A NEW CONSUMER'S BILL OF RIGHTS

Vincent M. Brannigan[1]

This presentation was designed to stimulate discussion concerning new concepts in the principles of consumer protection

One of the of the most striking features of the field of consumer protection is the lack of any widely accepted set of underlying principles for action in the area of consumer protection. Kennedy's four principles; the right to information, the right to safety, the right to choose and the right to be heard are so vague that they can be cited by both sides in any consumer policy argument. Some argue that consumers have the right to choose unsafe products, whether they be handguns, all-terrain vehicles, tampons or saccharine. Several federal appeal courts have decided that when Congress gave information on cigarette hazards in 1966, it meant to take away any right to compensation for such injuries.

The purpose of this discussion is to propose a series of underlying principles for debate, analysis, acceptance, replacement or rejection. Naturally, any such proposed list is somewhat arbitrary, and reflects the concerns of any specific time. However, by drawing on both academic sources and real world success stories it should be possible to pose a tentative list which would stimulate both academic research and public policy.

Public policy tends to be made in a politically charged environment. However, just as the concept of a "free market" has given some political figures intellectual support for their political orientation, it is equally possible that a well defined set of principles could organize political support for improved consumer welfare. In addition, it could give direct assistance to court and administrative agencies struggling with doctrines of unfairness or unconscionability.

The rights proposed in this paper are based on three principles:

A)   Consumer choice is a means to greater consumer welfare, not an end in itself

B)   Neither the private sector nor government have an inherent advantage in protecting consumers

C)   However efficient the marketplace is at production and distribution of goods and services, it relies on social determination of the original distribution of wealth

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1) Consumers are entitled to the greatest choice of goods and services consistent with socially acceptable minimum standards of quality and safety.

2) Deception of ignorant or credulous consumers is unacceptable.

3) The right to be heard includes the right to technical support and legal assistance to make such hearing meaningfull

4) The cost of injuries associated with socially desired products should be spread to all consumers. Compensation should be payable to consumers injured by the reasonable use of such products.

5) Unlawful behavior by business enterprises should be punished sufficiently in excess of the profits earned by such behavior to deter such conduct.

6) In each business, there should be management officials personally responsible for compliance with consumer protection regulations

7) Society has a non-delegable responsibility to protect children, the elderly and the handicapped.

8) Information is an inadequate consumer protection tool in the absence of a meaningful choice.

9) Information shall not be used to deny compensation for the reasonable use of socially acceptable products.

10) Economic analysis must take into account distributional equity in making cost benefit analysis of consumer programs. Since it always costs money to make wrongdoers correct their mistakes, any analysis shall separate such costs from the costs and benefits to consumers.

11) Consumer choice does not include the right to impose injuries or costs on other consumers without their consent.

12) All categorizations of consumers by business are subject to social control for reasons of both efficiency and equity.

13) Intellectual property, such as patents, copyrights and trademarks are given protection solely to increase consumer welfare.

14) The cost to consumers of government policies should be determined, whether or not such cost is part of the government's budget

DEVELOPMENT OF EXPERT SYSTEMS FOR FAMILY RESOURCE MANAGEMENT

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Businesses will spend billions of dollars over the next ten years developing expert systems (Kupfer 1987). For $688 one could buy the program "Criterion/STS", which is supposed to help investors decide when to buy and sell stocks (Criterion 1987). Expert systems have been used by some government agencies, businesses, and in medicine. American Express uses an expert system to help employees decide whether to authorize credit card transactions (Kupfer 1987). At Ford, an expert system replaced a 1,000 page robotics manual (Stone 1987). One program can diagnose pulmonary function disease (Hayes-Roth, Waterman and Lenat 1983). Other applications include factory floor production scheduling and preparation of capital spending proposals (Weiszmann 1987) and diagnosis of 500 possible internal medicine types from 4,000 possible situations (Arnold and Bowie 1986).

In the past, expert systems have not been applied to problems faced by individual households because of the limited availability of computers. Now, however, the introduction of the 386-based personal computer promises to widen the applications of expert systems (Angus 1987). Simple expert systems can be developed on older personal computers (Siegel 1987a), but more useful expert systems will probably require fast processing speeds and access to large amounts of data. An extreme example is a model used to help determine whether to allow oil exploration on the Alaskan North Slope, which required between an hour and 2.5 hours on a 10 MHz AT-compatible computer (Taylor and Taylor 1987). For one expert systems program, the reviewers suggest that you read War and Peace while the computer is performing calculations.(Taylor and Taylor 1987).

There are several categories of expert systems, including interpretation systems, prediction systems, diagnosis systems, repair systems, instruction systems, and control systems (Hayes-Roth, Waterman and Lenat 1983). For instance, a repair system might diagnose a problem with an automobile and recommend a specific repair strategy (Hayes-Roth, Waterman and Lenat 1983). Expert systems have been developed for problems for which there are human experts. Human experts should have the ability to learn from experience, reconceptualize, acquire general knowledge, and reason by analogy (Brachman et al. 1983). If effective human experts exist, an expert system can be developed by identification of the knowledge base and reasoning process of the human expert (Brachman et al. 1983).

Computer expert systems can assist human experts, or perhaps directly assist consumers. "Traditionally, the transmission of knowledge from human expert to trainee has required

education and internship years long." (Hayes-Roth, Waterman and Lenat 1983). Expert systems could enable paraprofessional staff in financial counseling centers and cooperative extension offices to work with more clientele than would be possible for professional staff to reach.

Maxims for constructing expert systems include: Focus on a narrow specialty area that does not involve a lot of commonsense knowledge.

Select a task that is neither too easy nor too difficult for human experts.

Record a detailed protocol of an expert solving at least one prototypical case. (Buchanan et al. 1983).

A variety of software is advertised as artificial intelligence, expert systems, or decision-making programs, with prices of $99 to $500 (Siegel 1987c) or higher. Some of the programs merely provide a structured procedure for input of criteria and features for choosing the best alternative in the manner of Maynes (1976) method of defining product quality. These programs could "... help you choose the car that best suits your needs, locate the nicest home you can afford ... " (Siegel 1987b).

Other programs simply provide a structure for a series of "if ... then ..." statements, which could be applied to deciding which shipping service to use, etc. (Siegel 1987a). Some programs provide for specialized optimization techniques, such as linear programming, while others provide for simulations (Taylor and Taylor 1987). Decision rules to deal with uncertainty (Maynes 1976) can be implemented in many programming languages or on spreadsheets.

One difficulty with many lower cost computer programs is the tremendous demands put on the user for feeding in information. For instance, in order to use a decision matrix or decision tree, one should know probabilities if one is to use the decision rule of maximizing expected utility. Some expert systems software provides for linkages with popular databases such as Dbase (Mace 1987). In order to make expert systems usable by inexpert consumers, information demands on the user need to be kept low. If goals are complex and heterogeneous, an expert system must query the user to ascertain individual goals. It is simple to identify the lowest priced life insurance policy, but it is a much more complex task to identify both the policy and the amount which will best suit the needs of a particular family.

Discussion at the roundtable included definitions of expert systems for family resource management and topics for applications, such as financial management.

The reference list is available from the author.

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REVIEW OF MULTI-NATIONAL CORPORATIONS AND THE CONSUMER

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This note is a background Study of work on Multi-nationals setting out their areas of operation, their scale of working and of profit, all derived from their annual reports for 1987. This encompasses Auditors, Board memberships, and ownership. The growth of Japanese Corporations is noted especially in the Electrical Industry and the importance of Banking support recorded. The note does not draw conclusions but does emphasize areas where questions may be asked.

Multi-national groups have existed in business, in manufacturing and trading for all of this Century. Based in Western Industrial nations they have grown and extended, selling goods in under-developed Third World countries, as well as extending their activities into other major manufacturing countries. More such Corporations have come into being as technology has created more specialised processes, and complex products and many of the Multi-national Corporations have production processes, or design Departments away from their main base as well as distribution systems that are truly international.

Consumer organisations have expressed concern over this phenomenon and here are regular presentations and lobbies at the United Nations seeking Codes of Conduct for Trans-national Corporations.

Especial problems arise in the marketing of Drugs, of specialist foods in particular dried milk and of differential pricing. High profits are alleged, and a tangled web involving Finance, Insurance, Technology and consultancy can be easily discerned.

This paper sets out some of the characteristics that appear to exist amongst a sample of 150 Multi-nationals to serve as background for other work.

The base from which the Corporation work is shown:

National bases

United Kingdom	49
United States	49
Japan	16
Other	34

The final group includes Germany, Sweden and France.

Some of these Corporations simply trade internationally, others manufacture within a wide range of countries using wholly owned subsidiaries.

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[1] Vice-President

The business involved are wide-ranging, traditionally including oil and metal extraction, construction of all possible kinds, food and agriculture and now including the electronics industries, of which computing is especially important, service industries including finance and banking, air transport and Hotels.

Commercial Sector

Sector	Number
Manufacturing Industry	39
Electrical	30
Trading	24
Food	19
Finance	10
Energy	8
Pharmaceutical	6
Transport	6
Construction	3
Hotels	1

Despite the diversity of interest, there are many common activities, as is shown later. No corporation with a turnover of less than billion annually is included, and the largest is more than $b100, which is more than the maximum only two years ago.

The following tables show the largest Corporations and which are expanding and contracting. This data is confused by changes in exchange rates, and the impact of the Market upon particular industries. However it does convey the flavour of the Multi-national world which is very different from the usual local Consumer world.

What is big?

Corporation	Turnover $b Annual	Business
General Motors	102.8	Automobiles
Sumitomo	81.7	Banking and Trade
Exxon	76.6	Oil
Ford	62.7	Automobiles
British Petroleum	47.2	Oil
I.B.M.	46.96	Computers
E.N.I.	40.0	Oil
N.T.T.	33.49	Telecom
B.A.T.	32.58	Trading
Fiat	30.46	Automobiles

It can be seen directly that these turnovers are of the same order as those of smaller nation states and it is in this context that they should be read. Italy, Japan, United Kingdom and the United States all have Corporations based within their confines that have activities far beyond them. This is mere sample of an extending group of Corporations not merely in the large Western communities but now world wide that now take up a large part of some industries.

For these Corporations, world trade, exchange rates, technological advance are all central to their affairs, they are a group of modern industrial and commercial baronies able to negotiate between themselves, settling prices, terms of trade and standards of performance without the essential participation of Governments or users. It is however important to realise that some national groupings such as NATO do compete since they are very large customers.

Regularly, there are changes that produce increases or decreases of work represented formally by financial turnover, and may also have effects upon profit but not necessarily in the same direction.

Growth Rates

Corporation	Change % annual	Business
Uniisys	90	Computers
Bell	90	General Trade
Hanson	61	General Trade
Pilkington	59	Glass
Fiat	39	Cars
Elders	38	Brewers
Walmart	35	Retail
TWA	34	Air Travel
Hillsdown	30	Food/Furniture
Glaxo	27	Pharmaceuticals

Decline

British Petroleum	32	Oil
Chevron	30	Oil
Schlumberger	28	Oil
Exxon	21	Oil
Steyr	18	Car Components
Veba	16	Energy

This table is affected both by World prices,
especially of oil, but also of commodities,
by major public policy changes, especially in
energy and other types of conservation. Is
it any surprise that these Multi-nationals
are interested in political action?

Declared profits change too, responding to
changes in total sales, exchange rates, State
policies, and convenience. Accounting
standards are not uniform, subsidies may be
available to support particular nations as in
Airlines or national groupings as in
agriculture. Within these limitations the
following table is interesting.

Profitability

Corporation	Change of declared Profit % increase	Profit % of Turnover	Business
Glaxo	22	43	Pharmaceutical
British Petrol	50	29	Oil
Honda	-43	29	Cars
Merck,Sharp, and Dohme	20	24	Pharmaceutical
British Telecom	12	19.4	Electronics
Lucas	40	18	Electronics
Coca Cola	42	17	Food
British Oxygen Gases	30	15	Industrial
Trust House Forte	10	14	Food
Warner Lambert	-	14	Pharmaceutical

The table illustrates the kinds of business in which profits are high, and where thrusting groups can expand, often with a small number of large customers. Pharmaceutical profits will reflect large market penetration by a small number of successful and prestigious drugs, Electronic profits flow partly from defence contracts and in one case from the preparation to market State-owned shares publicly. Performance in successive years may be less impressive.

The Corporations in this survey are usually owned by share-holders who trade on Stock markets, in New York, Tokyo or London. Some of the European Corporations are heavily controlled by Banks where there may be substantial State influence, others may be wholly or partially owned by the State or may have State institutions as principal customers or clients. In these circumstances, the "free market" is a heavily qualified term. Some British Corporations publish share-holder profiles and these show the relatively small part played by individual share-holders. Institutions, Funds, Banks and other Corporations are central to a rather incestuous structure.

Shareholders by Type

Corporation	Individuals	Insurance Pension Funds	Banks Corporations Universities
United Biscuits	14	20	65
Lloyds Bank	23	20	56
Midland Bank	32	18	50
British Aerospace	9	53	37
Cadbury-Schweppes	17	20	62
B.A.T.	18	20	62
Bowater	13	42	44
Tesco	17	8	75
Unilever	18	25	57

This shows clearly that there is relatively
little personal share-holding although people
through their pensions and insurances do have
a real interest in the performances of
Corporations.

Fund managers have real influence on the
supply of cash for growth.

The next tables show how this is monitored by
Auditors.

Auditors

Firm	Number of Audit Reports		Position in International Table of Auditors	
	No.	%		Turnover $m.
Price Waterhouse	15	29.4	3	282
Ernst and Whinney	8	15.6	5	214
Cooper Lybrand	8	16.6	2	310
Peat, Marwick McLintock	7	13.7	1	419
Arthur Anderson	5	9.3	7	312
Touche Roche	4	7.8	6	221
Deloitte	4	7.8	4	244

Many of these great partnerships are also concerned with management consultancy and achieve total turnovers of up to $1000m annually. They are just coming to the minimum size of the International Corporations that are listed here.

So that these Corporations are large, international either in production, distribution or design. They are financed through and supported by International Banking Institutions often with State connections or indeed directly owned. The directing Boards interlock in the same manner as the auditing and a sample is shown.

Whilst Corporations do have their own Corporate officers as Board members it is usual to appoint Corporation Presidents from non-related groups to add their corporate wisdom to the board deliberations along with newspaper publishers, College Presidents, retired politicians (especially from the Defence sector) Corporation Lawyers and audit partners (from other firms of accountants).

Directors

Corporation	Corporate Officer	Director (other) Corporation	Banker	Politician	University President or Professor	Lawyer	Accoun.
Coca-Cola	2	6	3	0	2	1	0
Chevron	4	5	1	0	0	2	0
United Technolo-gies	8	8	2	1	1	0	0
IBM	9	7	1	1	2	3	0
General Dynamics	9	4	1	0	0	1	1
ICI	9	3	3	1	0	0	0
General Motors	7	9	3	0	2	0	0
Exxon	6	7	1	0	3	0	0
ITT	4	9	1	0	0	0	0
Ford	8	7	4	0	0	0	0
Chrysler	6	11	0	1	1	1	0
General Electric	2	10	3	1	2	2	1
Warner Lambert	3	10	0	0	2	0	0
Boeing	3	8	2	0	0	0	0

This situation was first noted within American culture by Wright Mills many years ago and more recently by Kenneth Galbraith. It is now International. There are British advisers to American Boards, Japanese members of British Boards, American members of British Nationalised Corporations and so on. The interlock between Corporations, banks and professional advisers is not yet complete but the pattern is clear.

All this information has implications for people as citizens, as consumers as tax-payers and as public representatives.

The principal industries that are clearly international are set out with comment.

Energy includes mainly oil extraction, but also coal and natural gas which not only stretch over the developed and underdeveloped worlds but also between the East and West blocks politically.

Prices have fallen partly because of the recent perception of the need for energy conservation and because of re-aligned currencies.

Electronics including the main electrical fields is the new expanding technology with an impetus that flows from the Far East. Computing and Information Technology are included and these too are moving away from the traditional Western centres.

Growth is dramatic.

Chemicals partly including Pharmaceuticals and Speciality Chemicals is also a growth area subject to substantial acquisition practices that produce increases in scale without necessary increases in output.

Cars are in transition. The automobile industry (except for Volvo) is declining in Western Europe, despite the expansion this year of Fiat and General Motors and growing in the East, not only in Japan but in Taiwan and South Korea.

Retailing has become more international and more concentrated nationally so that with a limited market growth is by amalgamation rather than by the establishment of new outlets.

Food now includes catering and sometimes hotels and food conglomerates which dominate whole styles of eating. They both produce and distribute and have begun to be regarded as the real ambassadors of Western life-styles.

The effect internationally is that new forces, mainly Japanese are emerging as major Industrial participants, establishing new production facilities in the United States and in Western Europe. Not only cameras, cars and reproduction equipment but also banks and investment groups are growing, setting up new-style Institutions likely to affect whole societies.

New investment in the United States is coming from Western Europe and Japan and in some areas (Chemicals) is assuming a major element in growth.

In Europe, the remaining elements of an Aircraft Industry consists of an international consortium with a relatively small total output and with major state support. Real European investment goes to banking and to chemicals outside Europe.

The message is clear enough, major industry is international, so is banking, the excluded areas are in Africa and India which does have a multi-national hotel chain).

Consumers need to recognise this structure and ask important questions.

1.   Are the new World products and
        services
        Marriott? Sony? or Nestles?

2.   Are economies achieved by using
        low-wage Labour? or by real
        efficiency?

3.   Do the same standards apply globally,
        in services or in products? How does
        consumer observation respond?

4.   Is quality invariable? Is it true
        that rejected products in Western
        Societies are still produced for the
        other World?

These questions were important one or two decades ago, but as more and more Corporations are multi-national it is more important to question their practices.

BASIC SKILLS FOR PERFORMING
COMPUTERIZED DATABASE SEARCHING

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--------------------ABSTRACT--------------------
This paper outlines the basic techniques needed to conduct simple computerized database searches and familiarizes researchers with the most useful search commands available.

With a personal computer, communication software, and a modem, researchers with a password can access databases and compile bibliographies in minutes. Until recently, database searching was available only through an intermediary such as a librarian. Now researchers can do their own searching by using online systems or laser compact discs. Either way, one needs to understand the record structure and the basic commands necessary to direct the computer system to find relevant citations.

SAMPLE RECORD

A record is divided into different fields. Typical fields in a bibliographic record are: title (TI), author (AU), journal name (JN), date (PY), abstract (AB), and descriptors or subject headings (DE). For example:

TI- The Consumer Product Safety Commission's Promulgation of Bicycle Safety Standard
AU- Petty, Ross D.
JN- Jrnl of Products Liability
PY- v10 no1 pp.25-50 1987
AB- May 1986 is the 10-year anniversary of the effective date of the mandatory bicycle safety standard promulgated by the Consumer Safety Commission (CPSC). ...
DE- Regulations; Standards; Bicycles; Product Safety; Product Design; Injuries

SEARCHING COMMANDS

All systems have a basic searching command. The term used can vary from system to system; common commands are SELECT, GET, or FIND. The user types in such a command followed by a search term. For example, in a system using the command "FIND", a user interested in the topic "toys" would type in "FIND toys". Synonyms or similar keywords can be combined using the "FIND--OR" command. For example, using "FIND toy OR toys" tells the system to find records with either term. Several related terms may be combined together in this way, e.g., "FIND toy OR toys OR doll OR dolls OR bicycle OR bicycles".

Search terms can also be combined by using the "FIND--AND" command, e.g., "FIND toys AND safety". This directs the system to find records which have both keywords. The "OR" and "AND" boolean operators are the real workhorses of online searching. The "AND" command narrows a search, while the "OR" command broadens the search.

Another powerful command available in all online systems is truncation, or the wild card. This command directs the system to find all words beginning with a stem or string of letters. Again the symbol used varies from system to system e.g., "?", "$", or "*". By using the truncation symbol "?", "FIND toy?" will broaden the search to include any word beginning with T-O-Y. Thus not only toy, but toys and related words would be retrieved. However, any other words beginning with t-o-y such as Toyota will also be retrieved. This command needs to be used with care. In addition to single words, phrases with two or more words such as "product safety" can also be retrieved. Most systems even allow the user to specify exactly how close keywords may be to one another in a phrase. For example using "FIND toy (2W) safety" retrieves records which have up to two words between toy and safety.

Searches can be refined by directing the system to search certain fields. Frequently a term is searched in the title and descriptor fields only, e.g., "FIND toy?/TI,DE AND safety/TI,DE". This reduces the number of citations found and increase the relevance of records retrieved.

PRINTING THE RESULTS

Scanning the titles of a few records can help the searcher to decide whether search terms used are relevant. Popular names for this print command are "PRINT", "DISPLAY", "SHOW", or "TYPE". The user has the option of printing only the title, the bibliographic citation, or the entire record as shown in the sample record above.

CONCLUSION

Computerized database searching can be done by beginning searchers as well as by experienced librarians. With the development of user friendly menu systems, it is now time for researchers to explore the realm of database searching on their own. Librarians will always be willing to act as consultants or perform sophisticated searches.

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THE EFFECTS OF THE PRESENCE OF SALES TAXES ON STORE CHOICE: THEORETICAL AND PUBLIC POLICY IMPLICATIONS

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ABSTRACT

A major public policy debate centers upon the issue of the taxation of out-of-state mail order sales. Currently, it is impossible to collect sales taxes on out-of-state orders via the mail because of legal and cost limitations. Two studies were run to investigate the effects of the presence or absence of a sales tax on decisions to purchase a product. The results provided strong evidence that consumers do consider the presence of a sales tax when making purchases. Furthermore, some evidence was found that the effects were stronger for higher priced than lower priced items.

INTRODUCTION

Currently, consumers' use of mail ordering and catalog shopping is growing faster than more traditional forms of retailing. Over the past five years mail order sales have increased about 10 percent per annum and catalog sales have increased about 18 percent per annum, while more traditional retailers are averaging about 8 percent per annum sales increases. Furthermore, the disparity between mail order/catalog sales and traditional retail sales is expected to grow even more over the next five years. These trends have many state legislators worried about their fiscal health, because of the difficulty of collecting sales taxes on goods ordered from different states and sent through the mails.

The problems of collecting sales taxes for out-of-state mail purchases stems specifically from the 1967 Supreme Court decision of National Bellas Hess versus Illinois Department of Revenue. The Supreme Court based its decision on the Commerce Clause of the U.S. Constitution, which indicates that "states are prohibited from imposing the duty of use tax collection and payment upon a seller whose only connection with customers in the state is by common carrier or by mail."

A number of groups have a major interest in the sales tax issue. State governments have an interest because of lost sales tax revenues. Local retailers have an interest because consumers may be ordering goods through the mails specifically to avoid paying sales taxes. As one would expect, retail trade associations are in favor of legislation that would require the mail order/catalog retailers to collect sales or use taxes. Of course, the mail order/catalog companies would like to maintain the status quo. If laws were changed to force mail order retailers to pay sales taxes, they will incur additional costs in

order to remit taxes to 50 states with divergent laws. Finally, consumers also have a stake in the issue. Estimates are that requiring the out-of-state collection of sales taxes would cost consumers $1.5 billion a year in increased sales taxes.

OVERVIEW OF STUDIES

The basic question addressed in the research concerned the impact that sales taxes have on consumer buying behavior. Will the presence of a sales tax (say 7%) influence consumers to shift their purchase away from retailers, who must collect the tax, to retailers who do not collect the tax? A second question concerned whether such a tendency would be influenced by the price of the product.

Studies 1 and 2 used the same experimental design. In Study 1 secretaries role played that they were interested in buying either a high or a low priced necklace. (In Study 2, MBA students role played that they were interested in purchasing a high or low priced T.V.) Within each of these between subjects conditions, seven independent variables were manipulated in a fractional factorial design. Among the seven variables was whether or not a sales tax had to be paid to the retail store. Independent of the sales tax manipulations we varied whether or not the store was a local retailer or an out-of-state mail order firm. (Reasons for why an out-of-state mail order firm would have to collect a sales tax were given. Similarly, reasons for why a local retailer would not collect a sales tax were also given). In addition, other variables were manipulated that would influence store choice, such as merchandise selection, store hours and so forth. Subjects were asked to rank their preferences for the 16 store choice options created by combining the two levels of the seven independent variables. Using a conjoint analysis approach, it was expected that subjects would indicate that the sales tax variable was more important for store choice in the high priced product conditions. Furthermore, it was expected that subjects would overall prefer stores that had no sales tax to stores that required a sales tax payment.

The results supported the hypotheses in both studies. Overall, subjects preferred the retailer that did not charge a sales tax. Further, the results showed that this tendency was greater for a higher priced product than a lower priced product. The results were discussed in terms of their implications for local retailers, catalog retailers, and state governments.

THE DECISION TO DONATE ORGANS: A CONSUMER RESEARCH PERSPECTIVE

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The results of projects conducted by the Organ Donor Research Group at Kansas State University are summarized in this paper. An overview of the research is presented followed by a summary of implications and recommendations.

This paper is intended to provide a brief overview of the efforts of the Organ Donor Research Group in the Department of Psychology at Kansas State University. In the past two years, we have been conducting a series of investigations into psychological issues underlying organ donation. We have completed research projects exploring (1) the knowledge, attitudes, and beliefs of young adults concerning organ donation, (2) the effects of different types of motivational appeals on encouraging organ donation, (3) the perceptions and images that people have of their own body organs, (4) the perceptions and beliefs held about various definitions of death, especially brain death, and (5) the differences between various demographic and psychographic segments in their willingness to donate organs.

Based on our research, we have become convinced that there is a need to learn more about the psychological factors underlying the decision to donate organs. Although there have been several well-done surveys, these are not capable of addressing the psychological issues in any detail. Our research, in contrast, has been designed to provide in-depth analyses based on controlled experiments. As a result, these studies have revealed findings of considerable psychological interest. Consider the following four examples.

First, the public seems aware that (1) there is a great need for more organ donors, (2) considerable benefits to others can come from being an organ donor, (3) donating organs is seen as a positive step, and (4) there are ways available that a person can indicate his/her willingness to donate organs. Despite this evidence, there remains a critical shortage of organs. The question is why? We believe the answer lies in a deeper understanding of the psychological concerns of potential donors.

Second, in analyses of the motivation for donating organs, we have compared self (or inner) appeals with other (or outer) appeals. A self appeal says that its good to be an organ donor because "it makes you feel better." An other appeal says that its good because "it can help other people." In surveys, other appeals are rated as more influential. When actual radio ads were constructed, however, self appeals were described as more convincing; interestingly, the other appeals were rated as "clearer." What this suggests is that appeals to self motivation are more likely to encourage organ donation, even though other appeals are more "listenable."

Third, analyses of individual differences, based on willingness to sign an organ donor card, have revealed systematic trends. All groups were equally willing to donate organs while living (e.g., a kidney) to a relative. However, signed organ donors were much more likely to donate to strangers. This suggests that even "anti-donors" are willing to consider donation--under some circumstances. Its not the idea of donation which leads to resistance, but rather the social distance of the recipient. That implies efforts should be made to convince potential donors that strangers can be worthy/deserving recipients.

Finally, our research along with the findings of others indicates that it is not lack of knowledge, per se, that prevents most people from signing organ donor cards. Rather, the resistance arises from other psychological causes, such as fear, perceived risk, and mistrust of doctors. Yet most communications, e.g., in advertising, appear aimed at increasing knowledge (or sympathy) about the great need for organs. The underlying reasons for resistance are not addressed in such appeals. We believe that communications that address the psychological sources of resistance are more likely to be successful

Taken together, these studies suggest (1) most people are aware of the need for more donated organs, (2) much of the resistance to donation arises from unarticulated fears and perceived risks of premature organ removal, (3) self-directed appeals are more likely to be successful than other-directed appeals, (4) advertising should address the "emotional" fears of potential donors as opposed to imparting "intellectual" knowledge, (5) greater effort is needed to help people understand the concept of brain death, (6) since analyses of different segments reveal that most consumers support organ donation under some circumstances, attempts should be made to broaden the range of acceptable circumstances.

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THE EFFECTS OF SOCIAL CLASS ON CONSUMER
CREDIT CARD REPAYMENT BEHAVIOR

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This paper explores the relationship between the
use of credit cards as installment credit instru-
ments and social class. Individuals classified in
the lower social ranks are found more likely to
repay card credit on an installment basis than
their counterparts in higher social classes.

INTRODUCTION

In the past, much of social class research has
been concerned with the direct linkage of buyer
behavior to an individuals social class (4, 15,
16, 23), or the comparison of social class and
income as correlates of buying behavior (14, 20).
More recently, researchers (6, 9, 10) have
suggested that instead, the focus should be on how
social class affects the use of income when
examining buyer behaviors, loyalties and at-
titudes. In this study, the purpose is to examine
how social class affects the consumer's credit
card repayment behavior.

When card issuers grant credit to consumers they
customarily profit in two ways -- through the
collection of annual fees, and by charging
interest on the balances that are carried over
from one billing period to the next. Credit card
interest rates are among the highest charged when
compared to rates for other types of consumer
debt. So high in fact, that bills have recently
been proposed in the Congress to establish a
national credit card interest ceiling.

In light of these developments, card issuers may
find it necessary to re-evaluate both their
marketing programs (in order to hold on to their
market shares), and their policies (in order to
maintain their earnings). Card issuers may seek
to identify and focus marketing programs toward
those consumers who use credit cards to finance
installment debt. This would not only help
maintain market shares but would contribute to
earnings due to the interest charged on balances
that are carried over.

The threat of a rate ceiling may encourage card
issuing companies to become more restrictive in
their credit granting policies. They may elect to
change the time of when the assessment of finance
charges begins -- from the end of a billing cycle
to the date of purchase. They could also raise
annual fees. All of which would have adverse
effects on both convenience and installment users
of credit cards.

By identifying which consumers are
convenience users and which are install-
ment users of credit cards, policy makers may be
better able to assess who will be affected by any
proposed action, and what the ramifications of
such action might be. At the same time, card
issuers may find the information useful for
market segmentation purposes.

Social Class

Coleman (6) suggests that it is more valuable to
look at income and social class together in
examining market behavior instead of one versus
the other. He defends this on the basis that
income and social class aren't very well corre-
lated, and that this lack of correlation stems
from three factors: (1) The basis for social
class segmentation is derived from occupation,
not from income. For example, some blue-collar
workers earn as much as white-collar workers but
yet, would not be considered to be on the same
social status level; (2) Income varies according
to the age of the earner and what stage he/she is
in their career; (3)

Another problem with previous social class
research, is that there was little consensus on
what characteristics should be included in a
measure of social class (6, 9). Dominguez and
Page (9) cited Milton Gordon's definition of
"class" as being economic power measured by
wealth or income. Also cited, was Albert Reiss'
contention that class is centered in the in-
dividual's occupational role, as reflected in the
individual's command of human and financial
resources, decision-making authority, opportunity
for personal fulfillment and satisfaction through
upward mobility, and service to society. In as
much as these things reflect what society regards
as important, then Davis and Moore (7) suggest
that class can be based on the individual's
occupational role and can be measured by the
occupation's financial rewards and educational
requirements.

Installment Credit Use

In a study using data from the 1983 Survey of
Consumer Finances and logit analysis, Sullivan
and Worden (21) examined consumer installment
debt usage according to various sociodemographic
and economic characteristics, and credit at-
titudes. They reported that young couples with
children are significantly more likely to finance
consumption through debt than single people or
young married couples with no children, while
older couples were significantly less likely to

do so. Family size was also positively and significantly related to the installment use of credit. Although income was not significant, the stability of income was. When compared to renters or households with paid off mortgages, households with outstanding mortgage balances had higher probabilities of using installment credit debt. The likelihood of debt use decreased as the amount the household had in liquid assets increased. Finally, they found that a negative attitude towards using installment credit significantly decreased the probability of using it when compared to those respondents who had both a positive and negative attitude. Alternatively, a positive attitude significantly increased the likelihood of installment debt usage.

Model

Based on the preceding discussion we propose that the empirical model to be estimated is thus given by (1).

Installment use of credit cards

= F (Social Class and Related
     Variables, Family Composition
     Variables, Assets, Debt, Credit
     Attitudes, Sex, Race). . .(1)

The variables representing assets and debt are logged, as the transformed variables provided a superior fit.

METHODOLOGY

Method of Analysis

Binomial Logit Analysis (BLA) was used to empirically analyze (1). The choice of this method is based on its appropriateness as an empirical model when the dependent variable represents a two alternative choice (11). The maximum likelihood method (ML) was used to estimate the logit model.

Data

The data used for this study comes from the 1983 Survey of consumer Finances. The Survey is the most current and comprehensive collection of balance-sheet data since the 1962 Survey of Financial Characteristics of Consumers (1). It also updates balance-sheet information collected in the 1977 Consumer Credit Survey.

The subsample used is limited to those respondents who indicated how they paid off the balance on the bank or store credit card they used most often (either in full or in part at the end of a billing cycle). Cases in which the occupation or the education of the household head, or the annual income were not reported were excluded from the analysis as these are factors used in determining social class rankings. Individuals identifying their occupation as being in the military were

excluded due to the fact that their job or profession within the military could not be identified. In order to avoid the effects of extreme values, cases in which the annual income exceeded $130,000 were also excluded. A total of 1,466 families are included in this analysis.

Dependent Variable

For the purpose of this study, installment users of credit are defined as those individuals who reported sometimes or hardly ever repaying credit card balances in full at the end of a billing cycle. Conversely, convenience users were those respondents who reported always paying off balances in full.

Therefore, the dependent variable is categorical taking one of two discrete values. If the consumer is an installment user, the variable assumes a value of one, while a value of zero is assigned if the individual is a convenience user.

Independent Variables

In addition to social class, several variables are used to explain credit card repayment behavior. These include relative income status, unemployment status, general attitude towards credit, sex and race of the household head, marital status and age of the respondent, family size, presence of a child under the age of six, assets, variables representing regularly recurring expenses (monthly rent/mortgage payment and monthly installment debt other than credit card), and high income status. All variables are categorical with the exception of those representing family size, assets and regularly recurring expenses.

Based on social class research by Dominguez and Page (14, 19) and Nam and Powers (17), the Socio-Economic Status Index (SES) is used in this analysis to formulate a measure of social class. It ranks 3-digit level Census Occupational Titles. By determining the number of household heads who have a particular occupation, the median education and income levels for each occupation can be found. Occupations are then ranked according to the median values of education and income for each occupation. The ranked values of income and education for each occupation are then averaged. The average values are then scaled according to the number of occupations in the sample, resulting in ranked class scores that range from 1 to 100. The highest ranked occupations have the lowest class scores. After obtaining the ranked class scores, they are broken into sextiles. The resulting six groups were used as proxies for social class rankings.

A binary variable with a value of one if the household head is unemployed, and zero otherwise, was included on the basis of previous by research Sullivan and Worden (21) and Heck (11) that found the probability of installment credit use sig-

nificantly decreased if the household head was unemployed.

Peters (18) found in a study examining buyer behavior in the automobile market that over-privileged (families with incomes above the median of other families in the same occupational class) blue-collar workers demonstrated buying behaviors more similar to those of overprivileged white-collar and professional workers than to under-privileged workers in their own occupational class. Peters based his research on Duesenberry's Relative Income Hypothesis which assumes that the proportion of a family's income spent on consumption is not determined by their absolute income, but instead, on how the family's income compares with those in the community. Therefore, a binary variable was used in this study to represent the family's relative income status. If the family's income was above the median of all others in the same SES sextile, a binary variable was assigned a value of one, and zero otherwise.

A dummy variable was used to indicate annual income in excess of $70,500. This represents the top 5 percent of the sample. This variable was included to compensate for the fact that a high income opens up alternative credit opportunities not available to others. Thus reducing the need to use card credit for other than convenience purposes.

This study uses the family composition variables of marital status, age of the household head, presence of a child under six years of age, and family size instead of the traditional FLC variables. Research by Wagner and Hanna (22) and Derrick and Lehfeld (8) comparing FLC variables and family composition variables indicates that the family composition variables explain as much or more of the variation in the dependent variable. They are also easier to construct, and are flexible enough to accommodate non-traditional lifestyles such as the single-parent family. The age groups used were; under 25 years, 25 to 44 , 45 to 64, and 65 years and older.

To represent the family's ability to fund current consumption, the total dollar amount the family has in checking and savings accounts was included as a variable in the analysis. Sullivan and Worden (21), showed that the amount the family had in assets was negatively and significantly related to the use and amount of installment debt incurred.

Shay (19) suggested that "credit dependent" consumers have high regularly recurring expenses in proportion to income. With this in mind, monthly payments for rent or mortgage and monthly installment payments on debt other than credit card may be regarded as "regularly recurring expenses", and included as explanatory variables representing debt. Heck's (11) research indicated installment debt was positively related to the installment use of credit cards.

Two binary variables are used to represent the respondent's attitude toward credit in general. If the attitude was expressed as being either positive or negative then the corresponding variables were coded as one, and zero otherwise. If the attitude was both positive and negative (i.e., it depends on the use of the credit) then all variables were coded as zero. Previous research (2, 21) has shown that attitude is a significant influencing factor on the family's willingness to use installment credit, with negative attitudes being negatively related and positive attitudes being positive determinants.

Sex and race of the household head were also included as explanatory variables in this study. Race is represented as a single binary variable with a value of one if the head of the household is black, and zero otherwise. White (24) found the probability of paying for a purchase with a credit card as opposed to using cash or a check, was positively related to being nonwhite. The probability of using credit cards for installment purposes was also found to be positively related to being nonwhite (11)

RESULTS AND CONCLUSIONS

Table 1 reveals that the group of variables most affecting the likelihood of using card credit for installment purposes are those related to social class, assets and debt.

As expected, social class was found to be sig-nificant and negative for all categories when compared to the base category (LLOW). With the exception of the HMED group, as social class increased the likelihood of repaying card credit on an installment basis decreased. This is possibly a reflection of the higher educational status of the upper classes, which may increase the perception of the cost of credit. The coefficient for the HMED group indicates that the likelihood of using card credit as an installment tool is larger than for any other social class group except the lowest (LLOW). This result lends support to the theory that the need to con-spicuously consume is greatest for this group. In general, these findings are consistent with those of Mathews and Slocum (14, 20).

The variable representing those whose relative income status is above the median (privileged) of others in the same social class category, is significant and negative. Taken as a whole, individuals in privileged positions across all social class categories are less likely to maintain balances on their credit cards than their underprivileged counterparts. For those in the underprivileged position, this result is consistent with the relative income hypothesis and with Peter's findings (18).

TABLE 1. Summary of Estimated Coefficients for
Logit Analysis of Using Card Credit for Install-
ment Programs

Explanatory Variable	Estimated Asymptotic Coefficient	Std. Er
Intercept	0.866*	0.463
Social Class (LLOW)		
HHIGH	-1.302***	0.346
LHIGH	-1.025***	0.315
HMED	-0.569*	0.318
LMED	-0.900***	0.301
HLOW	-0.672**	0.321
Relative Income Status (under-privileged)		
Privileged	-0.289**	0.145
Unemployment Status (employed)		
Unemployed	-0.471*	0.270
Assets		
Log of total amount in checking and savings accounts	-0.181***	0.033
Debt		
Log of household installment debt other than credit card	0.112***	0.024
Log of monthly rent/mortgage payment	0.138***	0.027
Age of the Household Head (< 25)		
25 - 44	0.404	0.261
45 - 64	0.117	0.275
65 or older	-0.895***	0.321
Presence of a Child Under the Age of Six (none)	0.122	0.182
Marital Status (single)		
Married	0.462**	0.218
Family Size	0.039	0.058
Credit Attitude (positive/negative)		
Positive	0.218*	0.133
Negative	-0.342**	0.172
Race (nonblack)		
Black	0.781***	0.238
Sex (male)		
Female	0.312	0.219
High Income Status (below $70,500)		
Above $70,500	-0.854***	0.307

likelihood ratio statistic   = 314.29***
   degrees of freedom   = 21
likelihood ratio index
   (rho-squared) = 0.171

*** = .01 level of significance
 ** = .05 level of significance
  * = .10 level of significance

The unemployed are significantly less likely to
repay card credit on an installment basis. The
result supports the contention that the unemployed
are less willing to incur debt of this kind while
they have no means in which to pay it off. This
finding is also consistent with Heck's (11),
although it was not significant in that study.

Increasing amounts in checking and savings
accounts significantly decrease the likelihood of
families using card credit to finance installment
debt. This result is most probably due to the
fact that these families are better able to
finance current consumption through ready cash
reserves.

Variables for regularly recurring expenses
(household installment debt other than credit
card and monthly rent/mortgage payment) were
found to be significant determinants of install-
ment usage of card credit. The higher these
payments the more likely the household will
maintain card balances. These findings are
consistent with Heck's (11) and lend support to
Shay's (19) theory that "credit-dependent"
consumers have high regularly recurring expenses
in proportion to income.

Of the family composition variables, two were
significant. While all three age groups (25 to
44, 45 to 64, and 65 and older) were found to be
less likely to use card credit for installment
purposes when compared to the base category
(household heads under 25 years), only the 65 and
older group was significant. Also, being married
was significant and positively effects the
likelihood of maintaining card balances. Family
size and the presence of a child under six years
of age were not significant.

The attitude variables were significant and had
the expected signs. This and Awh and Waters' (2)
finding that attitude is the most important
factor linked to frequency of use would then
imply that a negative attitude not only means
less card credit use but also, that when such
credit is used, it tends to be repaid in full at
the end of a billing cycle. The opposite holds
true for card users with a positive attitude
toward credit. However, note that a negative
attitude has an effect larger than that cor-
responding to a positive attitude.

As hypothesized, a household with a high income
is significantly less likely to use card credit
in an installment fashion. Additionally,
households whose heads are black are more likely
to use their cards for installment purposes. To
the extent that this group has more difficulty
accessing other types of installment credit, the
result seems logical. Also, blacks are more
likely to feel discrimination in the payment of
bills by means of personal check (24), and
therefore, will use card credit as a means to pay
for things. If this is the case, they may be
more likely to incur instalment debt on credit
cards than nonblacks. The household head being
female was not a significant determinant of the
installment use of credit cards.

By reversing the logistic transformation, the
results from Table 1 can also be used to simulate
the probability of maintaining credit card
balances. Some of these probabilities are shown
in Table 2.

Marketing and policy implications now appear more
clear. Banks would profit by focusing credit
card marketing efforts toward those clients who
have good credit histories and have been iden-
tified as having occupations in the HMED social
class category, since there is indication that
this group is more likely than any other (except

those in the lowest category) to use credit cards to finance debt.

Table 2. Probabilities for Selected Household Scenarios of Paying Credit Card Balances on an Installment Basis Probability

1)	Full Sample	.51
2)	Representative Household:*	.69
	Changes to Representative Household:	
	Black Head of Household	.83
	Female Head of Household	.75
	Lowest SES	.80
	Female, Black and Lowest SES Household	.92
3)	If <25, Single, No Children, Lowest SES, Male, White	.62
	If same as (3) but Black	.78
	If same as (3) but Female	.69
4)	If highest SES, Male, ABOVEMED, Married, HIINCOME and over 65 years old.	.08

*Representative Household: Age between 25-44, Married, HMED SES, White, Male headed.

From a policy making perspective, a shift of the cost of this type of credit from disadvantaged to better off consumers is desirable. However, the actual mechanisms to implement this are by no means clear. An interest cap would probably foster discrimination of some of the intended beneficiaries of such policies.

The issue of credit card delinquency has not been addressed in this paper. This matter, nonetheless, seems most relevant. The results obtained in this paper coupled with research on delinquency would no doubt clarify the above mentioned policy issues.

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Economic Analysis of IRA Participation

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This paper presents the econometric results for estimating IRA participation and contribution resulting from the 1981 Tax Act. A sample for eligible households (those working under a pension plan) is constructed from the 1983 Consumer Finance Survey data. A Probit model is developed for analyzing the participation and a Tobit model is used to analyze the contribution. The statistical results show that income and age are important factors affecting household decision on participation and the amount of contribution. The results further show that black households had a lower probability of participating in IRA than white households.

INTRODUCTION

In 1981, the Congress voted to allow workers even with a pension plan to make contribution to an Individual Retirement Account (IRA). The program soon generated much competition among commercial banks and savings and loan establishments. By the end of 1985, the total value of IRA's amounted to $200 billion, up from $132.1 billion in 1984[1]. According to the Employee Benefit Resource Institute (EBRI), IRAs, along with Keogh retirement plans for self-employed people, were expected to draw $40 billion to $80 billion in new money in 1986[2]. The IRA program, to all outward appearances, is a soaring success.

However, while the 1986 Tax Bill was debated in the Congress, several issues related to IRAs emerged. The main question was whether or not IRAs are good for the country? More specifically, do IRAs increase personal savings; and if so, is the increase enough to offset the loss in tax revenue and correspondent increase in the nation's deficit? Do they provide an effective retirement cushion for those who need one or are they mainly a tax dodge for the well-to-do? Obviously, the law makers were convinced that these issues were legitimate. The Tax Bill was passed and signed into law. It contains several restrictions on eligibility for tax deferred IRA contributions as to be discussed later.

Hausman and Poterba (1987) recently argued that the restrictions in IRA deductibility that were instituted in the Tax Reform Act of 1986 should not have substantial impacts in personal savings. They cited three reasons. First, IRAs remain very attractive savings vehicles under the new

law because the income from IRA investments can be deferred to after retirement for the tax purpose. Second, the IRA restrictions affect only a small part of the contributing population (only 15% of the taxpayers who made IRA contributions in 1986 will completely lose the deductibility of their contributions). Finally, the new law preserves the incentives for banks and other financial institutions to promote a "psychology of savings" and encourage IRA contributions.

The purpose of this paper is to analyze the household behavior in IRA participation. Specifically, the study investigates the factors affecting the decision to participate in IRA and the amount of contribution. For analyzing the participation decision, a probit model is developed while a Tobit model is used to analyze the IRA contribution. These models are estimated using the household data from the 1983 Consumer Finance Survey conducted by the Federal Reserve Board. The empirical results can be used to analyze the above mentioned issues being raised on the IRA program. More important, the empirical results are useful for evaluating the impacts of the Tax Reform Act of 1986. Note that this study deals with only the IRA participation by those with a pension plan. The reason for confining the study to this limited scope is due not only to data limitations but also to its particular suitability for evaluating household saving characteristics and the impacts of federal tax policies.

HISTORY OF IRA

The IRA was established in 1974 under the Employee Retirement Income Security Act. Under this early legislation, individuals without an employer supported pension plan could contribute up to a maximum of 15% of earned income not exceeding $1,500 to their IRA's. The Tax Reform Act of 1976 increased the maximum limit from $1,500 to $1,750 while keeping the 15% cap unchanged. Therefore, during the period of 1974 - 1981, IRAs were available only to those working households without an employer maintained pension plan.

These limitations were relaxed in 1981 while the Economic Recovery Act made IRAs available to all working men and women with or without a pension plan beginning in 1982. The 1981 Act also changed the maximum amount of contributions to $2,000 for individuals, $2,250 for one-earner couples, and $4,000 for two-earner couples.

Under the 1986 Tax Reform Bill, the deductibility of IRA contributions is more limited for high-income taxpayers. For those without an employer maintained pension plan or

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those with a pension plan but with adjusted gross income (before contribution) less than $25,000 (single) or $40,000 (joint), nothing changes. A taxpayer with income more than $35,000 (single) or $50,000 (joint) can not make tax deductible contributions. However, one with an income in the $25,000 - $35,000 range (single) or $40,000 - $50,000 (joint) can have a partial deduction. Another important provision is that the accruing income from all IRA investments (regardless tax deductible or not) can be tax deferred until retirement under the new law.

CONSTRUCTION OF A SAMPLE

The 1983 Survey of Consumer Finance (SCF) was jointly sponsored by the Board of Governors of the Federal Reserve System, the U.S. Department of Health and Human Services, and five other federal agencies. The survey used a multi-stage probability sampling design. Interviews for the survey were conducted from February through July 1983, thus covering both 1982 and 1983 tax years for IRA participation and contribution. The questionnaire included many sections. Respondents were asked about their attitudes toward credit (especially credit cards), housing situation, income, wages and assets, household durables and other debt, checking and savings accounts including participation and contribution of IRA, Keogh and other retirement accounts. In addition, the employment and many demographic characteristics of respondents and spouses were enumerated (see Avery, et al. 1984a and 1984b for more detailed descriptions of the 1983 SCF).

Even though the 1983 SCF contains very rich information related to household financial variables, it cannot be readily used for this study. The main shortcoming of the data base is the lack of specific information on the IRA contribution made for the 1982 and 1983 tax years and on the length of period of participation. Since the questionnaire asked only the amount of IRA contribution, it is not clear when these contributions were made.

Therefore, we need to construct a subsample for this study. Specifically, this subsample should include only those working households with a pension plan during the sample period. This subsample, of course, includes both IRA participants and non-IRA participants. For the purpose of constructing the sub-sample for this study, we specify two categories of IRA participants, "old" and "new". The "old" IRA participants refer to those households whose accumulated IRA contributions exceed $8,000, the maximum for a two-earner couple for the two tax years of 1982 and 1983 under the 1981 Act. The "new" IRA participants refer to those with contributions less than $8,000. It should be obvious that the old IRA participants must have made part of or all of the contributions under the old rules (the 1974 and 1976 Acts). However, the new IRA participants were not necessarily making the contribution only under the new rule (the 1981 Act).

Table 1 shows the distribution of total sample (from the survey) under various catagories of working status, pension availability, and IRA participation, and average household income for various groups. Of the total sample of 3,824 households, 3,028 households have income data of which 2,236 households are working under a pension plan. In this group, there are 53 old IRA participants. These are the households with contribution under the old rules (i.e. with contributions exceeding $8,000). This can happen either (1) the householder changed the employment from one without to one with a pension plan or (2) the spouse made IRA contributions under the old rules prior to 1982. Note that this group of old IRA participants has an average income of $63,695 which is substantially higher than other groups in the same category.

Table 1. Characteristics of Total Sample

| Item | Number of Households | | Average Household Income (1982) |
	Number	Percent (%)	
Total Sample	3,824		a
Households with income data	3,208		$25,975
Working Households	2,236		$30,939
With pension plan	1,336	100	$34,339
New IRA	241	18	47,228
Old IRA	53	4	63,695
Non participants	1,018	76	29,718
No information[b]	24	2	36,083
Without pension plan	888	100	$25,901
New IRA	62	7	42,472
Old IRA	53	6	68,987
Non participants	751	85	20,866
No information[b]	22	2	47,288
Others[c]	14		$25,966
Nonworking households	970		$14,521
Households without income data.	616		a

[a] Not computed due to incomplete data on income.
[b] Lack of information on IRA participation, and/or contribution.
[c] Lack of information on pension plan.

Note that the number of nonworking households is 970 which appears to be unusually large. In this study, a working status refers a minimum of 20 working hours per week. A household is considered as having a working status as long as anyone in the household worked more than 20 hours a week. Therefore, the nonworking households include those working only part-time (less than 20 hours a week). Note that this group of households has an average income of $14,521, the lowest average of all groups of households. There are 616 households without information on income which is a key explanatory variable for our statistical analyses.

The subsample relevant for this study include the new IRA participants (239) and non-

participants (1,018) under the category of working households with pension plan. However, we can not use all these households because some lack data on the independent variables such as education, home ownership, etc. The final subsample used for statstical analysis included 216 new IRA participants and 1,014 non participants. Total sample size is 1,230 households which is 32% of the total survey sample. The actual IRA participation rate in this subsample of eligible households is 18%.

PROBIT MODEL FOR IRA PARTICIPATION

Assume there are two catagories of households -- one participated in IRA and the other not. Furthermore, the decision to participate depends upon a set of factors which may be represented by an index Z_i for the ith individual. Z_i can not be measured or observed. Assume that Z_i is a continuous random variable with normal distribution and is specified as

$$(1) \qquad Z_i = X_i\beta + u_i, \quad i = 1,2,\ldots n$$

where X_i is a vector of economic and demographic variables. β is a vector of parameters and u_i is the error term. Now, define Y as a dummy variable which is specified as

$$Y_i = \begin{cases} 1 \text{ if the household participated in IRA} \\ 0 \text{ otherwise} \end{cases}$$

Suppose there exists a critical cut off point Z_i^* such that

$$Y_i = \begin{cases} 1 \text{ if } Z_i > Z_i^* \\ 0 \text{ if } Z_i \leq Z_i^* \end{cases}$$

In order to simplify these relationships, we can always set Z_i^* to be zero by adjusting Z_i in equation (1). Therefore, Y_i can be alternatively defined as

$$Y_i = \begin{cases} 1 \text{ if } Z_i > 0 \\ 0 \text{ otherwise.} \end{cases}$$

Using the standard normal distribution for u_i, the Probit model can then be specified as

$$(2) \quad \text{Prob } (y_i = 1)$$
$$(= Z_i) \quad \int_{-\infty}^{X_i\beta} \frac{1}{\sqrt{2\pi}} \exp(-s^2/2)ds$$

is the probability that household i would participate in IRA. It is a conditional probability given the household's characteristics, $X_i\beta$. Φ is the distribution function. Our task is to estimate β given the observations on Y_i and X_i. The likelihood function for the Probit model is given by

$$(3) \quad L = \prod_{Y_i=1} \Phi(X_i\beta) \prod_{Y_i=0} [1 - \Phi(X_i\beta)]$$

The maximum likelihood (ML) estimator can be obtained from the first order condition of maximizing the log of (3) with respect to β.

TOBIT MODEL FOR IRA CONTRIBUTION

The Tobit model is used to estimate the relationship between the amount of IRA contribution and its determinants. The model is certainly more general and more useful than the Probit model in this study because it does implicitly analyze both the participation and the amount of contribution. In the Tobit model, if the amount of contribution is equal to zero, then the situation is equivalent to no participation. However, our data is not perfectly clean on the IRA contribution because it may include some contribution under the old rules. Therefore, it is still useful to keep the Probit model for comparison.

As discussed in Amemiya, there are several (five) types of Tobit model. The one used in this study is the standard Tobit model which can be specified as:

$$(4) \quad Z_i^* = X_i\beta + \mu_i, \qquad i = 1,2,\ldots,n$$

$$\text{and} \quad Y = \begin{cases} Z_i^* \text{ if } Z_i^* > 0 \\ 0 \text{ if } Z_i^* \leq 0 \end{cases}$$

Where μ_i is assumed to have independent normal distribution will mean zero and variance σ^2. Z_i^* represents an index for the right-hand side variables and Z_i^* maybe positive or negative. In this study, Y_i is the amount of IRA contribution while X_i is the vector of explanatory variables such as income and demographic characteristics of household i. The likelihood function of the Tobit model is given by

$$(5) \quad L = \prod_{Y_i=0} [1 - \Phi(X_i\beta/\sigma)] \prod_{Y_i=1} \sigma^{-1} \phi[(Y_i - X_i\beta)/\sigma]$$

Where Φ and ϕ are the distribution and density function, respectively.

There exist several estimation methods for the standard Tobit model (see Amemiya). In this study, we use the Probit Maximum Likelihood Estimator. Specifically, the Tobit likelihood function (5) can be rewritten as

$$(6) \quad L = \prod_{Y_i=0}[1 - \Phi(X_i\beta/\sigma)] \prod_{Y_i=1}\Phi(X_i\beta/\sigma) \prod_{Y_i=1}\Phi(X_i\beta/\sigma)^{-1}\sigma^{-1}$$
$$\bullet \phi[(Y_i - X_i\beta)/\sigma]$$

Note that the first two products in (6) constitute the likelihood function of a Probit model and the last product is the likelihood function of the truncated Tobit model. The Probit ML estimator of $\alpha = \beta/\sigma$ is obtained by

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maximizing the log of the first two products. α is a vector of the normalized regression coefficients. Under this method, only the ratio β/σ is estimated, not β or σ separately. However, the normalized coefficients can be transformed into the regression coefficients (β) by multiplying all normalized coefficients ($\hat{\alpha}$) by the calculated standard error of estimated regression ($\hat{\sigma}$).

Increased efficiency could have been gained by using the Heckman's two-step estimator which extends the Probit MLE. However, the improvement of the Heckman's two-step estimator over the Probit MLE is unlikely to be as much as in the more complicated Tobit models with sample selection bias. We further note that the Probit MLE is not consistent under heteroscedasticity or nonnormality of the error term. These problems obviously require further investigation of the estimates presented in this paper.

ECONOMETRIC VARIABLES

The empirical model includes a set of continuous quantitative variables and a set of dummy variables. The continuous variables are defined as follows:

IRAC =   accumulated IRA Contribution (thousand dollars),

INCOME =   total household income before tax in 1982 (thousand dollars),

WAGE =   total household wage-earning income before tax in 1982 (thousand dollars),

SIZE =   household size (number of persons),

AGE =   age of respondent person.

The variable IRAC is the dependent variable in the Tobit model. The variables, INCOME and WAGE are two alternative measures of income, which only one will be selected in the final model. SIZE and AGE are two continuous demographic variables.

Table 2 lists all the qualitative dummy variables in the model. IRAP is the dependent variable in the Probit model. The remaining dummy variables reflect various demographic and psychological characteristics of the household.

Notice that there are only two racial groups specified. This simplification results from the fact that the separate dummies for Hispanic and Asian/Pacific Islander did not work in this model. Notice also that we attempt to capture the impacts of household's attitude toward risk (NRISK) and liquidity (LIQD) on IRA participation and contribution in the Probit and Tobit models.

Table 2. Definition of Dummy Variables

Strata	Symbol	Definition
IRA participation	IRAP	IRA Participants
	NONP-Base	Eligible non-participants
Race/Ethnicity	WHITE-Base	Caucasian and others
	BLACK	Black
Education	GRAD12-Base	0 - 12 grades (without diploma)
	HIGH	High School diploma
	SCOL	Some college without degree
	COLL	College degree or more
Marital Status	MARRI	Married
	SINGL	Singles (never married)
	OTHER	Divorced, separated and, widowed, etc.
Home Ownership	HOME	Home owner
	NONHM-Base	Non-homeowner (renter or free occupying)
Region	NE-Base	Northeast region
	NC	North Central region
	SO	South region
	WE	West region
Risk preference	NRISK	Not willing to take any risk for saving or investment
	WRISK-Base	Willing to take some risk expecting to earn additional return
Liquidency pref.	NLIQ	Not willing to tie up money at all
	WLIQ-Base	Willing to tie up money for higher return

REGRESSION RESULTS

In our preliminary analyses, we tested two pairs of alternative variables. The first pair is between gross income and wages/salaries, and the second is between household size and the number of children. It was found that the regression results are very similar between these alternative variables. We decided to use income and household size variables in the final model. We also included squared income as an explanatory variable but it was not statistically significant.

Table 3 presents the regression results for both the Probit and Tobit models. For the Tobit model, both the normalized coefficients and the regular regression coefficients are presented. The standard error of estimate (σ) is 3.0749 which is used to transform the normalized coefficients to regression coefficients. Note that the results of Probit and Tobit models are very similar. The similarity is due partially to the fact that the Probit ML estimator is used for the Tobit model and both models have the same set of explanatory variables. Of course, for analyzing the quantitative impacts of explanatory variables, we should use the regression coefficients not the normalized coefficients. For hypothesis testing in the Tobit model, the normalized coefficients should be used.

Table 3. Regression Results

Explanatory Variable	Probit Model (Dependent Variable: IRAP)		Tobit Model (Dependent Variable: IRAC)		
	Estimated Coefficient	Asymptotic T-Ratio	Normalized Coefficient	Asymptotic T-Ratio	Regression Coefficient
Constant	-2.511	-7.84	-2.633	-8.62	-8.06
INCOME	0.007	3.51	0.0067	4.21	0.021
AGE	0.0281	6.28	0.031	7.30	0.095
SIZE	-0.055	-1.37	-0.053	-1.40	-0.163
HOME[a]	0.323	2.57	0.293	2.42	0.903
Education[b]					
HIGH	0.470	2.90	0.526	3.38	1.62
SCOL	0.559	3.02	0.584	3.31	1.80
COLL	0.574	3.24	0.608	3.61	1.87
Race[c]					
BLACK	-0.490	-2.42	-0.571	-2.87	-1.76
Marital Status[d]					
MARRI	-0.105	0.72	0.149	1.07	0.458
SINGL	-0.005	-0.22	-0.0007	-0.004	-0.0023
Region[e]					
NC	-0.373	-2.94	-0.391	-3.30	-1.20
SO	-0.221	-1.76	-0.219	-1.87	-0.674
WE	-0.344	-2.34	-0.376	-2.75	-1.158
NRISK[f]	-0.218	-1.96	-0.252	-2.37	-0.773
NLIQ[g]	-0.771	-4.58	-0.746	-4.60	-2.293

[a] Base dummy is NONHM.
[b] Base dummy is GRAD12.
[c] Base dummy is WHITE.
[d] Base dummy is OTHER.
[e] Base dummy is NE.
[f] Base dummy is WRISK.
[g] Base dummy is WLIQ.

For measuring the goodness of fit for the Probit model, we follow the likelihood ratio test suggested by Maddala (p.40). Specifically the reported likelihood-ratio test statistic is 203.6. So we have

$$-2\log\left(\frac{L_w}{L_\Omega}\right) = 203.6$$

where L_Ω = the maximum of the likelihood function with respect to all parameters,

L_w = the maximum of the likelihood function with respect to the constant term only.

Since the sample size (n) is 1230, we get $\left(\frac{L_w}{L_\Omega}\right)^{2/n}$ = 0.847 or R^2 given by

$$(7)\quad R^2 = 1 - \left(\frac{L_w}{L_\Omega}\right)^{2/n} = 0.153.$$

From the regression results, $\log L_\Omega = -571.54$ so $\log L_w = -673.34$. Using the results given in Maddala, the R^2 in (7) must lie in the range

$$0 \le R2 \le 1 - (L_w)^{2/n}.$$

In our case, the upper bound is calculated to be 0.66. Thus, the normalized R^2 is 0.232(= 0.153/0.66) which is typical for this type of analysis using household-level data.

For the Tobit model, we simply use the measure of R^2 computed as the squared correlation coefficient between the actual and predicted values of the dependent variable. R^2 is 0.190 which is comparable to that obtained for the Probit model.

The regression results in Table 3 show that income and age are the two most significant factors affecting both IRA participation and contribution. The statistical significance of the age variable is particularly strong. The positive coefficients of these two variables indicate that the probability for IRA participation is higher for older and higher income households. The same conclusion holds for the amount of IRA contribution. Household size is found to have a negative impact on both participation and contribution, even though the estimated coefficients are not statistically significant at the 10% level.

The estimates of the dummy variables provided many interesting findings. First, home ownership has a positive and significant impact on IRA participation and contribution. This variable may capture some income effects because homeowners tend to have higher income than nonowners. Second, education level has strong impacts on IRA participation and contribution. Specifically, the households with college education have a higher probability for making IRA contribution than those with education less than 12th grade. The estimated coefficient of the dummy variable for black households is negative and significant, suggesting that black households have a lower probability and smaller amount of IRA contribution than all other racial groups in the sample. (In our preliminary analysis, we included separate dummies, one for Hispanics and the other for Asian and Pacific Islanders. However, the estimated standard errors for these separate dummies were extremely large. Therefore, we dropped these dummies in the final model). The results related to marital status show this factor is, in general, not important. The regional dummy coefficients are all statistically significant at the 5% level. The results imply a higher probability of IRA participation in Northeast Region than in the other three regions.

The results associated with the two attitude variables are also interesting. The variable NRISK refers to an attitude of not willing to

take any risk for saving or investment. This
variable have a negative coefficient, implying
the negative impact of this attitude on IRA
participation. The sign is as hypothesized and
the estimate is statistically significant at the
10% level. The other variable NLIQ refers to no
willingness to tie up money in IRA (i.e. strong
preference for liquidity). The coefficient of
this variable is highly significant (at the 1%
level). These results imply households' attitude
and preference have strong impacts on their
saving behavior.

The estimated Probit model can be used to
estimate the probability of IRA participation for
different types of households. Two sets of
estimated probabilities are presented here. The
first set shows the impacts of race and education
on IRA participation. Specifically, consider the
following type of household: (1) married, (2) a
homeowner, (3) in the North Central region, and
(4) willing to take some risk and to tie up money
for higher return. For income, age, and
household size, the sample means are used. The
estimated probabilities for different racial and
education groups are then calculated and
presented in Table 4. The results show that the
estimated probability of IRA participation is 24%
for a white household with a college degree or
more (and other characteristics as specified
above) while it is only 11.5% for a black
household with the same level of education and
other characteristics.

Table 4. Estimated Probabilities of IRA
Participation by Race and Education Level

| Racial Group | Education Level | |
	College Degree or More	Grade 1 - 12 (without high school diploma)
White and others	23.9%	10.0%
Black	11.5%	3.8%

Households with a lower education (less than high
school) have dramatic declines in the probability
of IRA participation for both racial groups.

The second set of estimated probabilities is
developed to analyze the impacts of income on IRA
participation. Consider the same set of
household characteristics used for the previous
calculation and only the households with a
college degree or more. Three levels of
household income are specified, namely, (1)
$25,000, (2) $40,000, and (3) $60,000. The
results are presented in Table 5. As expected,
households with lower income have lower
probabilities of IRA participation. For example,
for a white household with income of $60,000, the
probability to participate in IRA is estimated to
be 30.2%. The probability would reduce to 22.4%
if the household has income of only $25,000.
Notice, however, that these differences are less
drastic than those either between racial groups
or between different education levels.

In the Tobit model, the impact of an explanatory
variable can be measured by elasticity. Table 6
presents two sets of elasticities for income,
age, and household size. The first set of
elasticities is computed directly for Y or Z^* in

Table 5. Estimated Probabilities of IRA
Participation by Race and Income Level

| Racial Group | Income Level | | |
	$25,000	$40,000	$60,000
White and others	22.4%	25.5%	30.2%
Black	10.5%	12.5%	15.6%

equation (1). The second set of elasticities
are computed for E(Y), the expected value of Y
as discussed in Maddala (P. 159). The
elasticities for E(Y) are lower because these
elasticities take into account the probability
of participation. The results show that E(Y)
has a very high elasticity of 2.46 with respect
to household age.

Table 6. Estimated Elasticity from Tobit Model

Explanatory Variable	Estimated Elasticity of Y	Estimated Elasticity of E(Y)
INCOME	1.668	0.436
AGE	9.419	2.461
SIZE	-1.258	-0.329

CONCLUSIONS

In this study, a subsample of working households
with a pension plan was constructed from the
1983 Consumer Finance Survey data. The
subsample indicated a 18% IRA participation rate
for the 1982 and part of 1983 tax years. The
maintained hypothesis of the study is that IRA
participation and contribution are dependent
upon income, demographic characteristics, and
psychological attitudes of the household. A
Probit model was developed for estimating the
probability of participation. A Tobit model was
developed for estimating the amount of
contribution with censured data due to zero
contribution for many households in the sample.

The statistical results show that the
participation and the amount of contribution to
IRA are highly dependent upon income and age.
The probability of participating in IRA is
higher for higher income and older households.
Furthermore, the black households tend to have a
lower probability of participating in IRA. The
level of education is shown to have a strong
impact on IRA participation and contribution.
The results further suggest that the
psychological factors such as preference for
liquidity are very important in household saving
behavior such as IRA participation and