorneys' fees. For years, lawyers around the country had minimum fee schedules. They would tell consumers that there is a minimum fee schedule, put out by the Bar Association, which gives the least amount of money the lawyer is allowed to charge. This prevented anybody from cutting prices, and kept the income of lawyers up. We knew a young consumer lawyer at the time, Louis Goldfarb, who had bought a house in Reston, Virginia. On his closing document was a requirement that he use a specific law firm, the firm originally used for the development. This firm did the work for the developer for almost nothing, and then got all the house closings (several hundred) when the developer sold it off, receiving 1% of the purchase price for each for giving an "opinion as to the legal state of the title". The firm hired a title

searcher to have the title searched at the court house, and charged additional for that service, as well as for the required title insurance. In the case of the Goldfarbs, the firm charged something in the order of $514, plus $25 for preparing the deed, $25 for preparing the mortgage, and $75 for conducting the closing.

The Goldfarbs had sent letters to 35 attorneys in the area, and they had all responded with statements such as, "I would love to be able to charge you less, but this is the minimum the law will allow. It would be unethical, and I know of no lawyer who would charge less than the minimum fee schedule". Armed with this, we went to court and sued the three local voluntary Bar Associations in northern Virginia and the Virginia State Bar under the Sherman Antitrust Act, saying that the minimum fee schedules constituted an agreement in restraint of trade, and that it was just as illegal for lawyers to fix fees as it would have been for the real estate developers, the real estate brokers, the banks or anybody else in this transaction. It was filed as a class action on behalf of those who had bought homes in Reston, Virginia within the last four years. The class was large enough to be significant but not so large that it would be unmanageable. The Goldfarbs asked for damages, injunctive relief and attorneys' fees as well. This was the first case ever brought against lawyers under the Antitrust Laws, and it was a question at the time whether lawyers could be subject to the Antitrust Laws and whether particular state bar associations, which were arms of the state court and set up by the state court, could be subject to suit under the Antitrust Laws.

Just before we were ready to go to trial, two of the three local bar associations came to me and said, "We are prepared to withdraw our fee schedules and to write our members and tell them that they should set their prices according to their own best judgment, if you are willing to let us out of the case". We did, and to mix a metaphor, were able to have our case and dismiss it too. We were able to get down to only two adversaries instead of four, and to have a psychological advantage when we got into the higher courts to be able to say, "The remaining defendants are claiming that if you knock out minimum fee schedules, lawyers will not be able to deliver services. Yet, in two counties, they've done it and people are still getting legal services." We went ahead with the lawsuit, and won half of it in the trial court. We lost all of it in the Court of Appeals, and went to the Supreme Court. The Justice Department Antitrust Division came in on our side to help us out, and we won the case 8 to 0 in the Supreme Court. This was a major victory, making lawyers subject to the Antitrust Laws for the first time. We went back to litigate the issue of damages, and settled the case for $225,000 distributed among about 1500 class members. The average distribution was only $139 each, but the message that went out to every bar association in the country was that lawyers need to worry about Antitrust Laws. It was the beginning of the change in the way the public and the courts have viewed the legal profession, recognizing the commercial aspects. The Bar Associations had said, "If we can't have minimum fee schedules, the income of lawyers will suffer, and we will not be able to be as attractive a profession as we were in the past," to which I had replied, "Precisely."

What kinds of things can we learn about consumer litigation from these three cases? The first proposition is that lawsuits, or a realistic possibility of a lawsuit being commenced, are often necessary. The realistic threat of bringing a lawsuit, if made credibly by people who are known to be willing and have the ability to carry out those threats, will be effective. This is necessary to bring about change.

Second, despite what industry claims, consumers are often willing to settle for less than they are entitled. In the Riggs bank case, we could have gone in and asked for money for past damages, but it made more sense in terms of allocating our resources to say "Let's get on and deal with some other problems that affect other people". Consumers are generally willing to settle low, while companies and defendants are not, they will stonewall and say "we'll see you in court."

Third, small claims are very easy for big companies to get rid of. They simply buy them off, and then only if somebody actually goes to court against them. Otherwise, they simply tell people to forget it, knowing that most people don't have the time, money, inclination or ability to do anything about it.

Fourth, lawyers are essential. We hear lots of criticism of the legal profession, much of it justified. But, in many areas it requires a lawyer to have a credible threat of having to do something about a problem and to effectuate change.

Fifth, lawsuits, even when they are not successful, generate publicity, generate interest, and generate information that can help bring about change from public pressure or result in legislative or regulatory activity.

Sixth, there are significant variations in the conduct of companies within the same geographical area and within the same industry. People react very differently to the possibility or the actuality of litigation, and it is surprising to see how people perceive their interests so differently. Some are more willing to talk and get out of the lawsuit and make some compromises. Others throw down the gauntlet and sometimes when they lose, it can be a very big loss: not only for them, but for others

similarly situated. They rationalize their fight on the grounds that they're going to win, without thinking about the possibility of what will happen if they do not prevail.

Seventh, cases from the plaintiff's side are handled rather differently, depending on who the lawyers for the plaintiff are. We are a non profit organization, and we operate rather differently from commercial law firms that engage in consumer class action litigation. From the defendants' perspective, this is both good news and bad news. The good news is that we won't hold them up for a lot of money. The bad news is that the absence of being able to hold them up for a lot of money won't hold us up from suing them. We are "economically irrational" when it comes to litigation, which makes it very hard for defendants to deal with us. We deal with both principle and principal.

Eighth, litigation imposes costs which are often significant. Sometimes, in lawsuits, the only people who win are the lawyers who get paid. Sometimes lawyers appear to be pushing the case forward, recognizing that their fees will continue to mount up as the litigation proceeds. Sometimes, the legal profession has a longer range view that litigation is not the end of the process; i.e. if a law suit is lost, there are two or three other avenues left to achieve the intended result. And, sometimes people don't realize that if you win a lawsuit, that may be only the beginning of your aggravation and you may end up with something much worse than you had to begin with.

It takes work to litigate. The Caplans, home owners in Scarborough, New York, got into a dispute with their bank where they had a home mortgage and were required to pay monthly into a tax escrow account. Under the terms of the mortgage, they had to pay 1/12 of the annual real estate taxes as estimated by the bank. Where they lived, there were three separate taxes, two of which were collected twice a year, not at six month intervals. The bank set up five separate accounts for tax escrow to make sure they had enough money to pay each of the taxes as they came due. In each of the separate accounts, there had to be enough money to pay that tax when it came due regardless of whether that same home owner had money in another escrow account that would be more than sufficient to pay it off. The effect of this was to significantly increase the amount of money that had to be paid each month into the escrow account, and to enable the bank to have between $1,000 and $2,000 more at any given time under their method than under a method of co-mingling the funds from the different escrow accounts. The bank referred to this method of handling the transaction as the "fully accrued method". We referred to it by another name that rhymes with accrued and sounds more like what the bank was doing to the consumers. Mr. Caplan noticed that his escrow payments were increasing at the same time that his taxes were staying level or going down. He finally was able to fathom what was happening, and wrote the bank. He included comparison charts, and showed them how every single month under his method they would have enough money to pay off the taxes. He even offered to pay a bit extra so that they could have a cushion. No, the bank preferred their method of doing it, not surprising because most escrow accounts do not pay any interest. New York State law required that the bank pay 2% interest, but at that time interest rates were in the 10-16% range, so the bank was doing very nicely on the Caplan's, and on everybody else's, money as well. Mr. Caplan wrote the State Attorney General and the banking authorities, nobody expressed any interest in doing anything about it.

Because he refused to send in the extra money, the bank sued to foreclose on the Caplan's house for nonpayment. The court said the amount as estimated by the bank is acceptable. The bank was about to sell their house when Mr. Caplan contacted us and asked what, if anything, we could do about it. We took the case on, and Mr. Caplan had to post a $10,000 bond to prevent the sale of their house. We took the case to the intermediate court in New York, and we won a reversal and a remand.

The court said to the bank, "We don't think this mortgage allows you to do that, but you've made some allegations about the custom and about what Mr. Caplan knew at the time, and if you think you can prove that, we'll allow you to go back and prove it." The bank had this foreclosure action and they were insistent on proceeding with it, so we said, "We can't stop you from proceeding, let's take some discovery." Then the Caplans told me that they wanted to sell their house. I wrote the bank to let them know that the Caplans want to sell their house, and are prepared out of the proceeds of the sale to pay 100% of the principal and 100% of the accrued interest. Further, they are willing to put in an interest bearing escrow account to be held pending the outcome of the litigation, all of the additional money owned for penalties, attorneys' fees and everything else, whatever amount the bank claimed was owed. The bank wrote back and said "No." I replied, "you are fully protected, and are causing serious injury to my clients," and they wrote back again and said, "It is our right, we want 100% payment." The Caplans were adamant, they refused to do that, and I said, "Fine." But they were unable to sell their house, or to rent it out for a good rent. We then filed a counter claim against the bank for abusive conduct in connection with absence of good faith dealing, and all sorts of other heinous crimes that we alleged against the bank, all of which were true; none of which had ever been brought before a state foreclosure case. Things went from bad to worse. The Caplans were going to take the proceeds of their sale and put the money in treasury bills. The treasury bills were 14%, and the market fell

out. The housing market fell apart in New York and worse, there was a zoning change in their area, and a big factory was going to be built not far from their house. There was a big controversy about the factory and some of the leaks from chemicals. All of this, of course, was this bank's fault in our view. It wasn't the bank's view, but it was our view.

Meanwhile, as this was going on, somebody at the bank decided that yes, they would allow us to sell the house. The house was sold, and the money was put in escrow precisely as we asked to do more than a year and a half before. We proceeded with the litigation, the bank was still unwilling to settle. Finally, the Caplans came to me and said, "We can't go on with this any more. This is too disruptive of our lives. Can we find some way to get out of this and get some money?" I went to the bank and persuaded the bank to pay all of the disputed money, all the attorney's fees, all the penalties and everything. In addition, they paid the Caplans $5,000 in cash. This was nothing compared to their actual losses, but they had to get on with their lives.

While this lawsuit was going on the Caplans said to me, "Can we make our lawsuit into a class action?" I explained several problems: first, the case was now in the intermediate court of appeals and it's hard to start a class action at that point; second, this is a mortgage foreclosure case; and third, you are the defendant. It would be extraordinarily difficult to bring a class action in these contexts. The Caplans asked, "Can someone else do it?" I said, "Yes." They asked if I would take them on, and I said "I'd be willing to do this, it seems to be an outrage, and we should do something about it." So the Caplans started talking to all their friends, almost none of whom had accounts with this bank. Several had accounts with other banks in the Westchester area, and a large number of them had a similar problem which they discovered when the Caplan's pointed it out to them. The Caplan's friends said, "Yes, it's wrong, but we don't want to get involved." And so we tried to strike a wider circle. The Caplans went to the deed books where mortgages are recorded, and they looked through to find out who they knew in their area who had a mortgage that they might get interested in starting the class action. They found a few people they knew, but none interested in starting a class action. Others were afraid that their bank would do something like the Caplan's bank did to them. People liked their homes, and were not anxious to sacrifice them for a couple hundred dollars which, of course, all of the banks understand perfectly well. As a result, we couldn't get anyone interested in starting a class action suit.

Finally, in 1988 the Attorney General of New York and some other attorneys general got together and started an investigation into these escrow practices. This was the same Attorney General who was not interested ten years before when we first contacted him, or six years before when we won the case in the appellate division in New York and a published opinion was widely circulated. A report was published about eight or nine months ago, and there are now congressional hearings in the House and probably going to be in the Senate about outlawing this practice entirely. In actuality, banks will continue to have any kind of accounting practice they want. The one very simple non-regulatory , non-bureaucratic, non-litigative solution is to simply say, "If you have an escrow account, you have to pay passbook interest rate on the escrow account." That's all. End of discussion. That will immediately tell you how much the bank is interested in security for the payment of taxes and how much it is interested in making money off of your money without paying you anything for it. Very simple, easy to administer, no problems. If you pay five percent to your savings books depositors, you have to pay five percent to the mortgage holders.

One final observation concerning this case is that the Caplans would have been no place without a lawyer, without an economically irrational lawyer since we didn't get any money out of the case at all. The banks know that as do most other large institutions.

The final group of cases I want to cover are those in which the nominal defendant is a regulatory agency. The real target is the regulated industry, or what is supposed to be the regulated industry. The claim in those lawsuits is that the agency didn't obey the law, or it unreasonably delayed in taking action, or it acted arbitrarily in the face of the evidence before it. Basically, we're saying that the agency didn't do the job Congress, in most cases, but sometimes State legislatures, directed it to. This is a rather unusual kind of lawsuit or it at least would have been unusual up to twenty years ago. Until the late 1960's, all lawsuits involving regulatory agencies were brought by the regulated industries who were claiming that the regulators were too zealous. We are now claiming that they are too cozy. It is the ultimate failure of the New Deal, and the assumption that the government would always provide protection, that has caused the change in these kind of lawsuits where the regulating agency is part of the problem and not the solution. There are many reasons why this has occurred, and there are others who have written and spoken about it, but there is little doubt that it occurs although as to the specific industries and specific agencies, there are some differences about it.

One example of this involves a product known as infant formula. During the mid-1970s, Congress had hearings and found that a large number of mothers were giving their infants infant formula that was seriously defective in terms of the nutrients

that were supposed to be in it and some of the other components of the formula. Some of these defects were the result of inadvertent errors, and some were the result of the water used with the product. As the sole food that they were getting, this could cause very serious and permanent injuries to infants. Congress decided that the powers of the FDA under the Food, Drug, and Cosmetic Act statute were not sufficient to deal with this very special circumstance, so they passed an Infant Formula Act in 1978 or 1979. In the latter days of the Carter administration an excellent proposal was put forth that would have carried out the intent of the Congress and provide the protection that was necessary. Unfortunately, for a great many other reasons as well, there was an election in 1980 and Ronald Reagan and his staff came in and one of the first things they did was to revise the regulation and make it worse. As a result, new loopholes were created in the regulations, and many potential and actual problems occurred. When these regulations were issued, we went to court to challenge their validity. We sued the agency, the agency defended the regulations, and the court said that while it is true that the agency was probably not faithful to the spirit of the law, Congress had not put enough "shalls" and "musts" in, they had put in some "shoulds" and "ought to's". As a result, we must give deference to the agency and we will sustain the regulations. Fortunately for us, we had friends on Capitol Hill who stepped in and saw the outrage, fixed it up, and were able to get amendments in parts of other legislation that was not vetoed. I ask somewhat rhetorically whether that way of doing business is in the best interest of the industry or the government.

Where does all that leave us? I wish I could say that I was optimistic that there was going to be less litigation in the future, but I can't be. There are still a great many recalcitrant companies and unfaithful agencies. Some people get the word and try to avoid litigation at least some of the time. The real problem is that the mule needs to be beaten to get his attention more often than should be necessary. Letters are often not enough, letters can be unanswered. They do have to answer a summons and a complaint lest judgment be entered against them. Surprisingly, the Litigation Group would prefer not to litigate. We are ready to do so and we are willing to do so, but we would be pleased to be put out of business if all wrong-doers would see the error of their ways and give in to consumers and produce a fair world. We don't expect that to happen anytime in the immediate future. We think there will probably be a lot of opportunities for litigation and while we're prepared to be reasonable and to compromise, we won't surrender. We must continue to have our credible threat if we expect any changes to be made "voluntarily" or otherwise. When people won't answer a call, there's only one way to get a response and that is to bring a lawsuit against them. So as they say, "I'll be seeing you in court;" at least for the foreseeable future for most disputes.

Discussion:

What criteria do you use in accepting a case? Most of my decisions about whether to litigate are based on close to twenty-five years of experience. We look for cases that we think will have some effect beyond the immediate parties to them, that will have an opportunity to set some wider precedent, that will affect large groups of people. We look at the possibility of victory. As litigators, we get more and more involved in the process and see our side of the case increasingly strengthening, the problem is sometimes to see the weaknesses. Another important criteria is that the case be factually rather simple. I prefer a case in which the pattern is not unique to these particular parties and in which we will not have to spend a great deal of time discovering and proving the facts. If a case is not precedent-setting, someone will be able to say the next time that the facts are very different, and we will have to go back and prove the whole thing all over again. We are very conscious about that in terms of the long-range goals, and also in terms of keeping our expenses down. We infrequently get involved in deeply complex cases. Importantly, I have a gut-level feeling as to whether this is an outrage, something that I'm prepared to go to war over and that I think is an important issue to a large number of people, not just something that affects only a few. Part of it, also, is the question about whether this is a particulary good plaintiff, it's important for us to have the consumer client be a person who will evoke some sympathy and who can be of some assistance to us in the conduct of the case.

What issues are you currently litigating? We have brought the first consumer lawsuit ever challenging the validity of a patent. The case happens to involve AZT. It is a very important issue for the people who need AZT because the drug is enormously expensive. The issue is a rather interesting one because it involves the question of whether the federal government, which did almost all the research establishing that AZT, slows down the spread of the HIV virus, should be the co-owner, if not the sole owner, of the patent. It is an unusual patent case in that regard. It is unusual because it is a consumer lawsuit, almost all the patent cases you will see will be manufacturer vs. manufacturer, or importer vs. manufacturer, i.e. business people on the business side. I expect that the first thing that will happen sixty days after the complaint is filed, when they're going to file their motion or their answer, they will file a motion to dismiss, saying "this is a patent case, and consumers have no business bringing patent lawsuits, patent lawsuits are between patentees". That will be a very important motion because we want to establish the principle that the patent laws really are a kind of consumer protection law, like the

anti-trust laws. They operate to create a monopoly, but ultimately that monopoly is for the benefit of consumers. That's the rationale for having the monopoly to begin with. What we are saying is that when the terms by which that monopoly are to be granted have not been followed, those who are the victims of the illegal monopoly have every right to go to court and sue just like they have the right to sue over other illegal monopolies under the Anti-Trust laws or other certain Common law doctrine.