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LOW-INCOME CONSUMERS -- DISCUSSION

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ABSTRACT

Three very different research questions are addressed: emergency food box use in Oregon, purchase of consumer durables by Southeast Asian refugees in Canada and determinants of objective and subjective resource constraints of one- and two-parent low-income families.

HOLYOAK, RAAB AND RAFF PAPER

This paper describes the outcomes of the Hunger Factors Project, a unique collaborative effort in Oregon involving a statewide emergency food distributor, university nutrition and family resource management faculty and representatives from the Governor's office.

The authors state that the project was designed to identify the socio-economic and political factors that put Oregonians at risk of hunger. Given the sweeping nature of this research objective and the limited resources available to accomplish it, it is easy to see why the results reported here do not fulfill that objective.

One problem relates to the sample surveyed. Because only 19 of the 317 Oregon Food Share member organizations participated in the survey, how representative of all emergency food box users in Oregon the survey respondents were is uncertain. Since not all Oregonians at risk of hunger may use emergency food boxes, their input would have to be obtained in other ways in order to fulfill the research objective.

There is still value in a limited sample survey focusing on public policy issues since they may provide impetus for future research as well as raise questions that policymakers may need to start addressing. For this reason, I was interested in the answers to the specific questions the authors posed. These questions were: (1) Who are Oregon emergency food box users?, (2) Why do people request emergency food?, (3) Is emergency food box use becoming a way of life?, and (4) What other sources of food and income are relied upon by emergency food box users?

Since the discussion relevant to each question was fragmentary, I was unable to obtain any satisfactory answers. Even when the space limitations of a paper of this nature are taken into account, the authors still fail to answer the questions posed. Table One provides some explanatory data, but it is still not detailed enough to provide needed illumination. In addition, coverage of all sections is spotty since most of the table provides

information related to the question "Who are Oregon emergency food box users?"

In some instances the fragmentary discussion creates confusion. For example, in the section relating to why people request emergency food the authors state that respondents looked to friends, neighbors, self-help groups and to Oregon Food Share for help when they need food. The basis for this assertion and its relevance to the section are not explained. The authors also fail to provide an explanation for what can be considered a striking finding--that one-half of all respondents received food stamps, but only during two months of the last year. In addition, the finding that for the majority (84 %), the food stamps last only through the second or third week of the month is a bit unclear within the context of this section.

The authors state that the average number of times assistance was sought was twice a year. It would have been relevant to know what the range was since there may be a certain proportion for whom such aid is fairly common. While twice a year may not be very frequent, if a segment of the population has to seek this aid every year, certain policy changes need to be made.

The value of research such as this is in its public policy implications. Since this research was conducted to provide insights into a statewide problem, there should have been some clear-cut implications specifically related to Oregon. In addition, survey results should have been viewed within the framework of nationwide food policy since this often impacts on what is happening statewide.

Land grant universities, such as Oregon State University, were established as a result of the 1862 Morrill Act. The philosophy underlying this law was the practical view that knowledge should be applied to improve the human condition. The Hunger Factors Project is important because it represents an attempt to utilize the research expertise of a land grant university to provide data needed to solve a pressing social problem. If adequate resources are provided for such collaborative projects, research findings can provide the knowledge which can be applied to improve the human condition.

PRITCHARD AND WILLIAMS PAPER

Although done on a small, geographically limited sample, the Pritchard and Williams study provides some insights into the resource differences between one- and two-parent low-income families and also raises questions to be answered by future research.

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I agree with their view of economic well-being as a function of the flow of goods and services over which a household has command. One important determinant is money income, both earned and unearned. The authors also recognize the value of nonmoney income in the form of in-kind services and used augmented income (money income from all sources plus the cash value of food stamps) as an independent variable. Inclusion of the value of other in-kind services such as public housing, energy assistance, childcare, etc., would have been a more precise measure of augmented income. It is unclear, though, whether this information was in the NC-152 data used by Pritchard and Williams. Future studies, however, should include the value of a broad array of in-kind services in their measure of augmented income.

I am not sure whether subjective resource constraints is the best term for the variables of perceived financial problems and perceived adequacy of income. Nevertheless, these measures are important because they reflect factors that significantly influence the quality of life of individuals and families.

When examining the objective constraints studied, the influence of household type on money income is not surprising. Controlling for family size and other factors, two-parent families would be more likely to have at least one member in the paid labor force. The positive influence of household size is also understandable since the number of earners has been found to vary directly with household size.

Given the differential in money income, it is not surprising that the augmented income model showed that adding the value of food stamps did not achieve horizontal equity. It is somewhat comforting to find that food stamps did help to reduce the resource gap between family types. Perhaps an augmented income model containing the value of other in-kind transfers might show more progress towards achieving horizontal equity.

Since all sample families were low-income, the finding that two-parent families had more perceived financial problems than one-parent families does not seem unusual. Because one-parent families are more apt to be low-income, I suspect that a survey of the general population would find that one-parent families had more perceived financial problems than two-parent families. I should mention that although family type was statistically significant, its influence on perception of financial problems was much less than that of the perceived income adequacy variable.

Similarly, although both were statistically significant, frequency of financial problems was much more influential in explaining variation in perceived income adequacy than was family type.

Time is a constraint that needs to be examined in future studies. This is because the number of adult hours available for both market and non-market work is a valuable household resource. At

any given level of family size, one-parent families usually have fewer adult members (and fewer available adult hours) than two-parent families. For this reason, the income differential between the two family types is understated. This is because the ability of one-parent families to substitute more time-intensive home-produced goods and services for more expensive (dollarwise) market goods and services is much more limited than that of comparable two-parent families.

JOHNSON PAPER

Johnson studied Southeast Asian refugee households in British Columbia in order to assess their initial priorities in purchasing consumer durables and to identify variables distinguishing purchasers from nonpurchasers.

The majority of sample households had made at least one purchase. Among purchasing households the most frequently acquired items were cars and television sets. Few households bought large appliances, small appliances or furniture. A partial explanation is that most households were renters who have been found to spend less on large appliances and furniture than homeowners. Another factor is that some items, such as small appliances and cameras, may have been received as gifts and would not have been purchased by the household. The items used in the survey may have also been a factor. Perhaps the addition of microwave ovens, dishwashers, portable heaters, etc., might have increased the number of purchasers.

A closer examination of other household budget items might shed additional light on the patterns found. Large education expenses might indicate that these households were investing in the human capital of its members rather than in consumer durables. Since most households were renters, they may have chosen to forego current consumption in order to save for a down payment on a house.

Johnson found that the refugee households followed the traditional practice of saving for purchases instead of using credit. It would be interesting to see whether continued residence in Canada will be associated with any change in this pattern.

As in previous studies, Johnson's findings demonstrate the positive influence of income on durable goods consumption. Being in a house versus being in an apartment was not influential, but this finding is not surprising since most households were renters. With increased time in Canada it is likely that many of the refugee households will become homeowners so that future studies will probably find homeownership to be influential.

In attempting to find a rationale for this research Johnson stated that some of the attention focused on ethnic groups may result from a concern that current approaches and understanding may not be appropriate when providing consumer education programs for ethnic groups such as new residents in North America. For this reason I feel she should have provided some specific examples of how her findings could be used to implement consumer education programs for Southeast Asian refugees.

THE DEMAND FOR LOCAL TELEPHONE SERVICE:
CONSUMER POLICY IMPLICATIONS

R. D. Reinking¹

ABSTRACT

Telephone service has several unusual consumer demand attributes. These characteristics include the concepts of a necessity, few substitutes, two-part tariff, option demand, unlimited calling option and "binary demand." The presence of these uncommon demand factors suggest of specific consumer policies. Optional local measured service and Lifeline discounts for low income are cited.

INTRODUCTION

The consumer market for telephone service has a number of characteristics which make it different than most other goods and services that consumers purchase. The unusual demand attributes have significant public policy implications. Consumer demand characteristics suggest that connection to the telephone network can best be maximized with Lifeline service and local measured service options.

Examination of this topic will begin with a discussion of the uncommon aspects of consumer demand for telephone service. The "binary" characteristic, the two-part tariff characteristic, and the availability of substitute products will be defined and described. Next, the market perception that telephone service is essential will be coupled with a review of the results of studies that quantify telephone demand. These data present a good picture of the nature and quantities of telephone demand. Following an overview of the pricing parameters of basic local telephone service today, the market demand description leads to policy implications. It is suggested that discounting the price for all residence telephone service is not an optimal approach to making telephone service available to the maximum number of households. Rather, a Lifeline offering targeted to low income households and local measured service options available to all consumers will maximize the availability of telephone service.

ATTRIBUTES OF TELEPHONE DEMAND

This paper focuses upon the connection of residence customers to the telephone network and consumers' local service. It does not consider, to any large extent, other telephone services such as long distance calling, the number of telephone sets a consumer has, or added telephone features such as Touch-tone. The service

which we examine may be called basic local service, residence service, basic service, or just telephone service. The nature of the demand and the consumption of business customers is quite different than residence customers and is not considered here. The term "binary" demand will be used throughout this paper. It has been coined by the author to describe an unusual attribute of telephone demand, but has no other known basis for its use.

Binary Attribute

When we consider the consumption of residence telephone service, we quickly find that few households do not have one telephone line, and even fewer have more than one telephone line. This phenomena of consumers having either one or zero telephone lines is what is meant by "binary" demand. The latest Federal Communication Commission (FCC) report shows that over 92% of all households in the U.S. have a telephone and 94% have telephone service available to them. [2, Table 2]. Therefore, we can say few households are without telephone service. At the same time, in Mountain Bell, we find less than 1% of our residence customers have more than one line. This characteristic is not common in other consumer products or services. Typically we find that individual consumers will purchase varying quantities of a good depending upon their preferences, the price, consumer income, and other factors. For instance, while many people have no automobiles, one car, two car, and even three car families are common in America today. We are now seeing even higher numbers of cars in families with teenagers and with the growth in the market for specialty vehicles such as motor homes and four wheel drives. The amount of most goods purchased, like books, pork chops, note pads, stamps, and nearly everything we purchase, will vary widely from household to household across a range. But, telephone service does not. We purchase one or zero.

The aggregate percentage of households which have telephone service is influenced by aggregate income, price, and other factors. However, the aggregate penetration variation between geographic areas and over time is caused by different percentages of households not having one and zero telephones rather than individual households purchasing multiple lines as price and income vary. The important implication of this demand characteristic is that nominal decreases in the price of telephone service may influence some of the 6% to 8% of the households without telephones to purchase service, but price reductions have little or no influence on the purchase decision of the 90+% of the residences which already have telephone service. As

¹The views contained in this article are those of the author and not necessarily of Mountain Bell.

a technical note aside, this characteristic should probably be considered when applying the economic concept of price elasticity although the interpretation of the elasticity coefficient is not impacted by this demand characteristic.

Two-part Tariff

Another unusual characteristic of telephone demand is the "two-part tariff" notion explored by W. Y. Oi, in "A Disneyland Dilemma: Two-Part Tariffs for a Mickey Mouse Monopoly." [4, pp. 79-96]. This concept applies to a product or service which has an entry fee that is fixed, but also has a per use fee which is dependent upon the amount of consumption of the good or service by each individual consumer.

To illustrate the two-part tariff notion, let us consider the instant Polaroid camera rather than the Disneyland example of Oi. The key elements of this concept are first, the consumer must pay a fixed amount as an entry fee. For instance, in order to take a Polaroid picture one must first purchase a camera. The price of the camera is fixed and does not change with the number of pictures taken with the camera. This is similar to the access or connection to the telephone network, which is fixed regardless of the usage. Second, in order for the consumer to get the benefit of the camera, film must be purchased. The amount of film that each individual customer purchases is different and is a function of the number of pictures each consumer wants to take with the camera. In a similar way, with long distance toll or local usage sensitive prices, the amount of usage of the telephone network purchased by individual customers is different. Third, the consumer purchases both the camera and the film in order to receive the benefit or value of the final picture, which is a function of both the entry and the usage sensitive element of the two-part tariff. Likewise, in the main, the telephone subscriber receives benefit from the communication, not from the access line per se, nor the fact that the telephone is "off the hook" for a period of time. Most economists separate this unique type of good and distinguish it from typical complimentary products such as bread and butter. Economists make this distinction because of the fixed entry fee, the part of the consumption that varies with the use between customers, and the benefit which the consumer receives being related to the combination of the fixed and usage sensitive parts. The significant implication of this characteristic to residence telephone service is that, in order to receive any value from telephone service, all customers must have one access line or connection to the telephone network which is not sensitive to the amount of usage.

This connection is essentially a pair of copper wires which stretch between the customer's house and our central switching office. However, individual residence customers make from zero to well over 1,000 local calls per month and zero to more than 300 long distance calls per month. The value that a specific consumer receives is a function of the single access line plus a

variable amount of usage according to each individual consumer's calling habits. This presents the "Disneyland Dilemma." If a single part price is charged with this type of product and demand, some consumer is hurt. Let us assume that local telephone service costs \$15 per month. Hypothetically, if all residence customers were charged a flat additional amount for long distance calling of \$50 per month, customers who did not make any long distance calls would receive no benefit for their payment. Many customers would disconnect their telephone service because the total value they receive from the connection, local usage, and toll usage would be less than the minimum price of the \$50 for long distance plus \$15 for local service. Likewise, some low usage customers may not subscribe because the flat rate of \$15 is too high while they would be willing to pay \$5 per month plus a few cents per local call they originate. Consequently, a two-part tariff which permits the fixed entry fee to be lower than a single part price and usage priced separately is appropriate.

Option Value

Let us now move to another characteristic of telephone demand which has had little analysis. Taylor refers to option demand for access in Telephone Demand: A Survey and Critique. [8, pp. 39-42]. Option value refers to the fact that a telephone line has some value to some consumers even if it is never used. The option value is created by the existence of the connection to the network. The connection is available to be used should the purchaser choose to exercise the option of making a call. For example, a consumer may want a telephone available for emergency calls only, and may never use the telephone if an emergency does not occur. A telephone line connection is much like an insurance policy on our automobiles. Payments are made to the insurance agent, and value is received, even if no claim is filed. This characteristic becomes very important in policy formulation when it is extended to recognize the current pricing mechanisms for telephone service. That is, long distance and local measured service calls are billed to the originator only. There is no charge for receiving a telephone call. Consequently, the purchase or existence of a telephone access line includes not only the option to originate calls, but also the option and ability to receive an unlimited number of local or long distance calls. This ability to receive calls enhances the option demand value. As a result of the option value, many customers purchase telephone service even though they have no long distance or local usage in any month. In fact, about 7% of the telephone customers make no calls in any given month. These customers receive value from the access line alone but would receive no value from any fixed usage related charge.

Unlimited Calling Option

For the last 50 years, most residence consumers have received telephone service under fixed or

flat rated local tariffs. Under that pricing arrangement consumers paid a fixed amount per month and received the connection to the network along with the ability to make unlimited local calls. With the widespread introduction of local measured service during the early part of this decade, studies revealed another demand characteristic related to local telephone usage. Reinking and Berryhill called this "the unlimited calling option." [1, p. 31]. Their studies of consumer behavior and attitudes revealed that some consumers place a value on having the ability to pay a fixed amount per month for local usage regardless of the amount of usage they generated. Research revealed that the unlimited calling option had a value greater than the value of the usage alone. On the other hand, their research showed that other consumers placed little or no value on the unlimited calling option. This is significant because if only fixed flat rates for local service are offered, consumers who place no value on the unlimited calling option are forced to pay for it anyway. Further, if the flat unlimited calling option is not offered and all calls are measured, consumers who value the unlimited calling option are denied the ability to purchase what they want. This leads to the conclusion that both flat and measured local telephone service should be provided. The consumer then has the individual choice and can match his or her purchase with the benefit received.

Necessity

Telephone service is typically viewed as a necessity in America today. Although the term "necessity" is not accurate in its purest sense, and life can be sustained without it, Americans view telephone service as a necessity. This has been demonstrated repeatedly through surveys of consumers for many years. In a University of Utah public opinion survey, 73.1% strongly agreed and 20.3% somewhat agreed when asked if local telephone service was a necessity to them. [7, p. 39]. Mountain Bell surveys in various states have shown between two-thirds and three-fourths of the residence customers respond that telephone service is a necessity when asked if they considered it a necessity, convenience, or a luxury.² A number of econometric studies have shown the price elasticity of basic residence service to be approximately $-.04$. Price elasticity is, roughly stated, the percent change in quantity of a product sold divided by a percent change in the price of the good. In other words, the elasticity value of $-.04$ means that the 100% increase in the price of residence telephone service would cause a 4% decrease in the quantity of residence telephone lines. Although no conclusions can be drawn from the value of the elasticity, the extreme inelasticity of residence service tends to imply that telephone service is viewed as a necessity. If telephone service is viewed as a necessity, a policy of maximizing the size of the market and

the ability of consumers to purchase the product follows. Indeed, this has been the policy of the industry and the Nation since the beginning of this century. This overriding policy, called universal service, has enabled the U.S. to lead the world in the percentage of households with telephone service by a wide margin and respond to the perception of telephone service as a necessity.

Substitute Products

Lastly, we should note that there are few practical substitute products for basic residence telephone service. Although visiting, letters, CB radios and even carrier pigeons are means of communications and technically are substitutes for telephone service, few of us really consider them as alternatives when we decide whether or not to have a telephone in our house. It is also true that there is a growing number of different providers of telephone service which provide consumers a choice of companies to connect them to the telephone network. However, since this analysis examines the demand for the entire telephone market rather than a specific provider, the growing competitive alternatives do not represent substitute products in the context of this analysis. Cellular mobile telephone service is the only practical substitute today, but its price and availability currently limit its impact on the residence market to a negligible level. The significance of the lack of substitutes for telephone service is merely to tie together the other aspects of demand. If there were reasonable alternatives for this necessary product, the policy issues would be simple - consumers would choose between the alternative products and competition would flourish. We would not have to be concerned with the unusual attributes of telephone demand and the resulting policy implications. But, telephone substitutes are limited.

To summarize the characteristics of telephone demand, we find that consumers view the telephone as a necessity with no close substitutes. Just having a telephone line or connection to the network has value in itself, but the majority of the value of telephone service to consumers is derived from the usage of the service. Both local and long distance usage, hence the total value, varies widely among individual consumers. We also find that nearly all residences have zero or one telephone line rather than a wide variation in the number of lines in individual households.

QUANTIFICATION OF THE MARKET

Approximately 93% of the households in America have residence telephone service. This is far higher than any other nation in the world and was the measure given most attention in the industry until the early part of this decade. However, studies performed using 1980 U.S. Census data have caused many people to focus more of their attention upon the percent of

²Various Mountain Bell consumer surveys conducted between 1981 and 1984.

households with telephone by income group. Figure 1 shows the relationship between telephone penetration and income in 1980 for the U.S. The vertical axis shows the percent of households with a telephone, while the horizontal axis represents income with respect to the poverty level in 1980. The first bar is less than poverty level, the second bar one to two times the poverty level, and so forth. Also noted is the mean income of each group.

These revealing data expose what is hidden by the overall 93% average penetration. At a household income level between \$15,000 and \$20,000, telephone penetration becomes virtually constant at approximately 96%. Below \$15,000 the penetration level is very sensitive to income. Indeed, less than 81% of the households in poverty have a telephone. When we note that these are U.S. Census data taken at a point in time, we can pragmatically conclude that nearly everyone with income above \$20,000 has a telephone.³ It is only the lower income households who do not have universal telephone service and who are sensitive to modest changes in the price level for telephone service. This observation is confirmed quantitatively by the

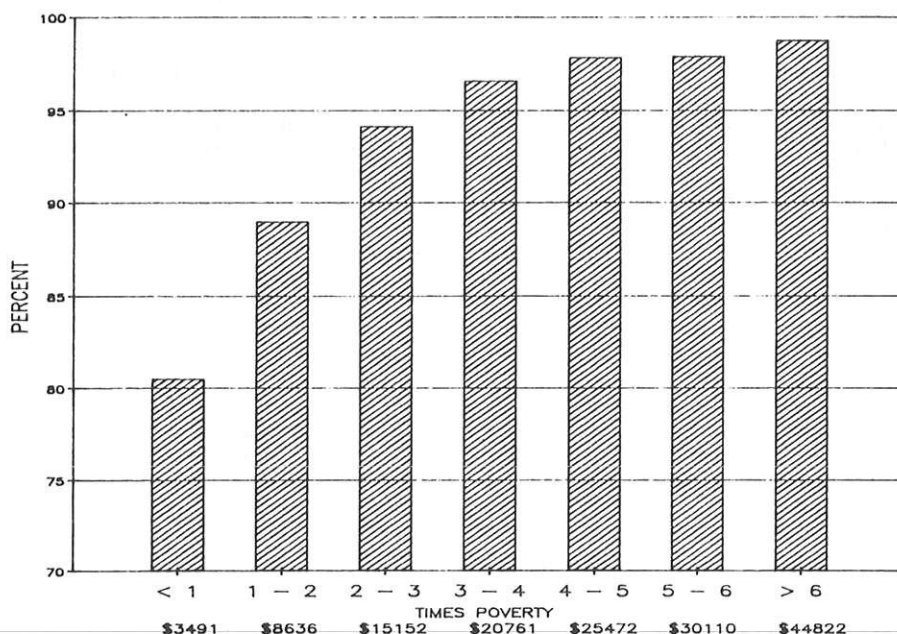
price elasticity by income level shown in Table 1. Considering these data in context with the unusual characteristics of telephone demand, we find a compelling case for a targeted low-income Lifeline offering, a conclusion that will be explored subsequently.

TABLE 1. Residence Price Elasticities by Income Level (1980).

<u>Times Poverty</u>	<u>Mean Income</u>	<u>Price Elasticity</u>
Below Poverty	\$ 3,491	-0.145
1-2 Times Poverty	8,636	-0.096
2-3 Times Poverty	15,152	-0.058
3-4 Times Poverty	20,761	-0.040
4-5 Times Poverty	25,472	-0.030
5-6 Times Poverty	30,110	-0.023
Above 6 Times	44,822	-0.015

From our examination of income, the only demographic variable that heavily impacts telephone penetration, let us now turn to price. The structure of prices offered to residence consumers and its impact on telephone penetration

FIGURE 1. Telephone Penetration and Income.



³At any point in time there are a small percentage of households who will not have telephone service at any price. A few people do not want a telephone. Other households will be waiting for a telephone to be installed or moving between residences and not yet able to have service installed. Consequently, we can never expect 100% of households to have a telephone at a point in time.

levels was explored by Doctor Perl in his 1983 study. He concluded, "Second, access demand is primarily a function of minimum rather than average access charges." [5, p. 2]. In other words, the penetration level is primarily a function of the entry fee or first part of the two-part tariff structure. Consumers react mainly to the lowest price alternative which will allow them to be connected to the network. Consumers react less to the price of usage or higher price alternatives such as flat rated service. He estimated, hypothetically, at a \$20 flat monthly rate (in 1980 dollars) the U.S. would have an 89.8% telephone penetration without measured rates. However, with the same flat rate and a measured option with a \$6 access price and a 10¢ charge for local calls available to consumers, 92.4% of the households would have telephone service. [5, p. 17]. This is consistent with Mountain Bell studies which have shown that low income consumers are significantly more likely to choose measured service when offered a choice between measured and flat telephone offerings.⁴ The lower entry fee, however, is also effective in helping consumers at any income level afford telephone service and can maximize their benefit-cost ratio. These models clearly demonstrate that due to the two-part nature of demand for telephone service, lower price connection options without any usage allowance helps universal service goals. However, the power of local measured service is limited by the fact that the usage is also a source of consumer value and the relative magnitude of the cost of the connection versus the cost of providing local usage.

POLICY ANALYSIS

We have seen that the demand for residence telephone service is binary. Less than 1% of American households have more than one telephone line. Low prices have not expanded the market vertically or encouraged individual consumers to purchase more telephone lines. Rather, low residence prices encourage more households to purchase one line. Nearly all households with median income or higher have a telephone, but only about 80% of the households with income below poverty have telephones. Nearly all of the sensitivity to current telephone price levels is concentrated in the lower income groups. Within modest price ranges, lower telephone prices have little effect upon the consumption of middle or higher income households. They continue to purchase one telephone line, no more - no less. On the other hand, lower telephone prices significantly encourage lower income households to purchase telephone service. Concentrating lower prices or discounts upon the low income customers only can have far greater impact than providing equal rates to all consumers. The impact of a lower lifeline rate targeted to low income households is even more dramatic when we assume a roughly

constant revenue to the firm.⁵ This is due to the relatively large number of households which are not impacted by modest changes in the telephone price. For example, if a Lifeline discount of \$1 per month was provided to 10% of the low income consumers who are most sensitive to price, the offsetting increase on the other 90% would be 11¢ per month and result in no perceptible change in their purchase. Further, though beyond the scope of this investigation, it can be maintained that Lifeline discounts are rational from an economic perspective and a reasonable utility classification. [6, pp. 32-37].

Lifeline rates are clearly the single most important public policy tool available today for the maintenance and encouragement of ubiquitous residence telephone service. The relatively small proportion of consumers who are sensitive to modest price changes receive the full benefit of the discounts. The FCC has recognized this and waives the Federal Consumer Access Line Charge where states have instituted local Lifeline offerings. Today, the federal charge is \$2 per month and is waived up to its full amount on a matching basis for states that have enacted state Lifeline rates. Individual states are employing Lifeline rates in increasing numbers. In February, 1987, fifteen states had enacted or had taken approval steps to enact low income Lifeline rates. This should be the top priority for those interested in maintaining universal telephone service.

The second easily employed measure to help promote widespread access to the telephone network is support for or implementation of a less costly service option than the traditional flat rated single-party residence service. The most common lower priced alternatives are party-line services and local measured service. Historically, two-party, four-party, or eight-party lines have provided lower priced options. However, multi-party service has become extremely unpopular for companies and consumers alike. Companies are often faced with equal or higher cost per customer when multi-party lines are provided. Consumers today generally detest multi-party service due to the busy condition on the line, lack of privacy, interruptions, and all of the other drawbacks of party-line service chronicled in literature. Surveys even show that many who have multi-party service do not like it. Mountain Bell surveys found that nearly 31% of multi-party customers are dissatisfied with their service while about 2%

⁵An assumption of a fixed total revenue is often applied to telephone service. Regulated industries are limited in the maximum rate of return and can file for increased rates if returns are unreasonably low. Consequently, rate adjustments in utilities often taken the form of a zero sum game to meet a specified total revenue amount from all services and consumers.

⁴Studies conducted by Mountain Bell in New Mexico, Idaho and Montana.

of the local measured service customers were not satisfied with their service.⁶

The most prominent local residence pricing alternative to the traditional flat monthly service is local measured service. This pricing structure is designed to reflect the nature and occurrence of both the benefits received by the consumer and the cost incurred by the company. This offering employs the two-part tariff or more accurately a multi-part tariff concept. Previously we have seen that the mere connection to the telephone network and the ability to receive incoming local and long distance calls provides a value to some consumers, although some customers may not originate any calls. The local measured service access line provides those capabilities at a lower price than the traditional flat rated service which includes some amount to pay for usage. With a local measured service option, usage is priced separately based upon the calls which are generated by each individual subscriber. The usage, with a demand characteristic that is not binary but varies over a wide continuum for specific customers, is priced according to the quantity consumed. This permits low usage customers who gain little value from the usage to pay a lower price, while higher use customers who receive greater benefit from the usage pay a higher price. Again, this is in keeping with both the two-part character of the demand as well as the cost of producing the service. When local measured service is combined as an option with the traditional flat rated local service, consumers who place value in the predictable monthly bill, unlimited calling and other features of the unlimited calling option are also able to obtain the service and value they want.

The combination of flat and measured services offered simultaneously permits individual consumers to match the value of each of the unusual characteristics of telephone demand with their purchase decision. The lower entry fee for connection to the telephone network permits more households to have telephones and maximizes the number of households with telephone service. Local usage as well as toll usage, which is not binary in nature, can be purchased by individual consumers to the extent that their individual benefit warrants. Other consumers who find benefit in the unlimited calling option are also able to purchase that type of service. Permitting the consumer the choice among these alternatives gives individual consumers the ability to get the services they want and avoid paying for the benefits others receive. For these reasons, consumers should support the concept of an optional local measured telephone service.

In summary, our research suggests two practical telephone pricing steps that will have a major impact upon the maintenance or expansion of

⁶Surveys of multi-line and measured service consumers in Colorado and Idaho.

universal telephone service. The primary policy that will have the greatest impact on bolstering residential connection to the telephone network is support of a means tested Lifeline discount. Secondly, optional local measured telephone service can help consumers better afford a telephone, as well as providing increased fairness and choices. This conclusion can be supported not only with our research, but also through studies performed by non-industry sources. We have recently applied a model of residence telephone service in Idaho developed by the Idaho Commission staff using 1980 census data, prices, income and so forth. [3, pp. 1-15]. Adjusting this model to account for inflation and telephone industry changes since 1980 permitted us to estimate that with the measured service option in place in Idaho at this time and a Lifeline program with federal matching, telephone penetration could be increased by greater than 1% at today's rates or maintained at the current penetration level even if basic residence rates were nearly 50% higher.

CONCLUSIONS

Consumer demand for basic residence telephone service is characterized by several unusual attributes. Connection or access to the telephone network is "binary" in nature. Local and long distance calling is two-part in nature and varies between individual consumers over a wide continuum. Although each aspect of telephone service provides value to consumers, the primary benefit, a telephone conversation, is a result of a combination of the specific pieces.

Overall, about 93% of American households have telephone service. Within that, however, we find approximately 96% of households with income of over \$20,000 have service, while as low as 80% of households with income below poverty have telephones. The two policy steps that will best promote universal service, consumer choice, and fairness are a means tested Lifeline rate and a local measured service option.

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ABSTRACT

Local Measured Service is a relatively new form of charging for local telephone use and is widely promoted by the industry. After a decade, few consumers have elected it and much debate continues. Consumer research has not been utilized by regulators, yet many fundamental questions could be resolved through structured research processes.

What is Local Measured Service (LMS)?

Local Measured Service (LMS) is essentially a method of charging for every local call according to the same "usage" factors used in toll or long distance calling: The duration of the call, the local distance between the parties to the call, an amount for setting up the call (also called frequency), and the time of day. (see Appendix I)

LMS has been heavily promoted and lobbied by every major telephone company in the past decade with little successful market penetration by 1987. Its rationale has varied, but LMS is apparently a solution in search of a problem. It is marketed and packaged in a variety of ways to regulators and the public in order to somehow sell it. Sometimes it is introduced in limited areas or with fewer "usage" factors.

1985 was the target year for completing the successful nationwide implementation set in the 1970's by the old Bell System. This was the year where the majority of residential customers and virtually all business customers were to have been signed up. Flat rate pricing and other options were to be rapidly disappearing offerings used by a minority of the public. While the goal was not reached and only 2%-4% of the residential customers have been added to the LMS rolls in the past decade, the debate nonetheless continues.

The carefully crafted LMS plans of the Bell System and General Telephone, in particular, have not been received well by regulators whenever the consuming public actively participated in rate cases and became aware of the issues and problems.

Today LMS is offered at least in part in a majority of states, but rarely do even 10% of the residential customers elect it in any state where other options especially flat rates exist at reasonable cost. The industry goals haven't been met. The industry arguments, backed by impressive implementation manuals, public relations campaigns, and committed top managements have failed dramatically.

Notwithstanding the setbacks in most states

through the end of 1983, the new Baby Bells often incorporated LMS again in their otherwise highly successful campaigns to raise local telephone rates in 1983-4. The new Bell companies managed to raise local rates and individual company profits sharply with arguments flatly predicting the most dire consequences from divestiture. Their financial abilities to provide telephone service were openly questioned loudly by themselves. Public Service Commissions were generous to a fault in raising rates, but LMS made little progress under this strategy to raise overall revenues.

Maryland may be a typical case where optional LMS was introduced by a close vote of its Public Service Commission. But in 1984, the public simply rejected the two optional forms of LMS in the marketplace. Three other options which continued to exist were favored by 99% of residential customers after a year of offering LMS. Wide public debate and state legislation that restricted the ability of the Public Service Commission to limit consumer choices in the future helped to focus public opposition to the company LMS plans.

Since 1983-4, general rate increases have dropped dramatically in the states. The lack of cases as vehicles to institute new rate structures such as LMS has reduced the progress of LMS. As flat rates are not rising, LMS is harder to promote to consumers where it is an option. This inactivity is a short term phenomenon.

Unresolved Research Issues

There are fundamental issues that should be resolved about LMS if states are to make decisions appropriate to the needs of citizens. Not all of these issues are given adequate attention in state debates. Some have been largely ignored.

Cost-based pricing. Nothing seems to attract regulatory fancy more than the claim that LMS is a step toward economic rationality in the form of cost-based pricing. This claim is largely unsupported simply because LMS is usage-based pricing. LMS is pricing according to the four usage factors and proponents have usually been careful to avoid claims in actual state rate cases that they have developed appropriate cost data to justify their rates.

Such cost justifications are not likely to occur in the near future. There is no generally agreed upon cost accounting system in place in the industry to help state regulators do their jobs. The appropriate costs to assign to the usage factors used in LMS systems - marginal costs - are in part declining due to technological advances. The marginal costs that should be the basis for pricing in these instances of declining

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costs fall below the average costs of the previously installed facilities. Prices set above marginal costs will become a powerful inducement for companies to market local calling - an incentive absent in the flat rate pricing environment most are in today. Cost - based pricing has been quite an issue in the regulated marketplace for a number of years in spite of the F.C.C.'s repeated failure in the past to develop a uniform telephone cost accounting system. The F.C.C. to date has not yet swerved from its passive resistance to developing the needed system. Regulators thus are faced with radically conflicting "special" studies of LMS costs in many rate cases. Consumer intervenors have had to almost completely revamp and rework company accounting reports because they do not reflect the marginal cost principles needed for evaluation of the costs and prices of each element of usage.

While confusion reigns due to the FCC's accounting shortcomings and the special studies, there is really little hope that LMS rates can ever be satisfactorily cost-based. There are simply too many jointly used facilities and aspects of the telephone system to sort out and assign to particular elements of usage. Also, the regulatory system's archaic processes which are built around past costs and expenditures seem inherently unable to cope with the future (and thus unknown) costs. Even if future costs are clearly going to be lower, argument can be endless on just how much lower they will fall.

Economic efficiency. A landmark study³ found that cost-based pricing in LMS is likely to be less economically efficient than flat rates. This is essentially true because the study found that demand varies greatly within time periods (time of day) and thus customers are paying too much or too little. Further, falling marginal costs of telephone capacity tend to lead to high charges for customers who use the newer installations. At best, so far arguments used by LMS proponents against the study have said economic efficiency as defined by the study is not the only way to evaluate LMS.⁴

Lifeline. LMS has been offered as a lifeline rate. It has been suggested that persons who need lower rates to be able to afford their telephone service could keep their rates lower with LMS. This is an appealing concept requiring some further examination.

Existing data suggest that local telephone usage is essentially unrelated to household income

³Rolla Edward Park, Bridger M. Mitchell, Optimal Peak-Load Pricing For Local Telephone Calls. Santa Monica, California: Rand Corporation, June, 1986. The authors' prestige due their other telephone research is a major element in the impact of this study, financed in part by the telephone industry and the National Science Foundation.

⁴Communications Week, August 11, 1986, p.8.

levels. Rather more important are factors such as the size of the household or the presence of teenagers in the household. These findings meet common sense standards. For example, it is not unlikely that more people with access to a phone will cause that phone to be used more.

LMS may in fact force people to give up telephone service. Those households with high usage and low income may not be able to control usage except by removing their telephones. Complex LMS rates make it difficult to control bills except by drastic and impractical measures such as banning the use of the phone for family members, baby sitters, or guests.

Lifeline through rate designs such as LMS may not be the best strategic approach in the first place. Deposit requirements or costs of installation may prove to be more significant causes of lost customers because they are high (often several times larger than the monthly bill) and all paid at once up front.

If telephone usage in economic terms is a case of price inelastic demand, there is a need to seek better lifelines for "needy" persons who use the phones substantially.

Marketing incentives. The fact that rates proposed for LMS exceed their probable marginal costs is clearly an inducement for telephone companies to seek ways of expanding usage to generate revenues. Objection to this rational business behavior is moot once rates are established that provide incentives to promote usage. There should be a more open admission and analysis by companies of their strategies to generate profits through this pricing approach.

There are many opportunities for the creative telephone marketing department to boost usage. New York telephone, for example, has spent much advertising money aimed at local customers with measured services in the New York city area. The ads suggest making impulse calls to friends among other appeals used in recent years.

Regulatory lag. The long term growth of telephone usage offers revenue growth through LMS without the need for regulatory approval. This should have the desirable effect of reducing the number of rate cases. The industry and its regulators fail to fully evaluate impacts related to regulatory lag because the very name of the issue itself implies that regulators aren't efficient - they lag in providing rate relief.

Regulatory "lag" could easily become regulatory "lead" whereby companies that have successfully stimulated usage may enjoy excessive revenues at the expense of their customers. Fewer rate cases may allow time for higher quality of regulation, but it will more likely mean less regulatory oversight of the industry for lack of opportunities through rate cases to review the performance of the companies. Regulators have characteristically acted as judicial bodies in rate cases rather than seizing them as windows of

opportunities to raise additional issues about company operations.

LMS arithmetic. Complex rates on each and every local call do more than increase the customer's difficulties in controlling monthly bills. They are a means of rate increase obfuscation. The individual consumers are all affected in different ways by the myriad of rate changes necessary in LMS rate systems.

One company, United, confessed to a strategy of multiplication effects in its future designing of rates. This simply means that small increases in single elements of rates have multiplier effects. A simple example would be to raise the rate for a particular distance and for, say, a certain time of day by 10% each. The actual impact of that rate increase is 21% (110% times 110%) for a call. With a subtle use of mathematics, the effect would be to produce many millions of dollars while unsuspecting customers only thought the rate increase was about 10%— a rate hike more pernicious than subtle.

Both regulators and companies in some states would appreciate a less aroused public participation in rate cases. Complex LMS rate designs only add another kind of public confusion and thus blunt the opposition that would be created if a rate increase were more easily understood.

Another choice (GTE says no). This patently silly argument is often relied upon to advance LMS. Based on some of the hazards inherent in LMS systems, the real question becomes one of analyzing carefully just what another choice offers to some customers. There is logically no limit to the number of choices that could be offered in addition to LMS, but its proponents have no intention of guaranteeing the existence of reasonable rates for any other service besides LMS.

The universal goal of large telephone companies is that LMS become the predominant form (General Telephone's mandatory system would offer no other options) of residential service. Such is the industry's meaning of choice.

Value of customers to each other. There is truth in the industry dogma of "value of service" in that the value of service increases by the addition of more customers to the telephone network. While not subject to standardized economic measures, this value is apparent. The Social Security Administration would benefit by being able to communicate with recipients. Telemarketing counts on customers with home telephone service. The pricing of local service usage may restrict calling and possibly cause some customers to leave the telephone network altogether.

Future Directions

The issues that are unresolved and in some cases not discussed are partly responsible for the indecisive resolution of the industry's LMS

proposals in nearly all states. While the best forecast is that massive confusion will reign, the industry has to recognize that there are only a few areas in which LMS has even technically reached the goal of the predominant form of residential service. LMS success appears to require either eliminating flat rate options altogether or raising the flat rate to prohibitive heights. In those states where it has been introduced as an option by regulators, it has been, by and large, characterized by overwhelming rejection of LMS by individual households. The decade of LMS implementation desired by the Bell System didn't happen by 1985.

Traditional marketing organizations operating in the competitive marketplace have learned the importance of knowing and understanding consumer behavior. These lessons have been expensive and slow in coming. The providers of local telephone service have found their new proposal for LMS rejected for lack of consumer research as well.

There are several possible myths about consumers which the industry should undertake to evaluate. LMS may be revised or rejected by studies of these beliefs about consumer behavior. On the other hand, LMS may be more readily accepted if the studies reveal more truths about consumers' use of the telephone that substantiates the market's need for such an option.

The possible behavioral myths concerning telephone usage

1. Local telephone users will choose the service that costs least in the long run.
2. Local telephone users will not change the type and amount of calling they do in response to the imposition of usage pricing.
3. Local telephone users can forecast future usage.
4. Local telephone users can compare future costs of service options.
5. Local telephone users with low incomes can reduce calling usage without any real effects on their lifestyles.
6. If one service is considerably cheaper, consumers will choose it to save money and the more expensive rate will become even more expensive in order to restore the company's revenues.
7. When reducing usage, consumers will eliminate "nonessential" usage only.
8. High usage consumers faced with rising costs of their current service options will change options rather than drop their service.
9. All of the above apply to all demographic and other segments.

These statements are mere assertions. Research may neither fully prove nor disprove these seemingly simple statements about local residential telephone customers, but it can provide researchers better probabilities of their likelihood.

Consumer Research Concepts For Telephone Companies

There are six basic steps in the consumer research process. These are problem definition; design; sample size; data collection; analyses; and formulating conclusions and preparing a report.

Problem definition. The telephone companies have presented a solution (LMS) in search of a problem. Furthermore, the problem definition has been complicated by insistence on usage rates rather than defining the problem(s) in terms of consumer behavior factors. At present, the break-up of the telephone system has caused not only uncertainty for the end users but also for the telephone companies and regulators. Why promote services (telemarketing, LMS, etc.) when there is no evidence, at present, to show that such services are even wanted?

In 1987 the industry has not yet arrived at any consensus as to the problems it wants to pursue with LMS. There is no logical way to proceed with further research steps unless there is an agreement on problems. If the problem, for example, is that low income consumers may have to give up telephone service, then LMS designs can be tested as possible solutions. Other solutions unrelated to LMS may prove more viable.

The importance of problem definition cannot be overemphasized. The entire idea of problem definition is obviated if large segments of the population cannot afford to rent or buy a telephone. And if these segments could be identified, it may be the rate structures that are critical or the behaviors of the various segments that are crucial in determining LMS usage.

Design. Once the problem(s) has been stated, then a method by which one can measure and test must be instituted. There are many types of research designs. They range from exploratory to experimental design. Each type has its advantages and disadvantages that must be weighed in light of problem definition, cost and time available to complete the study.

Exploratory research should be the initial step in this process. The problem and/or problems have not been adequately defined. Exploratory research would provide the foundation for determining whether the problem(s) are rate related, behavior related or some combination. Only then can one move on to more sophisticated designs. However, no matter which design is chosen, there are basically four methods by which a design can be carried out: laboratory experiment, telephone, mail and personal interview (including focus interviews).

Sample size. Sample size is actually determined in two stages. Stage one is determining who and what type of telephone users to survey. Stage two is determining sample size. Sample size can be reduced and still achieve significance if a probability sample is utilized.

Data collection. Data collection is highly dependent on the type of research design. For example, if mail is the chosen survey method, studies have shown, that on the average, only 25% are returned. Additionally, the researcher must set a deadline (e.g. six weeks) for the return of the mail questionnaires. Experimental design comes closest to the concept of cause and effect. However, many experiments suffer from what is termed, 'the artificiality of the laboratory.'

Recent studies have shown that the refusal rate for telephone surveys is 35%. There are no reliable studies on the refusal rate of personal interviews. It is however, considered to be a highly reliable method of collecting data. It should be remembered that personal interviews are expensive and time consuming.

Analyses. Analysis, to a great extent, is limited to the type of questions asked. The more open ended the questions, the less statistical analyses that can be performed. A concomitant problem is whether the closed-end questions utilize parametric data or non-parametric data. Each utilizes different forms of statistical tests and each has tests that vary in vigor.

Conclusions and report writing. One of the major functions of research is prediction. This ability to extrapolate from the results of the study is limited by the breath of the study; sample size and questions asked. For example, if a consumer survey of telephone customers is conducted only in Tennessee, the researcher cannot conclude that results are applicable to the United States in general. LMS studies in New York City may not be relevant in Louisiana or Colorado.

The report must stipulate all steps taken in the research, as well as a copy of the survey and results to allow future researchers to replicate the study.

Only then will telephone companies, regulators, and the general public be able to accurately assess the needs or the wants of consumers.

Political Forecast to - 1990

The research agenda is long term. Rather than rely on the belief that the regulatory agencies will press the companies to do what must be done to resolve the LMS controversy in the 20th century, short term forecasts are still needed.

The circumstances favor the lingering consideration of LMS proposals in spite of the fundamental unknowns of their merits for the public. The following suggest prolonged indecisive actions in the states in the next five years:

1. Few regulatory bodies have been able to receive enough testimony and other information to enable them to see below the surface appeal and intriguing possibilities of LMS. This infatuation will continue to favor partial acceptance of LMS, often on an alleged

experimental basis, to see how it is accepted.

2. LMS can still be offered as the answer to lifeline if for no other reason than industry's assertions cannot be disproven until they actually fail in field tests.

3. The issues of greatest concern are not yet discussed in serious public forums. What is usually discussed is the industry's repeated pleas and assertions for LMS which journalists often come to believe as the consensus wisdom. Unfortunately, LMS is often given credibility when it is viewed as news because calm, assertive, industry professionals and their experts, offering plausible rationales, have run into opposition from emotional consumers predicting dire consequences from something new and complex. The consumers may not be convincing if they rely only on their passion to persuade others.

4. Many regulators are largely unwilling to view consumer behavior except in simplistic economic terms. The regulatory mechanism only to a limited degree permits consideration of things such as consumers perceptions of risk and uncertainty or impacts of rates on lifestyles.

5. The industry is still searching for ways to implement LMS. It appears willing to move more slowly than originally planned. It is only too willing to try new arguments for its LMS programs (conceived before divestiture) as new problems arise in the post-divestiture world.

6. The Bell companies serving over 80% of the U.S. local exchange market are victims of their own historic allegiance to the intense 15 year effort of ATT to develop and promote LMS. It is a fine living example of the inertia of the corporate culture.

7. There is no real program or effort by companies or regulators to learn anything from the introductory phases of experience with LMS in the many states now trying it. Regulators essentially have ignored this opportunity. Companies have not even offered to study the real market experience, in any jurisdiction, in a manner consistent with even the most elementary principles of objective research.

8. The current climate in which some states are dismantling their regulatory apparatus in the name of deregulation may cause problems with LMS. No state has so far surrendered its right to approve new rate options. LMS is a case of potential abuse by telephone companies if they are given the privilege of adjusting the prices of various usage elements without regulatory review.

Epilogue

While the evidence on behalf of LMS is scant indeed, the public may yet benefit from some form or limited offering on LMS targeted to customers who have some demonstrated need for it.

Creative pricing is called for in today's local exchange market. There may be some residential customers who could be rightfully charged a reasonable price for their usage if it could be shown there was a public benefit.

The industry often complains of some instances of

residential customers who tie up phone lines with computers or who are running businesses from their homes. An LMS system designed to exempt legitimate home residential usage, but targeted to capture usage revenues from persons who use their phones for (e.g. 30 hours or 600 calls per month) would perhaps make sense.

APPENDIX 1

DETAILED DEFINITIONS OF FACTORS USED TO CALCULATE LMS RATES

1. Duration of the call. This is the additional charge per minute (or other time period) of a local phone call after the (higher) first minute charge. It is charged for fractions of minutes not fully used.

2. Distance. These are the additional charges for geographic distances further than the closest calls. It is measured by distances between telephone company switches or locations and not by the distances between two callers' business or residential locations.

3. Frequency (set up). This is the charge for setting up or initiating a call. The amount can be calculated by subtracting the additional minute (or duration) charge from the first minute charge. The first minute charge is a composite of frequency and duration elements. It is charged for fractions of the first minute even if the minute isn't used up.

4. Time-of-day. These are usually stated as discounts from the highest rates such as those often charged for weekday business hours.

5. Other fees or charges may include a minimum monthly fee whether or not any calls were made. Another practice is to offer an allowance such as \$8.00 worth of calls for \$6.00 that would be added directly to the minimum monthly fee. In effect \$2.00 is saved by persons who make \$8.00 worth of calls or more and the \$6.00 is lost if no calls are made. The variations on allowances and fees are many.

GENERIC ADVERTISING: AN OVERVIEW

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ABSTRACT

The paper provides a brief descriptive history of generic advertising. It points to differences between generic and branded advertising and raises some questions as to the effectiveness of generic promotions.

INTRODUCTION

Many foods products are sold in an unbranded and unprocessed form. Milk products, pork, beef, eggs, fresh fruit, and vegetables are examples. Primary producers of these commodities generally receive a relatively large proportion of the final sales price. This is true because in these markets processors have little market power, perform little processing and spend very little on branded promotion. The profits of primary producers of these commodities are sensitive to changes in tastes due to the inelastic nature of the demand curve. Consequently, they have watched with apprehension as the processors of foods with which their products compete have spent ever increasing funds on branded advertising. For instance, there is a feeling that successful campaigns for brand name poultry products has been successful in luring customers away from both beef and pork.

The introduction of vertical integration, or oligopolistic firms into any of the above mentioned markets would result in increased advertising, however, producers are understandably reluctant to encourage market developments that reduce the share of the final sales price they receive. Any increase in industry sales would be outweighed by a reduction in producers' share of the final sale. It is not in the interest of the atomistic firms in either the producing or processing ends of the industry to advertise. Large marketing costs and the presence of a free rider problem makes the costs prohibitively expensive. The solution to this dilemma would seem to be for some collective action to promote the commodity in a generic manner. In order to overcome the free rider problem some form of legislative action is required for success. Three revenue generating approaches have evolved, they are described below.

In the voluntary approach the producers are asked to donate a specific monetary amount per unit sold. In order to encourage a high level of funding those "voluntary" donations are often collected on all items sold and then returned to dissenting producers on written request. It is usually not in the interest of small producers to take the time to request a refund, while very

large producers often support the campaigns to avoid recriminations. In theory, the refund process is confidential, in practice, producer members of the boards are aware when large operations request refunds. Agricultural cooperatives demonstrate a second approach to generating funds. Members are required to fund these activities, the alternative being to leave the cooperative. This second form of advertising is closer, in reality, to branded advertising. Sunkist and Ocean Spray are cooperatively funded promotions that have become name brands in the minds of many consumers. In these cases the producer group often has a certain degree of supply control. The third method used to generate funds is mandatory checkoffs. These programs often begin as voluntary schemes. They become mandatory when two-thirds of the producers elect to continue them after an initial test period.

HISTORY OF GENERIC ADVERTISING

The history of these promotional activities dates back to 1880 when state legislatures began funding generic producer campaigns [3]. States such as Florida realized that the entire state would benefit from an increased consumption of citrus juice. In 1907 Sunkist producers began the generic promotion of orange juice. The funding for this campaign grew from \$7 thousand in 1907 to \$166 thousand in 1910 and was apparently very successful [10]. By 1915 several state affiliated national organizations emerged. The activity of these groups was hampered by a lack of appropriations. In 1935 the Florida legislature solved the funding problem with an excise tax on oranges, grapefruit and tangerines. This concept gradually spread to other states with large market shares in particular commodities. By 1961, 50 state checkoff programs were in existence. This increased to 266 by 1979 [8].

Congress passed the first national checkoff legislation in 1937 with the Agricultural Marketing Agreement Act. This allowed national producer groups to petition the Secretary of Agriculture for permission to hold a referendum to measure the level of producer support. The Agricultural Marketing Service of the USDA which oversees this process requires a two-thirds approval rating if all votes are weighted equally, or an absolute majority if votes are weighted by the level of production. In theory, the programs must refund all costs incurred by the federal government in administering the program as well as make confidential refunds when requested. The AMS also requires that the funds be administered by appointed representatives of the industry and of the public at large, and that funds be made available for the evaluation of the campaigns.

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Successful applications were made by producers of wool in 1954, of cotton in 1966, of potatoes in 1971, of eggs in 1974 and of wheat in 1977. Participation among these producers ranged from 91% for potatoes to 64% for eggs; no refunds were authorized in the 1954 Wool Act. In 1976, beef producers rejected a promotion program. It is interesting to note that 1976 was an excellent year for beef production.

In 1983 Congress passed the Dairy and Tobacco Adjustment Act. This program dwarfed all previously existing programs, with collections equal to \$110 million in 1985. No refunds are authorized in this act. Almost all of this money has been used in national advertising and promotion, with 25%, 41%, 10% and 24% being devoted to fluid milk, cheese, butter, and calcium promotion respectively. In 1985 national checkoffs were approved for both beef and pork. As of March 1987 these groups were providing refunds on request. Both groups have scheduled follow-up elections to determine whether the refunds should be continued. As of 1985, producer groups will spend a total to \$530 million on all of these promotions combined.

RESEARCH ON THE EFFECTIVENESS OF GENERIC ADVERTISING

Academic research on the effectiveness of these programs dates to 1961 when Nerlove and Waugh published a study of the promotional activities relating to orange juice. This paper has become a classic and set high standards for all that was to follow. In the early 1960s a group of USDA researchers [1] ran a controlled experiment to evaluate the generic promotion of fluid milk [2]. The design used was similar to that used by agronomists to test fertilizer response i.e., similar market areas received different levels of advertising. They concluded that advertising did increase sales. Research on the effectiveness of promotional campaigns for fresh citrus was undertaken in the mid-Sixties by the faculty at the University of Florida, where they used econometric techniques to measure the effect of the citrus campaign. They demonstrated that the effect of advertising carried over after the campaign was finished [7]. In the early Seventies, these techniques were applied to the New York milk promotion program. This work was based in Cornell University and demonstrated a decreasing marginal return to advertising expenditure levels [4] a complementarity between branded and nonbrand advertisements [5] and the importance of seasonality in planning campaigns [6].

ISSUES IN GENERIC ADVERTISING

Producer groups are continuously reminded of the benefits of branded advertising. It currently accounts for 2.5% of the GNP and is growing rapidly [9]. The success of branded advertising seems to indicate that all branded advertising campaigns have the potential to succeed, given

sufficient time, funds, and marketing skill. Consequently, issues raised about the effectiveness of generic advertising tend to concentrate on areas where differences exist between generic and branded advertising. Surprisingly, these differences are substantial. It is argued below that these differences make it much more unlikely that generic advertising will achieve its desired objectives than is the case for branded advertising.

Large variations in the type of legislation and funding, as well as in the type of campaign and information conveyed, make it difficult to make general statements about generic advertising. Hence, the following discussion relates only to the specific subgroup of these ads which conveys no new information, either about health or prices, and which do not attempt to establish a brand name.

HOW IS GENERIC ADVERTISING DIFFERENT?

The differences between generic and branded advertisements are: (i) Generic programs are based on federal regulation, namely the 1939 Act mentioned earlier. This centralized legislation makes it necessary to evaluate the program at a centralized level. Whereas it is suitable for a company such as Coca-Cola to evaluate campaigns only in regards to its own sales, the government should evaluate the generic campaigns as a group -- so long as it used its legislative power to enforce compliance. (ii) The market for many of these foodstuffs is saturated. Americans limit the total quantity of food they eat as well as the relative proportion of animal products. (iii) Producer groups can generally exert little control over supply, this is true for the short run where individual producers must sell whatever they produce at whatever the market will bear, as well as in the long run where producers can respond to the higher prices these ads may produce. (iv) There is a degree of uncertainty regarding the quantity of these products that will be supplied at any future date. Economists have never produced a model that properly explains how an industry which is comprised of many small firms, will react to economic conditions. The supply curve is not a line but rather a band within which the vagaries of weather and different expectation formations can produce different reactions to the same set of incentives. (v) The framework within which these programs are evaluated is unique. The marketing arms of corporation are generally controlled by executives who can devote time and skill to ensuring that shareholders get a return on advertising expenditures. The economists employed to spend checkoff funds have little incentive to produce results demonstrating that these funds have been used ineffectively. This is especially true during the initial testing period when producers can vote to discontinue funding. (vi) The funds used to purchase media time have a very high opportunity cost. The process of collecting funds, holding elections and enforcing rules is expensive. Returns on money collected in this

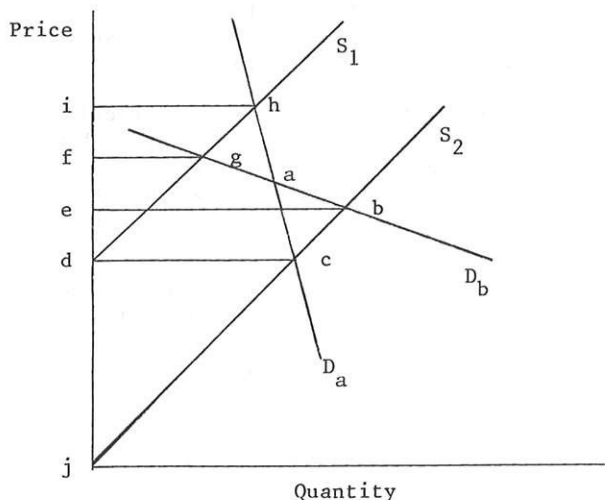
manner, often against the wishes of individual subscribers, should be compared with other alternatives upon which funds could be expended. Such alternatives include lobbying activities, new product and foreign market development, health related research and possibly branded advertising. A half billion dollars invested in any of these activities would in all probability produce a rate of return that is greater than the risk free interest rate normally used as a measure of the opportunity cost.

THE EVALUATION OF GENERIC ADVERTISING

The unique characteristics of generic advertising mentioned above have several implications for the manner in which they should be evaluated. For example, it can be argued that market imperfections have placed producers of beef and pork at a disadvantage in that branded advertising of poultry may well reduce red meat demand. Government involvement in red meat promotions could therefore be seen as correcting these imperfections. If this is true then a measure of the success of the campaigns should be their impact on the share of both beef and pork, relative to poultry. Results which show that advertisements increase the budgetary share allocated to beef are irrelevant if this increase is at the expense of other generically advertised commodities such as pork.

Proponents of these campaigns have argued that even though they may not be successful at shifting out the demand for a specific commodity they are useful because they decrease the elasticity of demand. This is one of the primary aims of branded advertisements. A company such as Kellogg can build consumer loyalty to the extent that sales will continue even where a substantial premium is charged over competing brands. This argument is not true for commodities with an uncertain and uncontrollable supply. This can be shown using standard welfare analysis. In Figure 1, the lines S_1 and S_2 reflect two equally likely supply curves. The line D_b is the demand curve

FIGURE 1.



before advertising while the line D_a is the demand curve after advertising. The campaign has rotated the demand curve so that at point a the new demand curve is more inelastic. One measure of producer welfare in this situation is the area above the supply curve and below the equilibrium price. For example, with supply curve S_2 the producer surplus before the promotion is the area ebj . The producer surplus after promotion is the area dcj . For supply curve S_1 the producer surplus increases from fgd to ihd . We can measure the effect of advertising on producer welfare, it is the area $ihfg - ebcd$. Because the demand curve has been rotated around a point equidistant from S_1 and S_2 the distance cb must equal the distance gh . This implies that the distances if and ed are equal (S_1 is parallel to S_2). So long as the demand curve is negatively sloped the distance eb will be greater than ih hence $ebcd$ is greater than $ihfg$, i.e., advertising reduces producer welfare in this example.

The intuition behind this result is that while an inelastic demand curve is preferable when supply is unexpectedly less than expected, it makes producers worse off when supply is greater than expected. Producers of branded commodities have control over output and are unlikely to find themselves in a position of unexpected excess supply.

A third implication of points (i) to (vi) is that it is not in anybody's interest to produce results detrimental to the campaigns. Checkoff monies are used to create full-time positions which depend on a continuance of the checkoffs. These employees have the skills to evaluate the campaigns but should not be expected to be overly critical. The same is true for the media companies who buy air time. Producers who fund these promotions can judge them only on the quality and quantity of the ads they themselves are exposed to. To them advertising is something that is done by every successful business.²

The above discussion would seem to indicate an opening for academic research in this area. This has been and continues to be the case as can be seen from the literature cited earlier. However there is an in-built bias in favor of research which shows successful promotions. Reviewers for academic journals expect to see innovative methodology as well as new empirical results. Researchers who replicate the methodologies of others on new data reduce their chances of acceptance. Hence there is a mutual dependency between results and the methodology used. Research that shows a significant negative impact of generic advertising would be rejected on the grounds of poor methodology. It is difficult to make conclusions or publish articles with results which are not significant, hence work which shows a significant positive effect is favored. Forker

²This raises the interesting question as to who the target audience is. Pork ads screened in Iowa are likely to result in more additional funding than similar ads screened in Manhattan.

[2, p. 48] supplies two interesting quotes in this regard, both are attributed to early researchers. "Both articles were ... optimistic about the probability of positive results if the right questions were asked and the right methods used in the analysis." "Statisticians and economists sometimes fail to discover basic facts either because their statistics are not accurate or because they do not use the most appropriate methods."

WHO WINS AND WHO LOSES

Checkoffs are exactly like an ad valorem tax, they act to shift the supply curve up and to the left. With an inelastic demand most of the burden of such a tax will eventually be passed on to consumers. It seems likely that these promotions will continue indefinitely. This is true because the large flow of funds has created a powerful interest group. In addition the ads, should they be successful, will raise producer prices, which will encourage additional production that will only find a market if the promotions are continued. Should producers vote to overturn those checkoffs this additional production will lower prices once the influence of the ads (if any) begins to wear off. The inelastic nature of the demand curve will ensure that total revenues after successful campaigns have been halted will be lower than those which existed prior to the campaign.

To summarize, producers gain if the promotion increases the share of generically promoted foods at the expense of branded items, if this causes a price increase, if this price increase is passed on to producers, if producers don't over react to this increase by producing more, and, if most of the costs of the promotion are borne by consumers.

Consumers gain if the quality of TV and radio programs increases to reflect the large sums being spent on these programs, if producers bear the costs, and if producers eventually over respond, thereby creating excess supply.

SUMMARY

Generic advertising is substantially different to branded advertising. The methods used to finance, operate and monitor generic campaigns as well as the unique market environment within which they occur make it less unlikely that they will be as successful as branded advertising. It is likely that these campaigns will continue however, as it is not in the interests of any particular group to produce results which portray them in a negative light.

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ABSTRACT

In 1985 national legislation was enacted authorizing excise taxes to be levied on farm output of beef, pork, and watermelons for the purpose of conducting producer-funded promotion programs for these commodities. Other agricultural commodities with promotion checkoffs include milk, eggs, citrus, and catfish. This paper explores economic and public policy implications of farm commodity promotion programs and identifies gaps in knowledge about the efficacy of these programs.

The purpose of this paper is to discuss some commonly raised issues associated with efforts to evaluate farm commodity promotion programs. As defined here, farm commodity promotion programs are producer-financed efforts to increase the demand for the commodity in question. Approaches to demand enhancement usually fall into three categories: (1) research into new uses for the raw agricultural commodity, (2) consumer education about the nutritional and other desirable attributes of the commodity, and (3) media advertising and promotion. An excise tax levied on farm output is the usual funding mechanism for these programs.

Because the majority of such funds is usually invested in media advertising and promotion, the focus of this paper is on issues relating to this component of the programs. Moreover, because my own experience with these programs is limited to evaluating their effects on producer returns, the paper will have a bias in favor of examining issues from the producer, rather than consumer, viewpoint. However, as a compensating factor, the paper does rely to a considerable extent on existing literature, including papers from a symposium on the on the topic presented to the 1986 annual meetings of the Southern Agricultural Economics Association.²

A convenient and useful way of thinking about issues relating to commodity advertising is to con-

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²Speakers preparing papers for the SAEA symposium include Ron Ward of the University of Florida, Bernie Lester of the Florida Department of Citrus, Greg Rathjen of Darcy, Masius, Benton and Bowles (an advertising agency), and Bill Manley of the Agricultural Marketing Service, USDA. Request for copies of these papers can be directed to the authors.

sider whether the issue in question relates to the demand or to the supply side of the market. Accordingly, in discussing the issues they will be organized into two broad categories: issues relating to how advertising and promotion affect market demand and issues relating to supply response. A further classification scheme imposed on the paper is the origin of the issue, that is, whether it arises from concerns expressed by individuals in the private versus public sector. In general, "public sector" individuals are defined to include professionals in academia and government and the "private sector" as individuals working for commodity boards, advertising agencies, or private consulting companies. However, it must be recognized that this distinction is not always apt because overlap does exist in the issues raised by the various interest groups. Nonetheless, separating the issues in this way does appear to be useful in that it brings the subject into sharper focus.

The paper proceeds by first discussing issues relative to demand side effects. A symmetrical discussion is then presented relative to supply side effects. Some concluding remarks close the paper.

DEMAND SIDE EFFECTS

Advertising and promotion are pursued by farm commodity groups primarily as a means of increasing the demand for the advertised commodity. The important research issues associated with this attempt by farmers to manipulate the demand curve for basic agricultural commodities differ depending on the viewpoint of the affected group.

Private Sector Views

From the standpoint of promotion boards and the producer groups they represent, the most pressing issue is whether advertising has been successful in terms of raising the income of those paying for the promotion effort. In economic terms, this issue boils down to determining whether the advertising and promotion program has in fact shifted to the right the demand curve of the advertised commodity and, if it has, whether the magnitude of the shift is large enough to compensate for the cost of the program. Without hard information on the cost effectiveness of producer funded promotion schemes, boards and other groups who have a vested interest in the programs find it difficult to maintain farm level support for the effort.

Other issues raised by those in the private sector are really just corollaries of the main issue, "Does promotion pay?" These issues relate primarily to fund allocation: where to spend the money, when to spend the money, how best to allocate the

budget among alternative product forms, to various media and so forth. What boards want to know is how to get the "biggest bang for the buck" from the limited budget at their disposal. In other words, what policy or combination of policies will result in the greatest shift in aggregate demand of the advertised commodity?

Finally, private sector participants want questions answered as to the appropriate level of investment in advertising and promotion. How much should be spent in total on advertising and promotion to achieve maximum efficiencies from the investment. Do economies of size exist in advertising and is the nature of market response such that a minimum level of expenditure is needed for efficiency? This information is important in determining the appropriate checkoff level to impose on producers and to avoid wastefully high (or low) levels of expenditures.

Public Sector Views

The government is interested in a different set of issues with respect to attempts by farm groups to influence commodity demand via advertising and promotion. Public policy makers want to know what affect these advertising programs have on the demand for nonadvertised agricultural commodities. Does providing beef producers the right to tax themselves for the purpose of launching a collective advertising effort come at the expense of pork and chicken producers? If dairy farmers begin an intensive and successful campaign of butter advertising, how will soybean producers and suppliers of oil to the margarine industry fare? This is a real concern in situations where cross-price elasticities of the commodities in question are relatively large.

Another concern of government is the impact of advertising on the aggregate demand elasticity of the advertised commodity. Advertising and promotion is often directed at differentiating a product from its competitors. To the extent that consumer perceptions about the desirability of the advertised product are enhanced, market sensitivities to changes in price may diminish. If market demand becomes less price elastic, or more inelastic, as a result of promotion programs, the inherent instability of agriculture will be made worse.³

³Although most advertising, especially the branded variety, might be expected to make demand more price inelastic, there are instances in which the opposite effect may occur. As explained by Waugh, advertising that informs consumers of price changes will make demand more price elastic if it encourages consumer to increase purchases when foods are plentiful and prices drop. An example of such a program cited by Waugh is the Plentiful Foods program conducted by the U.S. Department of Agriculture. However, commodity advertising in general does not contain price information; hence, the general concern that such advertising will accentuate the inherent instability of agriculture via reduced price elasticities (thereby making agriculture more dependent on government) appears valid. This hypothesis represents an important research issue to be addressed in future studies.

If this happens, federally sanctioned promotion programs would in effect operate at cross purposes with other government agricultural policies.

Essentially, public sector concerns about advertising and promotion differ from private sector concerns in that the latter group is concerned primarily with the magnitude of the shift in the demand curve, while the former group is concerned with how advertising has affected the shape or slope of the curve. To date, most research on agricultural commodity programs has focused on demand shift issues; very little, if any, research has been conducted to determine whether the shape of these curves have changed. Because cross effects are ordinarily smaller than the direct effects, they are more difficult to measure. Nevertheless, future research will need to focus more on shape vis-a-vis shift issues if the information needs of public policy makers charged with overseeing commodity promotion programs are to be met.

SUPPLY SIDE EFFECTS

Agricultural commodity promotion, by shifting to the right the demand curve for the advertised product, can evoke a supply response as price adjusts to a new equilibrium. Depending on the nature of the adjustment process and cost conditions of the industry, supply response can dilute, and even eliminate, the short term benefits producers might have received from the advertising effort. Specific issues deemed important relative to supply response differ depending on the orientation of the interest group.

Private Sector Views

Because the eventual impact of promotion on the supply of the advertised commodity is a more subtle and longrun notion, producer boards, advertising agencies, and others in the private sector are less vocal in their concerns over this issue. In the short run, an advertising-induced increase in farm level demand of sufficient magnitude will ordinarily result in economic profits to existing producers of the advertised commodity. In the long run, however, entry of new firms into the industry causes supply to increase until economic profits are eliminated, thereby removing the incentive for further expansion. The upshot is that advertising and promotion can place producers of the advertised commodity on a treadmill in which profits from the promotion investment are transitory--lasting only as long as it takes for supply to "catch up" with demand. Although producers and the boards who represent them have an inkling that advertising may simply result in expanded output with little long term benefits in terms of improved profitability, this aspect of farm-funded promotion has not been well articulated by either boards or economists who attempt to assist them in the formation of promotion policy. It represents an area that warrants a higher level of research activity. The theoretical models developed by Nerlove and Waugh, and Clement and the empirical work of Thompson and Eiler are good starting points for such an endeavor.

A different type of supply response affecting private sector decision making has to do with expanding shares of the domestic market enjoyed by some importing countries. This point is mentioned by Gunter who expresses concern over the encroachment of Brazil into the U.S. orange juice market. Because imports represent a growing share of the U.S. orange juice market, the potential exists for advertising-induced increases in demand for orange juice to be met primarily by increased imports--with no benefits to the domestic producers funding the effort. This represents a new twist on the "free rider" problem associated with voluntary promotion programs.

Public Sector Views

Concerns over supply response to commodity promotion from government and academic viewpoints relate to two issues: potential for industry over-expansion and excess capacity problems.

The overexpansion issue and consequent adjustment costs that may be incurred as a result of promotion are perhaps best articulated by USDA economist Wendell Clement some 23 years ago. Clement's basic argument was that "Under certain conditions, shifting the demand curve to the right might induce a state of disequilibrium in the industry with severe maladjustments in the rate of output and prices" [3, p. 185].

Maladjustments are likely in agriculture because of the inability of producers to respond immediately to changes in output price. For example, in the case of orchards, it may take five or 10 years before new production can be brought to market in response to a price increase. Because of these production lags and also because of lags associated with the formation of future price expectations on the part of the producer, advertising may cause the farm level price to rise too sharply in the short run and remain well above the longrun equilibrium level for an extended period of time. The resulting extended period of profitability elicits a level of supply response too great to yield a profitable return to all industry participants as supply fully adjusts. The extra supply forces price below the level consistent with long-run competitive equilibrium and the industry is forced to contract in order to reestablish price at a sustainable level. Of course the adjustment process associated with industry contraction is painful and costly and therein lies the concern of public policy makers should promotion create the scenario just described.

The effect of promotion on the production capacity of certain sectors of the agricultural economy is another concern. Largely because of government intervention in agriculture in the U.S., many sectors of the agricultural economy have more resources than can be justified on grounds of economic efficiency. Farm funded promotion programs may exacerbate the excess capacity problem by encouraging additional resources to enter already overcrowded industries. An apparent case in point is the dairy industry in which the government currently purchases about 10 percent of pro-

duction. Under classified pricing, it makes economic sense for dairymen to devote most, if not all, advertising funds to the promotion of fluid milk because doing so provides the highest returns when surpluses are large. (Advertising cheese, for example, simply reduces the amount of government purchases necessary to maintain the support price: the blend price of milk received by producers is unaffected.) Assuming the increase in blend price associated with the fluid milk advertising effort is more than sufficient to cover advertising cost, dairymen realize profits from the advertising effort and these additional profits encourage even greater production. This is another example in which promotion programs can be at cross purposes with other governmental policy aimed at controlling production or providing for an orderly reduction in capacity of targeted industries.

CONCLUDING REMARKS

Farm funded promotion schemes have demand and supply side impacts that are yet to be studied in a systematic fashion. Most of the empirical research to date [2, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15 are some good examples] has been directed toward answering primarily private sector concerns. Public sector concerns such as the effects of advertising and promotion on price instability, excess farm capacity and disequilibrium in agriculture have yet to be analyzed. Then, too, the general issue of the desirability of advertising and promotion from a social welfare standpoint is bound to surface as farm groups become more active in using promotion as a means of enhancing markets for their commodities.

In developing research programs to address these issues, it may prove helpful to be reminded of a challenge presented in another context by D. Gale Johnson when he stated [6, p. 196]:

No government or, for that matter, no institution really wants to have an honest or competent evaluation of the effectiveness of its programs.

It is incumbent upon us, especially those in the academic community, to insist that a scientific and critical attitude be maintained in conducting the research and in presenting and discussing results. Comprehensive discussion of the limitations of a piece of empirical research may not be popular with clientele groups because of the uncertainty it engenders, and it may reduce somewhat the probability of the article being accepted by a journal editor, but I believe such discussions are an essential element of any good study. Not only does it protect the researcher (usually) from unwarranted criticism, it also establishes a tone of diffidence that is appropriate for economic research - especially the empirical variety.

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GENERIC ADVERTISING OF FOOD PRODUCT CHARACTERISTICS
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ABSTRACT

Understanding the effects of information from advertising provides an important analytical basis for evaluating agricultural commodity promotion. A sequential information-decision process model is used to evaluate the effects of promotion and advertising of a food characteristic, the calcium content, on the consumption of dairy products. The multi-stage model, estimated using market ad data, shows advertising to affect beliefs and awareness about product qualities. They, in turn, and not ads directly, increase the purchase of dairy foods.

INTRODUCTION

Traditionally, brand food manufacturers have used advertising as one of the major instruments for differentiating their products. The advertising, aimed at conveying to consumers perceptions of food product differences or brand image, has been primarily noninformational [2, 8]. More recently, promotion of farm commodities and advertising to directly expand the demand for farm products has increased both in domestic and foreign markets. While brand advertising is usually associated with efforts made by major food manufacturers, generic advertising is linked with the efforts of producer-farmer organizations to expand demand for farm products. As advertising of generic food products, much of this advertising has been focused on conveying information about product qualities and uses. Thus it differs from the traditional advertising of food qualities by including informational content, related both to the introduction of "new characteristics" (of which the consumer was previously unaware) and also to changes in the level of information on the value of existing characteristics.

In evaluating the impact of advertising or promotion programs, the process of acquiring information, and related changes to consumers' attitudes and beliefs underlie modeling the effectiveness of advertising consistent with consumer behavior [9]. Ideally, one would like to represent a model of behavior which incorporates explicitly such factors as cognition and recall, rather than assumes them away. In this paper, we present a model which is used to sort the sequential acquisition of information, and thus incorporate the process of advertising in evaluating its effect on consumer demand.

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The paper is organized as follows. First we review current economic models which incorporate product quality or attributes. Next, we develop a model to represent the multi-stage process of acquiring information from advertising and the effect of advertising on consumption decisions. The model is then specialized to the case of promotion of dairy products as a source of calcium, and evaluated using data from a market tracking study.

INFORMATION AND PRODUCT QUALITY

The economics of information, as developed by Stigler, focuses on the search for low prices of a homogenous product, given knowledge about the price dispersion in the market [13]. His and later studies argue that informative advertising is valuable to the buyer because it reduces the cost associated with the search for price information about products. Thus, consumers demand information and advertising may be one of the more effective means of satisfying the demand. Following Stigler, Nelson analyzed consumer behavior in markets characterized by joint distributions in both prices and quality. He observed that the information about quality differs from the information about price, implying that the consumer information problem must include both quality and price variability when analyzing the market. Further, commodities may differ in being either "search" goods or "experience" goods: for experience goods, the attributes cannot be effectively evaluated by the consumer prior to the consumption of the product; for search goods, consumers can inspect the product attributes prior to purchase. Foods are generally classified as (nondurable) "experience" goods. Several studies have attempted to more formally study the markets under imperfect information using a Becker-Lancaster approach to multi-attributed products [e.g., 10, 11]. The results of these studies were consistent with Nelson's hypothesis that advertising conveys information.

Khilstrom [3, 4] presented a more complete, theoretical representation of product quality information: commodities are demanded by consumers because they possess desirable attributes; the uncertainty in product quality leads to demand for information. He derived the utility of information from a Bayesian preposterior analysis. As a special case of a Bayesian decision model, his model bridged the work of the "decision theorists" and "economic theorists" on the role of information in consumer choices. However, there remain no strong theoretical predictions about the effects of information on consumer demand under uncertainty [1, 12]. Approaches, such as those which use a sequential process of information acquisition, provide a broader structure

within which to evaluate advertising's effects, where the interaction of advertising with the perceived transformation of goods to characteristics is basic to the structure of the model.

One approach to measuring the impact of advertising used in this paper is based on a model which postulates that advertising works in a hierarchical fashion. This AIDA type model (Attention - Interest - Desire - Action) [7] focuses a hierarchy of effects related to the concept of "involvement", including awareness of the importance of the decision outcome, the degree of actual or perceived risk involved and the degree of felt interest in the subject matter. Appropriately, some researchers have emphasized not one "hierarchy of effects" but many. In either case, the key is to recognize those response measures that follow directly from, and relate directly to, the advertising's objective. Among the factors important to identifying the effects of advertising are the source and type of information which consumers seek and the patterns of information acquisition.

A MODEL

A sequential model of the decision-making process is used to evaluate the effectiveness of advertising information on the consumption decision process. Formally,

$$I = f(X_1) \quad (1)$$

$$A = g(I, X_2) \quad (2)$$

$$C = h(P, Y, I, A, X_3) \quad (3)$$

where I is advertising information, A is awareness, C is consumption, P is a vector of prices, Y is income and X_1, X_2, X_3 are sets of socioeconomic factors determining the dependent variable. This model depicts a multi-stage process: first consumers get information through advertising; advertising creates awareness of the product quality or related issue; and finally consumption patterns reflect the joint effects of whether or not the consumer is "aware," and, the effects of advertising directly. The motivation for this structure is an attempt to sort the types of information messages and their effects on consumption patterns.

THE CASE OF CALCIUM ADVERTISING

Since 1985, the National Dairy Board has undertaken a broad promotional program, emphasizing the calcium content of milk and other dairy products and the importance of calcium in combatting osteoporosis. Osteoporosis is a disease that has recently been identified as a major public health concern by the Joint Nutrition Monitoring Committee in a review of the health and nutrition status of the U.S. population. Since dairy products provide an excellent source of calcium, the National Dairy Board has launched its advertising campaign, informing the consumers about

calcium in dairy products and thus promoting the dairy products. The model described above was used to evaluate the calcium promotion and its effect on changes to the consumption of dairy products: seeing or hearing an "ad" about the importance of dietary calcium represented the obtaining of information, which in turn created an "awareness" of possible health risks associated with low calcium intake. The consumption of dairy products was, then, affected by both these variables.

Data

To evaluate the model empirically, we used data from a Calcium Ad Tracking (CAT) study conducted by Market Facts, Inc. (1985/86) for the National Dairy Board. The survey was a randomly dialed nationwide telephone survey of households, designed to gather information on dairy foods consumption, attitudes and beliefs related to calcium intake, and awareness of calcium advertising. The data were collected weekly and reported on a monthly basis, during period November 1985 through October 1986. The sample included women in 2440 households.

The CAT data provided a rich source of information on attitudes toward health and calcium; the data were more limited relative to measuring actual calcium intake. The respondent's socioeconomic characteristics included: household income, race, age, employment status, marital status, the presence of children under 18, and education. The variables related to advertising information included: whether or not the respondent had seen/heard an "ad" for calcium; and "awareness" of whether "calcium is very important" and that "milk is a good source of calcium". A control for general concern for health was measured through whether the respondent used vitamin supplements. Monthly binary variables controlled for seasonality and for ad campaign efforts. Consumption of calcium was measured by the frequency per month of consuming: dairy products (milk, cheese, and yogurt); milk; and cheese.

Empirical Model

Under the multi-stage model specification, individuals were assumed to determine final dairy products purchases, conditional on the probability of awareness of the feature, and probability of seeing or hearing the advertising information. A two-stage estimation yielded consistent estimates for the parameters of the model [5, 6]. Specifically, the empirical model was

$$I^* = X_1 \alpha - \epsilon \quad (4)$$

$$A^* = X_2 \beta + V_1 \lambda_1 + \eta \quad (5)$$

$$C = X_3 \gamma + V_2 \lambda_1 + V_3 \lambda_2 + U \quad (6)$$

where I^* was 1 if the consumer had seen or heard an "ad", and 0 otherwise; A^* was 1 if the consumer had indicated calcium was very important, and 0 otherwise. C was consumption of the dairy