

Savings balances were lower than expected, on average, but only by \$83. As indicated by the median value of the savings difference variable (\$4,511), the distribution of this variable was somewhat skewed. Approximately 28 percent of households reported a lower savings balance in 1979 than in 1971. In some cases, the difference was quite large; in 10.5 percent of the cases, the savings balances dropped over \$30,000 during the 8 year period.

Total financial assets dropped about \$530 over the 8 year period. This dissavings is consistent with the life cycle theory but the magnitude is quite small to represent any significant dissaving. The increase in the average value of total assets (\$13,640) most probably reflects the rise in housing values over the 8 years.

The higher than expected balances held in checking accounts can be interpreted as an indication of the high liquidity preferences of retirees. It is important to note that during the period under study (1971-1979), checking accounts were interest free. It was not until the Monetary Control Act of 1980 that NOW and "interest checking" accounts came on the scene. Thus, these retirees were choosing to forego interest in order to remain more liquid.

With regard to the higher than expected holdings of stocks, this result is as might be expected if the retirees chose not to realize their capital gains and/or participated in a dividend re-investment program. Ordinarily one might expect retirees to end such re-investment programs and take the dividends as cash income. However, in the early years of retirement, retirees may rationally decide to have an investment goal of continued growth in order to buffer their future income (in 15 or 20 years) against the effects of inflation. The shift out of re-investment programs and/or out of growth oriented stocks and into income producing stocks may occur later on in retirement.

The difference variable for the value of the house is of interest more from an academic perspective than from a practical one. Since these households could not, or did not, tap the equity in their homes, the higher than expected value is expected. It is also interesting to note that the value of housing for persons in this sample increased by a factor of 1.9 from 1971 to 1979; over the same time period, the CPI for housing rose by a factor of 1.84.

REGRESSION RESULTS

Results of the regression analyses of the effect of the independent variables and other assets in the portfolio are presented in Table 3. Adjusted R^2 s range from .01 (stocks) to .15 (balance in checking account). The equation for stocks was not significantly different from zero; this may be due to the large proportion of households who did not hold this asset (75 percent). The remainder of the discussion will focus on the other

7 equations which are significant at the .04 level or better.

It is clear that changes in other assets as well as certain socio-economic factors affect the difference between expected (1971) and actual (1979) values of a given asset. Turning first to the relationships among assets, it is apparent that a change in a given asset is affected by changes in other assets. For example, a dollar increase from 1971 to 1979 in the value of bonds (i.e. the difference between the actual value in 1979 and the expected value based on 1971) is associated with a \$.48 increase in the value of savings.

For the most part, these intra-asset relationships are positive, with a positive difference in one asset associated with a positive difference in another asset. However, the relationship between checking and savings is negative, as is the relationship between value of stocks and housing. A dollar increase in savings is associated with a slight decrease in checking, while a dollar increase in checking is associated with a \$1.33 decrease in savings. This implies that households shifted money between checking and savings accounts.

An increase in the value of stocks is associated with a slight decrease in the value of housing. This might be expected if households liquidated their housing assets and invested the proceeds in other equities.

Among the socio-economic variables, total income was a significant factor in all 7 equations. It was positively associated with changes in the value of savings, checking, housing, total financial assets, and total assets. It would be logical to assume that, other things being equal, the more income one had, the less one would need to draw down assets. In fact, the more income one has, the more one might be able to continue to build up assets. The negative relationship between total income and bonds and between total income and life insurance may be reflecting the fixed income nature of these investments as well as low rates of return relative to the inflation levels of the 1970s.

Living in an urban area was negatively associated with changes in bonds, savings, checking, total financial assets and total assets. It may be that urban households face higher costs of living which require them to dissave in order to maintain their level of living.

A change in marital status from married to widowed was negatively associated with bonds, life insurance, and total financial assets. With regard to the cash value of life insurance, this result is as expected. Also, to the extent that widowed persons needed to dissave to pay for funeral and estate settlement expenses, the negative relationship with total financial assets is logical.

Education was positively associated with changes in savings, checking, total financial assets and total assets. Ceteris paribus, people with more

education may be more knowledgeable and/or skillful in asset management and thus able to increase the value of their assets through sound investment practices.

Other variables that achieved significance in one or more of the seven equations were age (positively associated with checking), sex (positively associated with savings), race (positively

TABLE 3
REGRESSION COEFFICIENTS (t values in Paren)

INDEPENDENT VARIABLES	Dependent Variables							
	BOND	STOCK	SAVE	CHECK	LIFE	HOUSE	FINANCIAL ASSETS	TOTAL ASSETS
Bond	--	.4231	.4848	.0303	.1213	2.8302	--	--
--	(.87)	(1.41)	(.91)	(.54)	(5.01)	--	--	
Stock	.0054	--	.0432	.0021	.0522	-.1079	--	--
	(.87)	--	(1.10)	(.57)	(2.07)	(1.62)	--	--
Save	.0124	.0853	--	-.0123	.1341	.1909	--	--
	(1.41)	(1.10)	--	(2.34)	(3.840)	(2.05)	--	--
Check	.0836	.4612	-1.3291	--	1.2540	.9015	--	--
	(.91)	(.57)	(2.34)	--	(3.44)	(.92)	--	--
Life	.0074	.2467	.3207	.0278	--	-.0847	--	--
	(.54)	(2.07)	(3.84)	(3.44)	--	(.58)	--	--
House	.0251	-.0739	.0662	.0029	-.0122	--	.0479	--
	(5.01)	(1.62)	(2.05)	(.92)	(.58)	--	(.73)	--
Education	36.5484	233.443	630.421	43.5728	-205.412	58.5691	936.088	1300.727
	(.80)	(.58)	(2.22)	(1.58)	(1.11)	(.12)	(1.57)	(1.64)
Age	43.3126	-92.1560	336.111	137.165	-36.1156	377.286	687.919	1495.907
	(.47)	(.11)	(.59)	(2.54)	(.09)	(.39)	(.58)	(.95)
CMS	-483.172	61.5375	1605.83	212.885	-4832.397	3632.470	-7170.859	-4050.601
	(1.43)	(.02)	(.75)	(1.04)	(3.59)	(1.01)	(1.64)	(.69)
MS	-63.1915	3409.919	1460.237	-328.816	1370.269	4073.096	7537.789	11776.914
	(.11)	(.73)	(.44)	(1.03)	(.64)	(.72)	(1.08)	(1.27)
Sex	-514.088	-8658.42	6568.312	51.8928	-1841.300	-7686.366	-5754.509	-13957.617
	(.68)	(1.32)	(1.40)	(.11)	(.60)	(.96)	(.58)	(1.06)
Race	-158.675	1766.608	-3486.87	-306.381	1595.795	11627.909	-811.226	10827.254
	(.24)	(.31)	(.86)	(.78)	(.61)	(1.70)	(.09)	(.96)
Urban	-595.918	258.414	-4742.82	-657.639	-503.682	950.544	-9884.131	-12631.652
	(2.04)	(.10)	(2.61)	(3.99)	(.42)	(.30)	(2.67)	(2.56)
Health	125.134	1816.484	326.730	-34.2648	324.808	-2896.286	3378.101	325.5713
	(.42)	(.70)	(.17)	(.19)	(.27)	(.93)	(.87)	(.06)
Total Income	-.0784	.3745	.4990	.0802	-.3713	.8765	.4276	1.3391
	(3.08)	(1.66)	(3.14)	(5.38)	(3.63)	(3.25)	(1.36)	(3.25)
Intercept	-2535.835	6510.905	-32744.769	-9813.215	5618.883	-22086.196	-54171.365	-106475.
N	342	342	342	342	342	342	342	342
R ² (adj.)	.09	.01	.11	.15	.11	.12	.03	.06
F	3.62	1.33	4.13	5.19	4.15	4.21	1.92	3.37
Prob(F)	.0001	.1884	.0001	.0001	.0001	.0001	.04	.0006

associated with housing), and marital status (positively associated with total assets).

DISCUSSION

The purpose of this research was to explore changes in levels of financial resources during retirement, to explore patterns of asset use, and to determine factors affecting changes in assets during retirement. It appears that holdings in bonds, savings accounts and life insurance decreased, while holdings in stocks and checking accounts increased. Overall, there was a slight decline (\$530) in the average value of financial assets over the 8 years, although when the housing component was added in, the average value of total assets rose over the 8 year period. It is noteworthy that although in the aggregate values of financial assets and total assets rose (Table 1), at the micro level differences emerged (Table 2).

It is quite probable that this 8 year time span is not "long enough" to capture real changes in assets which occur during retirement. Since life expectancies at retirement are in the 17 to 26 year range, and since people are uncertain about lifetimes and future health care needs, the first 8 years of retirement may not provide evidence of dissaving. Since 5 percent of persons 65 and over are in nursing care facilities, compared to 22 percent of persons age 85 and over [Pollak, 1983], dissaving may be better studied at later ages in retirement.

The large proportion of assets held in owner occupied housing (53 percent of total assets in 1979) may become problematic during the later years of retirement when more liquid assets have been spent down. It is likely that consideration of owner occupied housing as an asset to be managed will become more important, especially in these later years of retirement. The appreciation rates for well-maintained houses have tended to keep pace with inflation, making owned housing a "growth investment." However, tapping home equity through reverse annuity mortgages or sale and lease back arrangements was impossible (if not unthinkable) in the 1970s. The choice set for making housing a more "manageable" asset has expanded in the 1980s. Although equity conversion is one way to manage this asset, there are other options for older homeowners which may provide alternative streams of income, services or a shifting of resources and/or expenditures (e.g. accessory apartments, home sharing). The feasibility of these options is in part dependent upon the attitudes of the retirees and in part on

federal, state, and local policies and regulations with regard to shared appreciation, zoning and other issues.

The focus of this study was nominal change in asset values during retirement, consistent with "live off the interest" asset management. This management practice may be appropriate if retirees are able to receive a portfolio rate of return which equals or exceeds current inflation

rates. Mean interest income for the sample in 1979 was \$1569; comparing this to the mean value of total financial assets, the implied rate of return is 6.06 percent; during 1979, the CPI rose 11.5 percent. Thus retirees were losing ground both in the real values of their assets and in the income these assets generated.

Given the limitations of the data, it is not possible to determine exact patterns of asset decumulation during retirement. However, the data do give some clues as to how retirees use their assets. First, they seem to have shifted money out of low return, fixed income assets, such as bonds and life insurance. This finding with regard to life insurance may be a reflection of collecting beneficiary payments. Second, retirees have a strong liquidity preference as evidenced by their holdings in checking and savings accounts. However, there is no way to spot movement within categories. For example, retirees could have moved money out of passbook savings accounts and into certificates of deposit, which paid better-than-inflation interest rates in the late 1970s. There is no way to know if the proceeds from life insurance were re-invested or used for consumption. Similarly, there is no way to know to what degree retirees adjusted their stock portfolio to provide for desired levels of risk, income, and growth.

With regard to factors that affect changes in assets during retirement, it is clear that changes in other assets held in the portfolio affect changes in a given asset. Total income available to the retired household also affects asset use, as do some demographic and locational variables. It is of interest that the health variable was not a significant determinant of asset change. Given the age of the sample (68 to 73 in 1979), this is not surprising. Again, a study done over a longer period of time may reveal the importance of health related variables in asset decumulation.

It is likely that there are cohort effects with this sample. Persons in this sample were in their 20's during the 1930's Depression. They may hold some financial management values and attitudes with regard to safety (and/or risk) and liquidity which may be quite different than those of younger cohorts. Also, their employment patterns and participation in pension programs may not be typical of younger cohorts. Thus, results of this study are not necessarily generalizable to future cohorts of retirees.

Finally, it is important to re-iterate three major technical problems with this preliminary look at asset use in retirement. First, the sample is biased due to the fact that only survivors were studied. Use of a Heckman procedure to identify probability of survivorship and estimated future asset levels is possible to correct this problem. Second, the large proportion of persons with no holdings of stocks and/or bonds (i.e., reporting zero) is problematic when using OLS regression. Use of ordered probit may be a more appropriate approach, categorizing cases as negative changes

in a given asset, zero change, and positive changes. Third, there is a problem with simultaneous equation bias. Two stage least squares is the appropriate model estimation tool. Future research on this subject will need to take these factors into consideration.

CONCLUSIONS

This study has shed some light on the changes in levels of assets during retirement and on some of the factors affecting those changes. The interrelationships among the various assets indicate that households consider the entire portfolio as they liquidate, dissave and re-arrange assets.

The decline in the real value of the portfolio and the lower-than-inflation rate of return indicate a need for better asset management on the part of retired households. While a retirement nest egg should not be considered venture capital, it may be that with increased knowledge of financial institutions and financial markets, and improved financial management skills, retirees can improve their portfolio value and rate of return. Consumer educators and financial planners may be able to work through and with senior citizen groups to provide such educational opportunities.

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APPENDIX NOTE

1. Mortgage debt was subtracted from each summary variable for net financial asset and net total asset variables. However, because of the distribution of the mortgage debt variable, the mean net asset variables were not significantly different from the gross asset variables. Other debt (auto, consumer, medical) was also considered, but the coding on these variables proved problematic. Only about 10 percent of the cases had figures (including 0 values) for these debt variables, with the remainder coded as missing. Thus it was decided to eliminate debt variables in this study.

DISCUSSION

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ABSTRACT

These three papers investigate longitudinal changes in family financial decision-making, unemployment adjustment, and retirement assets. The Fitzsimmons article is one of many investigating task assignment in families. The Wilhelm, Iams, and Ridley article identifies consumption change behavior resulting from unemployment. Hogarth provides valuable information about asset changes after retirement.

INTRODUCTION

These three papers focused on longitudinal changes experienced by families in their financial decision-making and task assignment, adjustment to unemployment, and retirement portfolios. The contribution to knowledge about family financial behavior is varied, but all three papers elicit discussion that can redirect or improve future research or the analysis of the data presented here. All of these researchers should be commended for their use of longitudinal rather than cross-sectional data to test their hypotheses.

Fitzsimmons

The words "money management" imply decision-making power. Record-keeping and transaction task assignment is an inappropriate measure of the exercise of financial decision-making power by husband, wife, or jointly. The major question raised by this research paper is whether task delegation between husband and wife is an important issue. As long as the task gets done, does it really matter who does it as far as the impact on family financial well-being is concerned? It is even possible that children could be assigned some of the tasks studied. The important issue is who makes the decision about task assignment. Where is the power over money-related task assignment in the family?

A second concern with this research is the confusion that exists between the concepts of role specialization and task assignment. That issue is further confused by uncertainty as to which role is being studied--the marital roles of husband and wife or the family money manager role. Once those questions are resolved, research on the outcome of money management in terms of family financial well-being relative to whether the husband, wife, or the two jointly manage the family's finances may be a more profitable line of inquiry. Task assignment associated with husband and wife roles has been studied extens-

ively, and this research does not add any significant information to the already existing pool.

A methodological issue is the definition of full-nest families as including couples without children. This seems a contradiction in terms. Couples who have children and couples who do not have children live very different kinds of lives and are faced with a different set of decisions, or at the very least, a different hierarchy of criteria for making decisions. Analysis of the longer-married couples without children compared to newly-wed families and to full-nest families with children would seem to be at least a minimum requirement before they are lumped in with families whose nests are "truly" full.

The author of this paper makes a rather strong statement that women have traditionally been "perceived as having little input into family money management". There is research that indicates this is an inaccurate generalization, at least in lower class and blue-collar families. Some additional search of the literature and expanded discussion of this issue would strengthen the paper.

Wilhelm, Iams, and Ridley

Since no tables were included in the copy of the paper submitted to the discussant for review, the comments on this paper are limited to two aspects of the text that caused some concern. Overall, the research appeared to be well conceived and carried out to achieve the authors' intent.

Their discussion of the negative relationship between the husband's level of economic satisfaction after one year and the consumption management changes of income raising and credit use engaged in by the family ignores the research data on the psycho-emotional impact of unemployment on the male self-image. Having to rely on the earning power of other family members and the inability to get a full-time job would appear to be critical determinants of self-esteem and may better explain the husband's dissatisfaction than his perceptions about their insufficiency to meet short- and long-term family needs.

There is a tone of disapproval in the text of this paper about one of the consumption change behaviors--credit use. It is questionable whether any of the coping strategies for handling unemployment included in this research are undesirable. Credit use is a legitimate method for dealing with a financial emergency. Perhaps expectations about the credit repayment experience (requires an extended period of time, difficult negotiation with creditors, for example) or a perceived lack of ability to ever repay might better explain the finding of a de-

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crease in economic satisfaction associated with credit use. Credit use per se does not appear to be a cause of diminished satisfaction in our economy and might even be argued by some to increase satisfaction under certain circumstances.

The consumption change behaviors for coping with unemployment developed for this research can profitably be studied in family response to other kinds of financial stress, such as meeting college education expenses or retirement, or unexpected financial emergencies, such as severe illness or disability. Comparisons of how family coping strategies vary among financial situations requiring an alteration in behavior patterns would be a useful contribution to our understanding about longitudinal family financial behavior.

Hogarth

This paper provided a valuable look at what happens to retirement resources through time as individuals participate in the retirement experience for which they have planned and prepared (or not planned and not prepared) during their working years.

The major concern with the paper lies in the model proposed by the author and the statistical procedures utilized. The model states that:
 $\Delta \text{Asset} = f(\Delta \text{Other Assets}, z)$ Z is defined as a vector of eight socio-economic variables. This suggests that z is an independent variable composed of some intersection of the socio-economic variables. That suggested to me that some appropriate statistical technique would be used on the eight socio-economic variables to determine a range of values for the independent combination variable z . Instead, Hogarth ran a regression analysis using the eight socio-economic variables as individual independent variables. The analysis needs to be reconsidered. If retained as is, the model should be described more accurately or more clearly so that this confusion does not arise. If the analysis is inappropriate for the model as it presently stands and the model is unchanged, a thorough revision of this section of the paper is in order.

The "safety of principal invested" as an explanatory factor in retirement asset management relative to accepting returns below the rate of inflation should be further developed in this paper. This factor is of greatest importance in financial portfolio management during the retirement stage of the family life cycle.

CONSUMER REPORTS' SURVEYS OF PROBLEMS EXPERIENCED BY OWNERS OF USED CARS:
AN EMPIRICAL ANALYSIS OF THEIR USEFULNESS TO CONSUMERS

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ABSTRACT

This study assesses the predictive validity of aggregate frequency data yielded by Consumer Reports' annual surveys of problems experienced by owners of used cars. For cars representing each of five model years (1975-79), bivariate and multivariate correlational techniques were used to analyze the data of six annual surveys. The study findings indicate that each year's reported frequencies of problems are highly predictive of next year's, both for overall and individual categories. Predictability was found to differ significantly by individual problem category and by the recency of the survey data.

Most car buyers choose used models and they often do so with little reliable information upon which to base this important purchase decision (Anonymous 1986). The one source of information which is often cited as an exception to this generalization is the assortment of monthly magazines published by consumer associations in many nations of the world, such as Consumer Reports, the American publication of the non-profit, consumer testing organization, Consumers Union. Each year this magazine presents detailed summary information relating to serious problems (i.e., problems requiring major repairs) which owners of major makes and models of automobiles report they have experienced in the previous year.

The purpose of this research study is to provide an empirical assessment of the usefulness of this information to consumers interested in the purchase of used automobiles. The study addresses a problem with significant implications for many consumers.

METHOD

Bivariate and multivariate correlational techniques were used to determine the predictive validity of Consumer Reports' automobile problem data for the various makes and models of cars manufactured in 1975 through 1979 for which complete survey data were available in Consumer Reports' for six years of consumer use. For each year of manufacture, bivariate correlations were computed for all pairs of successive years over the six-year period (e.g., for 1979 cars, this means 1979 with 1980, 1980 with 1981, etc.).

When, for a given year of manufacture, more than one predictor year was available (e.g., for 1979 cars, 1979 and 1980 as predictors of 1981),

¹Professor of Psychology. The author would like to thank Leslie Braden, Kathleen Kunk, Alice Mack and Tammala Woodrum for their help with the data analysis phases of the study. He would also like to thank The Graduate School of Eastern Michigan University for funding the study.

multiple correlations were also computed. Separate correlations were computed for each of 15 potential problem categories for which Consumer Reports' had gathered survey information since 1975, as well as a composite category which includes all 15. For cars manufactured in 1978 and 1979, two more potential problem areas were added by Consumer Reports' (body exterior-rust and body exterior-paint) and separate correlations were computed on these areas as well as the composite category. With the two body exterior additions, the composite category for the 1978 and 1979 model years is based on 17 individual problem areas.

The results of the statistical analyses should shed light on the following questions:

1. Are aggregated problem experiences for one year a good predictor of aggregated problem experiences in the following year?
2. Does predictability vary by problem category in that, for example, brake problems are more predictable than problems with exhaust systems?
3. Does predictability vary by years of consumer use in that, for example, survey data for automobiles in their first year of use are more predictive of next year's data than are survey data for automobiles in their fifth year of use?

RESULTS

The results presented in this section are in two parts. The first part examines the findings of the bivariate correlational analyses which relate to the three questions posed earlier. The second part reports the results of multivariate correlational analyses which examine possible extensions of the findings of the bivariate analyses.

The Bivariate Correlational Analyses

Let us look at the findings for the three earlier-posed questions.

1. Are aggregated problem experiences for one year a good predictor of aggregated problem experiences in the following year?

On the average, for all individual problem areas examined, one year's relative frequencies of problems experienced by the owners of various makes and models of automobiles were found to be highly predictive of the relative frequencies of problems likely to be experienced in the following year by the owners of the same makes and models of automobiles.

2. Does predictability vary by problem category?

The 1979 model year data suggest that it varies considerably, and this suggestion is confirmed by statistical analysis. Statistically

significant findings were also yielded for the data of each of the remaining four model years in the study, indicating substantial agreement across model years.

3. Does predictability vary by years of consumer ownership and use?

The question here is whether the year-to-year correlations of owner-reported problem data change as the cars of a given model year age. Once again, the study findings suggest considerable variation and, as was the case before, the suggestion is supported by statistical analysis. The statistical analyses reveal that as cars of a given model year age, their record of serious problems experienced in the recent past (i.e., the just-completed year) becomes more useful as a predictor of serious problems to be experienced in the year ahead.

The Multivariate Correlational Analyses

As indicated earlier, each year Consumer Reports presents to its reader tabular summaries of the major automobile problems experienced by its survey respondents in the just-completed year. No attempt is made to include in these tabular summaries a more comprehensive rendering of these repair experiences, such as a longer history treated in a manner which would assign more weight to the more predictive (presumably, the most recent) years of data collection. To correct for this deficiency a multivariate technique was applied to the six years of survey data for each model year in an effort to determine if predictability of automobile problems in a selected criterion year (say, 1984) could be improved by going beyond the most recent year's survey results (1983) to include survey results for the following: the two most recent years (1982 and 1983), the three most recent years (1981, 1982 and 1983), the four most recent years (1980, 1981, 1982 and 1983), and the five most recent years (1979, 1980, 1981, 1982 and 1983).

Examination of the study data reveals only modest average increases in predictability for the cars of each model year as one proceeds from one predictor to five. In particular, the mean tabular values for the individual problem areas increased by less than .10 units. The individual problem areas for the five-model-year sample which increased most in predictability with an increase from one-to-five predictors were body hardware and manual transmission.

The Major Study Findings

To sum up, the statistical analyses lend support to the following generalizations for the 1975-79 model cars:

1. Frequencies of used car problems reported in Consumer Reports in one year are an excellent predictor of frequencies of used car problems appearing in Consumer Reports in the following year.
2. Year-to-year predictability varies substantially by individual problem area with some areas, such as body integrity, being far

more predictable than others.

3. As the cars of a given model year age (from brand new to five years old) their record of individual problem areas experienced in the recent past (i.e., the just-completed year) becomes more useful as a predictor of individual problem areas to be experienced in the year ahead.
4. With the exception of a few areas (notably body hardware and manual transmission problems), multiple correlation efforts to increase the predictability of used car problem frequencies (by using more than one year's survey results) yield only modest gains beyond those achieved through the use of simple bivariate correlational techniques.

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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN CONSUMER
INFORMATION AND SATISFACTION WITH FOOD MARKETING SERVICES

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ABSTRACT

Providing in-store consumer information has often been suggested as a means of improving customer satisfaction and generating sales. Yet, a search of the literature did not uncover any empirical test of this relationship. A conceptual model depicting the linkages between the provision of information and both increased satisfaction and higher sales volume was developed. An empirical test of the model was conducted at a warehouse foodstore where an information program had been implemented one year prior to the study. The results of the test confirmed the posited relationships.

Advocates of consumer education have asserted that the need for information is central to purchase decisions. Consumers want and need information that will aid them in making effective choices in the marketplace. To fulfill this need, the information must focus on salient product attributes, be available at the point of purchase, and be easily processed and comprehended by those for whom it is intended.

Being cognizant of the need for information, food retailers have begun to engage in education/information programs [15, 19] Many of these are general in that they provide educational/informational printed materials on nutrition, recipes, and answers to consumer questions. However, several supermarket chains have targeted their educational efforts to specific product categories. Since meats have traditionally accounted for up to 35 percent of retail food store sales volume, the decline in consumption of red meats [27] has had a negative impact on supermarkets [23] Spurred on by the marketing efforts of trade associations, several supermarket chains have begun to engage in consumer information and education programs for meat products.

These programs are perceived to be beneficial to both consumers and food retailers. In-store information/education programs should raise consumer confidence in the retailer resulting in higher levels of satisfaction. Increased satisfaction should lead to increased product purchases resulting in increased profits for the retailer. Although it has been implied in the literature that the provision of consumer information will lead to increased satisfaction with products and with the total shopping environment, these effects have not been empirically tested.

The intent of this study was to measure the effects of an in-store information/education program in a supermarket environment. Evidence of increased consumer satisfaction and increased

product purchases should contribute to growth in the number of information programs in retail markets which will be beneficial to consumers and to the business community.

RELATED LITERATURE

A review of the literature in consumer behavior, consumer affairs, home economics, nutrition education, and retailing failed to uncover studies regarding the effects of information/education programs on consumer satisfaction with retail markets. Several conceptual papers on consumer information programs implied or projected that consumers would be more satisfied and that providers would benefit, but none of the papers reviewed provided specific empirical evidence of these relationships. Selected studies within the areas of consumer information/education, retail patronage and store preference, and consumer satisfaction were reviewed to identify criteria for effective programs, factors which contribute to store patronage, and methods for measuring satisfaction.

CONSUMER INFORMATION PROGRAMS

Research on the development of information/education programs has focused on programs for public policy implementation [5, 6, 36] or on the development of independent consumer information systems [10, 12, 35]. Capon and Lutz [6] presented a methodology for the development of a program conceived within the marketing framework. Day [8] proposed that the evaluation of consumer information programs be based on a hierarchy of effects model. He suggested that the process of adoption of information is slow and it occurs in stages. Prior to adoption, consumers must be aware of and comprehend the information. Aaker [1] in a conceptual paper, made recommendations for a corporate consumer information/education program, and predicted benefits to the firm. Each of the papers reviewed emphasized the importance of developing an information program from the consumer's point of view. These authors suggested the following: the information must be relevant; it provide something not previously known; it be available at the point of decision; several modes of presentation be employed to appeal to slightly different audiences; and that the information be easily assimilated.

Aaker, citing Giant Foods' market share, predicted that providers of the information program would benefit by improved customer satisfaction, a better customer image of the firm and increased profits in the long run. Day [8] presented data from selected studies on information disclosure which suggested that there were general and

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specific effects of information programs and that providers would benefit in terms of consumer confidence and satisfaction once they were aware of the information and had developed a positive attitude toward it. Actual use of the information or behavioral changes were not requisite to an assessment of the benefits.

STORE PREFERENCE AND STORE PATRONAGE

Studies on store preference have indicated that supermarket store choice is based primarily on locational convenience, low prices, and assortment of merchandise [4, 22]. Monroe [6] suggested that shopper characteristics and retail strategies influence general opinions and attitudes toward the store and affect store choice. Information processing within the store leads to product choice which feeds back to influence individual opinions and attitudes toward the store.

According to Engel and Blackwell [11] repeat patronage is extremely important to the food retailer because stores with the largest number of loyal customers control the largest share of the market. Studies [13, 16, 17] have shown that loyalty among food shoppers is generally low and that warehouse foodstore shoppers are inclined to be less loyal than those who shop the traditional supermarket.

Awareness of low prices, convenient location, and assortment of merchandise as salient to store choice is of limited use to the food retailer interested in building store traffic and increasing sales. The location and square footage are fixed in the short run; therefore, it may not be feasible to be more locationally convenient or to significantly increase the assortment of goods. Whether a particular food retailer could lower prices and operate profitably given their traditional low profit margins is a matter of conjecture. Evidence of low loyalty among warehouse shoppers where prices are reputedly low, raises doubt to the benefits of lowering prices if it were possible. Hence store attributes which could be manipulated by the retailer must be identified to be incorporated into retail strategies.

Levitt [21] indicated that for marketers to maintain their profit positions, they must enhance their offerings of products by helping to solve the buyers' problems. The provision of consumer information/ education programs is a service of the food retailer which aids shoppers in this regard. Thus these programs have the potential for increasing store traffic and sales through increased consumer satisfaction.

CONSUMER SATISFACTION

The consumer satisfaction/dissatisfaction paradigm has evolved over the past decade [3]. One major research track that has emerged focuses on the conceptual and methodological issues in defining and measuring consumer satisfaction and dissatisfaction [14, 29, 34] Oliver's work, based on adaptation theory, provided an

understanding of the illusiveness and temporal nature of satisfaction and of the relationship between the major constructs of the CS/D paradigm [30, 31, 32]. He postulated a sequence of effects based on the relationship between attitude, expectation, satisfaction, and intention. Through empirical studies, Oliver was able to distinguish between these constructs. He concluded that the disconfirmation of expectations was a factual assessment based on the performance of the product. Satisfaction was an emotional response involving the liking or disliking of the disconfirmation experience, and satisfaction provided feedback which affected attitudes and intentions related to future purchases. Oliver [29] also concluded that consumer satisfaction was an evaluation of the total purchase experience and that satisfaction with retail stores was a factor of satisfaction with the store attributes and with the product category.

Issues of measurement related to consumer satisfaction have been addressed in several of the reviewed studies [2, 7, 9, 25, 29]. Major problems include the timing of the measurement, the referent state, and reactivity of the instrument with the satisfaction state. Global measures and attribute composite measures have been used to assess the construct. Disconfirmation of expectations has also been used as a measure of satisfaction. At the present time there does not appear to be any consensus or research tradition in measurement of consumer satisfaction.

THEORETICAL FRAMEWORK

The literature on information suggested that the provision of a consumer information would benefit the provider [1]. Consumers who responded to the program would be more satisfied with the decision process, with the product, and with the purchasing environment [8]. The literature on store patronage suggested that retailer strategies contribute to store patronage, and that in-store information processing leads to product purchasing [26]. The literature on consumer satisfaction suggested that satisfaction leads to post purchase attitude, which leads to intentions to repurchase [31]. The relationship between consumer information/education programs and satisfaction is represented by the conceptual model in Figure 1.

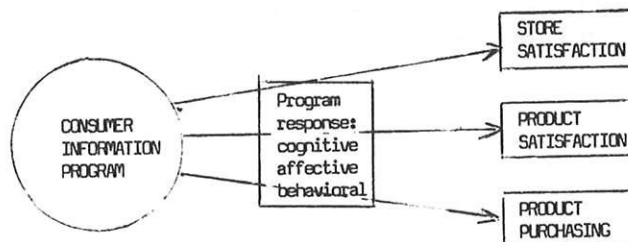


Figure 1: The Conceptual Model

collection. This was a three part program comprised of 60 second video presentations, brochures which provided further information on the featured meats, and recipe cards along the meat counter. The warehouse foodstore was selected because the information program utilized different modes of presentation as recommended by Aaker [1] and it was specific to meats which account for the largest share of the food budget [25] Because the image of warehouse foodstore meat departments is generally poor [16, 17] an in-store information program would be more likely to create a measurable effect than if it were tested at a foodstore known for its meat department.

A cross sectional survey design was incorporated into a store intercept study. The study measured the effects of a treatment through intervention. All shoppers were exposed to the information program and had the opportunity to accept or reject it. Product purchases and levels of satisfaction among shoppers surveyed were measured and compared on the bases of their response to the program.

INSTRUMENTATION

Two instruments were developed for the study. The first was an instrument to evaluate the quality of the consumer information materials utilized by the store. Two experts in the field of food and nutrition were asked to evaluate the program materials on the bases of objectivity and completeness. The recipe cards (which included information on meat selection, preparation, or nutrition), the brochures, and a video presentation were found to be acceptable and appropriate for use with average supermarket shoppers.

The survey instrument developed for this study was divided into two parts on the basis of method of administration. The first was a six page self-administered questionnaire. This included the items to measure satisfaction with the store and with the meat department. Also included were twenty-one attitude, interest, and opinion items related to food shopping and preparation. The second part was a three page interview questionnaire which queried respondents on their use of the information program, shopping habits, and demographic data.

The instrument was pretested at the data collection site. Cronbach's alpha for internal consistency was above .80 for all multi-item and indicator scales in a pretest with 25 shoppers at the experimental store.

VARIABLES

To operationalize the concepts, three indicators were used to measure each of the five constructs of the conceptual model. The Consumer Information Program was operationally defined by the three part program in place at the warehouse foodstore. Program Response was defined by a cognitive, affective, and behavioral measure. Meat Purchasing was defined by the respondents'

reports of the amount of meat purchased at this foodstore. Meat Satisfaction and Store Satisfaction were each defined by three types of measures used in previous satisfaction studies.

The measures of response to the program were attitude toward the program, perception of its usefulness, and use of the information presented. Attitude toward the information program and perception of its usefulness were each composite measures of five questions extrapolated from the questionnaire. Use of the program was measured by response to 13 direct queries on recall of the video presentation, selection and recall of brochures during the current or previous shopping trips, selection and use of recipe cards including preparation of the recipe or use of the information on the reverse side of the card.

Meat Purchasing was defined by the percentage of the meat budget generally spent at the experimental store (a recall measure), the number of meat items purchased on the date of the survey (observation), and whether the percentage of the meat budget spent at the store had changed (a recall measure).

Meat Satisfaction was defined by three indicators. The first was a composite score of three meat attributes previously identified as being associated with satisfaction with meats [14]. The second, a global measure of satisfaction, was based on one question which asked respondents how satisfied they were with the meat department. The third indicator, disconfirmation of expectations, was a composite of three questions which queried respondents on satisfaction with this meat department compared to other foodstores and shopping environments. Five point Likert type scales were used for all satisfaction measures.

Store Satisfaction was operationally defined by three indicators which included a composite measure of store attributes, a global measure of satisfaction, and a three item composite of questions which asked respondents to compare satisfaction with this store to other shopping environments. Sixteen store characteristics used in previous studies [15, 16, 22] formed the attribute measure. The remaining two, a global measure of satisfaction and the disconfirmation of expectations, were similar to those used for the meat satisfaction construct.

THE SURVEY SAMPLE

Two hundred seventy-seven shoppers were interviewed at the warehouse store during a four week period. Data were collected on Thursdays, Fridays, and Saturdays as 39.0% of consumers shop on these days (Food Marketing Institute, 1984). The offer of a token gift resulted in a response rate greater than eighty percent.

The sample represented typical warehouse food store clientele. The average household size was four persons and the largest share of shoppers interviewed was between the ages of 25 and 34 years. Fifty percent reported an average weekly

The model illustrates the benefits that accrue to the recipients of a consumer information program and to the providers of the program. The Consumer Information Program is defined as an ordered effort by an enterprise to provide product specific information that will help consumers in the selection and use of goods and/or services. Consumer information incorporates both consumer information and education.

Response to the Program by consumers is an intervening variable that is essential to the measurement of program's effectiveness. Awareness of the program and perception of its usefulness (cognitive), attitude toward the program (affective), or actual use of the information (behavior) responses could all be expected to moderate the projected outcomes.

Because the information is presented at the point-of-decision, product purchases should be expected to increase. The model posits that a positive response to a consumer information program in the shopping environment will lead to increased product purchases.

The purpose of the information program is to aid in the selection of specific products. Therefore, consumers utilizing the information should be able to make more informed choices in the marketplace, and experience higher levels of satisfaction with the products they select than consumers who do not use the information. Hence, the model posits that use consumer information programs will lead to greater product satisfaction.

Previous research suggested that satisfaction is a broad concept and that consumer satisfaction involves not only the object or product under consideration, but that it is a measure of the total experience surrounding its acquisition. It was also suggested that the provision of consumer information will lead to improved overall customer satisfaction. Therefore, the model further posits that satisfaction with the product/object of the information will contribute to satisfaction with the store, and that the provision of consumer information will lead to store satisfaction.

HYPOTHESES

This study was designed to provide an empirical test of the conceptual model. The purpose of the study was to define the relationship between the provision of a consumer information/education program and satisfaction with food marketing services. The specific objectives of this study were to determine whether an in-store information program focused on meats was associated with increased purchasing of meat products, satisfaction with the meat department, and satisfaction with the supermarket. Based on these objectives, the following hypotheses were formulated:

H₀1: An in-store consumer information/education program will be associated with increased meat purchasing by shoppers at the supermarket providing the program.

H₀1a: Shoppers who express a positive attitude toward the information program consumer information program will purchase more meat than shoppers whose attitude toward shoppers whose attitude toward the program is neutral or negative.

H₀1b: Shoppers who are users of the consumer information program will purchase more meat than shoppers who are nonusers of the program.

H₀1c: Shoppers who perceive the consumer information program to be useful will purchase more meat than shoppers who do not perceive the program to be useful.

H₀2: An in-store consumer information/education program focused on meats will be associated with on meats will be associated with higher levels of satisfaction with the meat department.

H₀2a: Shoppers who possess a positive attitude toward the consumer information program will be more satisfied with the meat department than those whose attitude is neutral or negative.

H₀2b: Shoppers who are users of the consumer information program will be more satisfied with the meat department than shoppers who are nonusers.

H₀2c: Shoppers who perceive the consumer information program to be useful will be more satisfied with the meat department than shoppers who do not perceive the program to be useful.

H₀3: An in-store consumer information/education program will be associated with higher levels of satisfaction with the store.

H₀3a: Shoppers who express a positive attitude toward the program will be more satisfied with the store than those whose attitude is neutral or negative.

H₀3b: Shoppers who are users of the program will be more satisfied with the store than shoppers who are nonusers.

H₀3c: Shoppers who perceive the consumer information program as being useful will be more satisfied with the store than shoppers who do not perceive the program to be useful.

PROCEDURE

The field test was conducted at a warehouse foodstore in the northeast where an in-store information program, focused on meats, had been implemented one year prior to the data

food bill of \$100.00. Half of those interviewed shopped at the warehouse store once per week and half had been patronizing this store for more than three years. Store loyalty was low as 78.1% reported that they shopped at least one other foodstore.

DATA ANALYSIS

Analysis of the data to assess the the model was divided into three sections. The first section examined the reliability and validity of the indicators used to measure the constructs. The second section presented the tests of the hypotheses, and the third was concerned with the validation of the model.

The data were analyzed to test the hypotheses and to validate and assess the completeness of the model. Independent sample t-tests and Pearson product-moment correlations were used to test the hypotheses. The total sample [n=277] was split to test the sub hypotheses which stated that there would be differences between shoppers who responded positively to the consumer information program and shoppers whose response was negative or neutral. Cut scores were used to distinguish between positive and negative responders on attitude, perception of usefulness, and use of the information. In establishing the cut scores an attempt was made to have equal sample sizes. Scores clustered around the point of ambivalence were not included in the analysis. Because the clustering differed for each indicator, the sample sizes used for these analyses varied.

RESULTS

Cronbach's alpha for the measures of the constructs was at or near the minimum .70 specified for widely used measures (Nunnally, 1967) as shown in Table 1. Pearson product-moment correlation coefficients between and amongst the indicators for each construct were positive and statistically significant at 0.000. Correlation coefficients for the constructs were also positive and statistically significant.

Table 1
Standardized Alpha coefficients for construct measures.

Construct Measure	Alpha
Response to the Information Program	.76595
Meat Purchasing	.62350
Meat Satisfaction	.89597
Store Satisfaction	.76677

The three major hypotheses of the study were confirmed based on Pearson product-moment correlations. The nine sub hypotheses were confirmed based on the results of independent samples t-tests.

Hypothesis one postulated that an in-store consumer information program would be associated with increased meat purchasing by shoppers at

the supermarket providing the program. The correlation between the constructs ($r = 0.303$) was positive and statistically significant ($p < .000$). The three sub hypotheses were confirmed as shown in Table 2. Shoppers who responded positively toward the program in terms of attitude, use, or perception of usefulness purchased more meat than those whose response was neutral or negative.

The mean scores on the indicators were derived from the percentage of meat purchased at the store, whether the shoppers had increased or decreased the percentage of meat purchased, and the number of meat items purchased on the date of the interview. As shown in Table 2 there was a sizeable difference in the scores between the positive and negative responders. The variance in the scores of negative responders was larger than among those who responded positively.

Table 2
Comparison of positive and negative or neutral responders toward the Consumer Information Program (CIP) on the construct of Meat Purchasing.

Indicator of CIP	Negative/neutral			Positive			t ^a
	n	Mean	SD	n	Mean	SD	
Attitude	94	64.57	37.58	87	84.39	32.25	3.79***
Use	123	66.86	37.91	115	87.72	27.93	4.81 ^a ***
Usefulness	76	69.75	37.54	77	87.80	24.46	3.39 ^a **

^aSeparate variance t-test based on F test for homogeneity of variance
** p < .005
*** p < .000

Hypothesis two postulated that the consumer information program would be associated with higher levels of satisfaction with the meat department. The Pearson product-moment correlation (0.295) between the Consumer Information program and Meat Satisfaction was positive and statistically significant thereby confirming hypothesis two. The sub hypothesis which stated that shoppers who purchased more meat would be more satisfied with the meat was also confirmed by a correlational statistic of $r = 0.510$, $p < .000$. The sub hypotheses which proposed differences between positive and negative responders were also confirmed as shown in Table 3.

Table 3
A comparison of positive and negative or neutral responders toward the information program on the construct of meat satisfaction.

Indicator of CIP	Negative/neutral			Positive			t ^a
	n	Mean	SD	n	Mean	SD	
Attitude	94	27.97	6.30	87	30.85	4.88	3.82**
Use	123	28.24	6.31	115	30.34	4.72	2.89**
Usefulness	76	27.12	6.27	77	31.64	2.96	5.69***

^aSeparate variance t-test based on F test for homogeneity of variance
** p < .005
*** p < .000

The mean scores in Table 3 were derived from summing the scores on three indicators for meat satisfaction. These included measures of meat attributes, disconfirmation of expectations, and a global satisfaction score.

Hypothesis three postulated that an in-store consumer information program would be associated with higher levels of satisfaction with the store. The Pearson product-moment correlation coefficient (0.389) was positive and statistically significant. The sub hypothesis which stated that shoppers who were more satisfied with the meat department would express higher levels of satisfaction with the store was confirmed ($r = 0.494, p < .000$). The three sub hypotheses which stated that those who responded positively toward the program would express higher levels of satisfaction with the store than those whose responses were negative or neutral were confirmed as shown in Table 4.

Table 4
A comparison of positive and negative or neutral responders toward the information program on the construct of store satisfaction.

Indicator of CIP	Negative/neutral			Positive			t ^a
	n	Mean	SD	n	Mean	SD	
Attitude	94	83.71	8.72	87	91.45	8.53	6.02***
Use	123	85.27	10.06	115	88.45	2.60	2.89*
Usefulness	76	80.74	9.11	77	92.14	7.99	8.24***

^aSeparate variance t-test based on F test for homogeneity of variance
* $p < .01$
*** $p < .000$

The mean scores given in Table 4 were derived from summing the scores of the three indicators used to measure the construct. Although the differences between positive and negative responders were statistically significant for each of the three indicators, effect sizes differed amongst the three tests. The effect size was smallest for the behavioral indicator (use), and the difference in variance between groups was the largest.

DISCUSSION AND CONCLUSIONS

The study provided empirical evidence that the provision of a product specific in-store information program would be beneficial to consumers and to the program provider. The shoppers interviewed for this study who responded positively toward the program either by direct use of the information, attitude toward the program, or perception of usefulness purchased more meat, were more satisfied with the meat department and with the store than those who responded negatively.

Although actual use would be the ultimate response to the Consumer Information Program, equal attention was given to attitude toward the program and perception of its usefulness. Previous studies [1, 6, 8, 10] have indicated

that cognitive and affective response to information disclosure might yield positive outcomes in the absence of the behavioral measure of program use. The data presented here evidenced this trend. The mean scores for measures of satisfaction were higher for nonusers of the information program than for negative responses on the remaining two indicators. Failure to use the information might be the result of lack of time or belief that one already possesses sufficient information on the topic. However this nonuse does not preclude a positive attitude toward the information or a perception that the information is useful to others.

The conceptual model for the study posited a relationship between the provision of a consumer information program and consumer satisfaction with food marketing services. The results of the study indicated that there is a positive relationship between the provision of an information program and consumer satisfaction. Because this study was based on a cross sectional survey design with intervention on a treatment and the conclusion is based on statistically significant correlations between the two variables, no assumption of causality can be made. As shoppers who responded positively toward the program were more satisfied with the meat department and with the store, it was concluded that there is a relationship between the provision of consumer information and consumer satisfaction with food marketing services. This conclusion is limited to those shoppers who are likely to have a positive attitude toward consumer information, perceive the particular information program to be useful, or actually use the program.

In measuring the relationship between the provision of an in-store information program and increased satisfaction, the program was viewed from the consumer's perspective. The Consumer Information Program was operationally defined as response to the program materials. The results of the study indicated that whether response was measured in terms of use of the program, a positive attitude toward the program, or perceived usefulness of the program, shoppers who responded positively expressed higher levels of satisfaction with the meat department and with the store. Therefore it was concluded that if benefits are defined as satisfaction with the marketplace, consumers did benefit from the provision of the in-store information program.

The benefits to the provider of the Information Program were measured directly in the form of increased purchasing of meat and indirectly by the increase in consumer satisfaction which could culminate in increased patronage. The results of the study indicated that those who responded positively to the program, purchased more meat, and were more satisfied with the meat department and the store. Therefore, it was concluded that the Consumer Information Program benefited the provider directly through increased purchasing of meat products by users of the information

program, and indirectly through satisfactions received by the store's patrons.²

The conceptual model proposed a positive relationship between the provision of consumer information and increased satisfaction and product purchasing. The model was validated by analysis of the data. Positive response to the information program was explained by increased meat purchasing, satisfaction with the meat department, and satisfaction with the store. The reverse of this position was not confirmed. Due to instability and variation in the scores, negative response was not explained by the model in terms of lower levels of meat purchasing, satisfaction with the meat department, and satisfaction with the store. This was not unexpected as previous studies have shown that there are a multitude of factors (low prices, convenient location, assortment of merchandise, etc.) that contribute to store preference and patronage.

RECOMMENDATIONS

The results of this study have implications for the need for additional consumer and market research on information use and for producers and retailers as providers of consumer information.

Further research should be undertaken to explain negative responses to a consumer information program and to identify modes of presentation that would result in usership. There is a need to identify characteristics of nonusers of information provided in a variety of environments. It is not known whether the nonusers are simply information avoiders or whether nonuse is a factor of the type of information provided or the format used.

As usefulness of the program materials was found to be the strongest of the three measures, usefulness of the program materials should be the primary concern of program developers. To enhance usefulness, materials should provide information that is salient to the shoppers. For meat products salient information might include the value for the dollar measured in cost per serving, nutritional information, alternative preparation ideas, and storage. Several modes of presentation should be offered for food store information programs to appeal to a variety of market segments. This is of critical importance for food retailers as shoppers for a given store cannot be segmented on demographic or psychographic characteristics and are generally representative of a cross section of consumers.

²Store records show that sales of a specific meat product increase by an average of 15 percent when the video presentation is used. The design of this study required that the multiple indicators to measure each construct be measured from the same perspective - ie. consumer response.

Providers of consumer information should encourage use of the materials and should attempt to increase their visibility. Attention could be focused through the use of product spotters and by incorporating the information with other promotional materials such as coupons or newspaper ads. Providers should experiment with locations for the information materials within the store. Visuals such as video machines should be located in an area where shopper movement is naturally interrupted. Areas such as the deli counter or the checkouts provide such a location. If the visual is concerned with a specific product category, it should be placed in proximity to the product to aid the shopper at the point of decision.

Food retailers should engage in consumer information programs as these can be of particular benefit in upgrading the image of the whole store, upgrading the image of a particular product category, and increasing levels of purchasing.

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"THE ECONOMIC IMPERATIVE TO CONCEAL: WHY
SELLERS HIDE INFORMATION ABOUT DEFECTS"

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ABSTRACT

It is inefficient to fight fires with every case of deception eventually discovered. Much more useful is an examination of the general principles which provide incentives for sellers to conceal information. The paper identifies three important cases and examines five factors which play a fundamental role in affecting concealment.

"Evil events from evil causes spring"

- Aristophanes

INTRODUCTION

The marketing of useless or dangerous products may sometimes be the work of evil persons - a devil theory. However, it is the contention of this paper, that a major explanation of market deception rests in the routine operation of the economic incentive structure.

Examples of mis-informed consumer purchases abound. For example, it has been reported that as much as 25% of the food passing through markets in India has been adulterated (Jacob, 1975). Fully 35% of the over-the-counter drugs appraised and agreed upon by two expert scientific panels in the U.K. were found to be "undesirable preparations" - defined as irrational combinations, obsolete preparations, or ineffective or dangerous drugs (Sainsbury Report, 1967). In the Best-Andreason survey of over 28,000 purchases, U.S. consumers perceived a problem afterwards in more than 28% of the cases (1976). In Thailand, 96% of respondents in a large survey by Thorelli and Sentell (1982) favoured government intervention in markets as a measure designed to improve the quality of products.

Why does this market deception persist? The competitive model assumes perfect information on all aspects that really matter. If there is inadequate information - and the consumer knows it - then the individual has reason to acquire units of information up to the point where the marginal benefit equals the marginal cost of search (Stigler, 1961). However, we will demonstrate in this paper that resources may be deployed to ensure that critical information is concealed resulting in too few units of search being under-

taken. This matters much because it can lead to the lemons equilibrium described by Akerlof (1970).

Previous studies have recognized that there are some circumstances where a measure of fraud is likely. The main contribution to this theme is Darby and Karni (1973). Prior to that Nelson (1970), had identified search and experience qualities of a good (characteristics evident prior to purchase, and characteristics evident only after purchase, respectively). To this useful metric, Darby and Karni added "credence" qualities. These were defined as worthwhile characteristics that cannot be evaluated in normal use. That is, the assessment of the characteristics requires additional costly information. Thus the buyer must trust the judgement of the seller about the need for, or the value of, the "credence" good. This analysis is particularly useful for Darby-Karni problems where the seller is responsible for both the diagnosis (demand) and service (supply). In this context Darby and Karni establish the conditions under which an "optimal" amount of fraud is likely. An impressive number of important implications result from their analysis. Yet the analysis is, in an important sense, incomplete. It does not deal with a class of cases requiring expenses to conceal information which might be important to consumers. In the Darby and Karni model, the seller is passive with respect to the characteristics; whereas, in our model, resources are expended to "move" characteristics away from the "search" end of the spectrum. We explore this broader problem concluding that the misallocation of economic resources is significant. None of this shakes the Darby-Karni conclusion that there is some optimal quantity of fraud which must be tolerated. But our work suggests an optimal framework of incentives which can lower the quantity of fraud from the level which exists when incentives favor concealment.

The organization of the rest of the paper is as follows. In section 2, The Economics of Concealment, a simple heuristic model is developed and interpreted. Section 3, Factors Affecting Concealment, contains a discussion concerning the revenue, technological and cost impacts upon the decision to conceal. Finally we offer a brief conclusion in section 4.

The Economics of Concealment

It is necessary to recognize that some sellers may be well rewarded for (ill informed) sales of products which have defects, if these defects pertain to experience or credence characteristics of the product (in either case not detected before the sale). The hazards or the defects may be unimportant - or they may be absolutely vital. A method of viewing this is to posit that many products yield characteristics that are both good and bad. Cigarettes, for example offer both nicotine and carcinogens. In general, we use the word malefit to cover the sum of the negative characteristics. We are therefore interested in both goods and their defects (bads).

The production of any good (X) can be represented as

$$X = f(K, L) \quad (1)$$

where f is assumed strictly quasi-concave and given the cost of inputs P_K, P_L , cost minimization yields the cost function:

$$C = C(X, P_K, P_L) \quad (2)$$

If there is competition in the input markets, the function can be simply expressed as

$$C = C(X). \quad (3)$$

If a defect or a "bad" is associated with product X we may hypothesize that Y, the quantity of "bad" produced is such that

$$Y = Y(X) \quad (4)$$

where $Y \geq 0$ and $Y' > 0$ and $Y'' \geq 0$, i.e., the bad is an increasing function of the good. With a defective car this might be a linear relationship; with pollution or with a drug like clioquinol $Y'' > 0$ may be more plausible. For all products or services with non-zero Y, where there are positive amounts of malefit generated, the seller may employ any of three strategies: (i) ignore undesirable properties, (ii) devote resources to eliminate undesirable properties or (iii) devote resources to concealment. By considering each in turn we are able to examine the implications of each strategy.

Ignore Malefits. For $Y > 0$ this strategy requires the seller to recognize potential additional costs: the costs associated with being apprehended. Section 2 (ii) covers firms which intend to honour guarantees or to compensate consumers fully. The extra costs following apprehension for a firm employing strategy I may depend on voicing rates or on consumer complaint skills. In brief, if P_A is the probability of being apprehended, and C_A is the direct cost of being apprehended (where $C_A > 0$), the additional cost is $P_A(Y) \cdot C_A(Y)$, where $P_A^T, C_A^T \geq 0$. Since normal practice excuses many defects under the caveat emptor principle, the word "apprehended" means being found out - not necessarily going to court - for discovery of any malefit implies at least a loss in goodwill. Further, the discovery

of the malefit could lead to voicing expenses or to exit on the part of consumers and to a corresponding reduction in revenue for the firm.

Let $R(X)$ be revenues if the bad is concealed and $\bar{R}(X)$ be revenues if the bad is seen where

$$\bar{R}(X) \leq R(X). \quad (5)$$

If $P_A(X)$ is the probability of apprehension, and $1 - P_A(X)$ is the probability of non-detection then with risk neutrality the expected profit π_1 is

$$\begin{aligned} \pi_1 &= (1 - P_A)(R(X) - C(X)) + P_A[\bar{R}(X) - C(X) - C_A] \\ &= R(X) - C(X) - P_A[R(X) - \bar{R}(X)] - P_A C_A \end{aligned} \quad (7)$$

Let $D(X) = R(X) - \bar{R}(X) \geq 0$ with $D'(X) \geq 0$ thus

$$\pi_1 = R(X) - C(X) - P_A[D(X) + C_A]. \quad (8)$$

Simple maximization yields the profit maximizing output level X_1^* and the maximum expected profit, $\pi_1(\max)$.

Abatement or Elimination of Malefit. Let π_2 be the expected profit when this strategy is employed. Let Z equal the quantity of abatement, thus

$Z = -\alpha Y$ where $0 \leq \alpha \leq 1$. [$\alpha = 0$ implies strategy 1, i.e., do nothing, and $\alpha = 1$ implies complete elimination.]

Now assume

$$Z = -\alpha Y = F(Y, \alpha) = F(Y(X), \alpha) \quad (9)$$

and thus the cost of abatement C_{AB} ,

$$C_{AB} = C_{AB}(X, \alpha) \quad (10)$$

whereas the "new" level of malefit is $(1 - \alpha)Y = (1 - \alpha)g(X)$ and thus the probability of apprehension due to residual malefits will be reduced to $P_A[(1 - \alpha)Y]$ from $P_A(Y)$ and a corresponding reduction in C_A may eventuate.

This happy outcome is akin to "Honesty is the best policy." The cause, though, may have little to do with ethics and more to do with the expected level of expenses for product improvement, repairs, or warranties when appraised against the expected expenses of concealment.

In terms of our previously established notation the expected profit of this strategy π_2 is

$$\begin{aligned} \pi_2 &= R(X) - C(X) - C_{AB}(X, \alpha) \\ &\quad - P_A[(1 - \alpha)Y][D(X) + C_A] \end{aligned} \quad (11)$$

Again this may be solved to yield output level (X), level of abatement (α) and maximum expected profit $\pi_2(\max)$.

Hiding the "bads". The cost of hiding information may be assumed to depend upon the quantity of bad produced and the desired level of concealment. Let the quantity of concealment be h where

$$h = -\beta Y = h(Y, \beta), \quad 0 \leq \beta \leq 1 \quad (12)$$

[where $\beta = 1$ is complete concealment and $\beta = 0$ implies there are no resources devoted to concealment, i.e., strategy 1 of no action], and thus the cost of concealment C_H

$$C_H = C_H(h, Y) = C_H(\beta, Y) \quad (13)$$

If $0 < \beta < 1$ the perceived amount of malefit is as if $(1 - \beta)Y$ of malefit were actually produced, although Y is in fact produced.

If we allow the expected profit π_3 to be the profit accruing when strategy 3 is employed then

$$\pi_3 = R(X) - C(X) - C_H(\beta, Y) - P_A((1 - \beta)Y) [D(X) + C_A] \quad (14)$$

and $Y = g(X)$.

Again the maximum expected profit $\pi_3(\max)$, the profit maximizing output level X , and the quantity of concealment may be determined.

Thus we are now in a position to compare the three strategies. Now if $\pi_3(\max) > \pi_2(\max)$, or $\pi_1(\max)$ i.e. the expected profit following concealment is greater than the expected profits following either strategy (i) or (ii) then resources will be expended upon concealment.

The general proposition involved here is that, if economic enterprises are not to be run as social services but as profit maximising firms, then in certain predictable economic circumstances, resources will be devoted to concealing unfavourable information.

There are two particular cases of note:

$$A) \quad \pi_3(\max) > \pi_2(\max), \pi_1(\max) \text{ where } \pi_1(\max) ; \pi_2(\max) < 0 ; \pi_3(\max) > 0 \quad (15)$$

$$B) \quad \pi_3(\max) > \pi_2(\max), \pi_1(\max) > 0. \quad (16)$$

In case (A) the product would not be produced unless there is concealment of the malefit. Here not only are resources being diverted to concealment, additionally we witness production of an inappropriate product.

In case (B) again we witness the wasteful diversion of resources in order for the firm to enhance profits.

In either case economic rationale implies that resources will be diverted wastefully into the production of concealment. We now focus our analysis on the individual factors affecting concealment and on some potential policy implications.

Factors Affecting Concealment

Assuming the firm chooses to conceal malefits, then we have expressed the expected maximum profit π_3 ,

$$\pi_3 = R(X) - C(X) - C_H(\beta, Y) - P_A((1 - \beta)Y) [D(X) + C_A] \quad (17)$$

where $Y = g(X)$

i.e. $\pi_3 = F(X, Y, D(X), \beta, C_H, P_A, C_A)$

We wish to focus upon the importance of the impact of $D(X)$, β , C_H , P_A and C_A . These factors are:

- $D(X)$ - marginal revenue impacts
- β - technical productivity factor
- C_H - cost of hiding
- P_A - probability of apprehension
- C_A - cost of apprehension

Broadly speaking these parameters represent revenue, technological and cost impacts.

$D(X)$ - Marginal Revenue Impacts. This effect depends on the selling price or the price elasticity of demand as governed by competitive conditions in the output market. In general the situation calls for an absence of competition or at the least goods with experience/credence qualities. Concealment is inconsistent with perfect information and usually becomes worse as monopoly is approached.

In the longer run MR is affected significantly by whether the seller expects a "once only" sale, or if repeat transactions are a possibility. In the latter case the expected discounted value of future sales becomes significant. This explains why a consumer is at greater risk facing a travelling salesman at the door than facing the community shop-keeper. It also has much explanatory power in high risk markets in the third world. This situation can be posed as the repeat transactions condition: the lower the expected number of repeat transactions, the more likely is concealment. This condition parallels a Darby and Karni conclusion concerning the optimal amount of fraud.

β - The Technical Productivity Factor. The marginal price of concealment depends on technical factors and their ability to conceal defects, hazards etc. from consumers. We have for heuristic purposes simplified these factors in our " β " term. However, this impact is complex in that it depends on the balance between the march of science (at deception) and the consumer's investigation/interpretation skills. The second part is, in our view, important, but it has been discussed elsewhere as consumer search capital (Kerton, 1980) and we will set it aside here.

The productivity of deception is perhaps highest when resources of the state are used to produce the misinformation. This point is made all too clearly in George Orwell's Nineteen Eighty-Four with the "Ministry of Truth". Few dictatorships espouse consumer rights, and in the international arena, government-owned suppliers have been a special problem. It would be comforting if market-oriented economies were immune to this sub-

type of concealment of negative information, but this is not always the case. A telling example was provided by the United States Department of Defence at the time when 6000 sheep were killed or sickened on land near the Utah site where nerve gas was being tested. Initially the Army denied that it was testing the lethal gas at that time, and subsequently it denied that there had been a malfunction in the test. Later it would not release an unclassified summary of the accident. From the evidence it seems that other accidents may have occurred but that earlier efforts at concealment were effective, so no search costs were undertaken (Science, 1968; pp. 1460-4).

Another most efficient concealment device (as measured by the quantity of concealment per unit of cost) is self-governing boards created by the licenced professions in many countries. These agencies can conceal malefics and keep information from spreading, indicating the technical productivity of this method of concealment. A list of tactics which we think can be used to hide information, and a set of policies to improve the situation are given in Slayton and Trebilcock (1978). More generally, analysts refer to this strategy as regulatory capture.

Aside from public goods which are misused for concealment, the science of deception is well developed and has been for a long time. In a review of adulteration practices in the 1700's one author details how intermediaries supplied bakers with "sharp whites" (flour containing alum) to be mixed in with old flour so that bread that would otherwise be grey would turn out white (Accum, 1820). Industry was organized to supply the adulterants. Accum writes: "There are wholesale manufacturing chemists, whose sole business is to crystallize alum, in such a form as will adapt this salt to the purpose of being mixed in a crystalline state with the crystals of common salt, to disguise the character of the compound." (1820; p.136). Even in the 1700's industry could supply bakers with two grades of defective pepper and a broad range of other adulterants. Thus throughout history we have had a supplying industry responding to market incentives and providing resources to help produce concealment. "Food adulteration, in fact, is a highly organized industry in India." [Mandanna, 1982; p. 31]. In India one can buy white stones ground precisely to resemble rice, or wood created as a careful imitation of wheat.

There is no need to go to the Third World for examples. When we know more about Industrial Bio-Test labs (IBT) we may learn that the market has responded to the demand for (pseudo-) scientific tests which conceal hazards from the Food and Drug Administration. There seems to be no doubt that IBT sold fraudulent results of tests. An official from the Food and Drug Administration discovered - all too much by chance - "reports on the use of live test animals after they had been reported killed in earlier experiments." (Science News: 1981: p.11). In addition "IBT's records showed evidence of ... data that had been doctored to obscure potential harmful effects of

chemicals." (Science News, p.11). Next, we need to know if there was an especially high chance that IBT would be chosen as the tester for those products which were thought to be exceptionally dangerous. Sellers of effective products and these without serious side effect have just as much interest in policies which can remedy this situation as do consumers. Honest sellers are, after all, threatened by the extinction guaranteed by a 'lemons equilibrium'. The first step toward a workable public policy is to recognize that in certain economic circumstances, state-of-the-art technology can be used to affect the technical productivity factor.

The Private Cost of Concealment. The hiding of information (or the provision of misinformation) is not always criminal in nature. Even so, it is helpful to adopt Becker's approach to the economics of crime (1968). Concealment is a risky activity because unsuccessful attempts to hide negative information or to provide untrue positive information may be punished - sometimes by law but more often by the exit or voice of consumers. The main variables in determining the private cost are:

$$C_H + P_A(C_A + E)$$

where we previously defined
 C_H as the direct cost of hiding information
 P_A as probability of being apprehended
 C_A as the cost of being apprehended
 and we introduce E to account for any personal psychological cost from embarrassment.
 Let us examine the components in more detail

Direct Expenditure on Hiding: C_H . In his famous essay on dissimulation, Sir Francis Bacon argued that there is "great advantage" to a policy of less than perfect information, one reason being "... to lay asleep opposition ..." (Selby, 1955; p. 14). Evidently he felt that

$$C_H > 0$$

$$C_H < 0$$

for he argued for "dissimulation in seasonable use," possibly having in mind some notion of law of variable proportions, and certainly having in mind an optimum quantity of resources to allocate to hiding.

It may well be that a small number of product failures need not be hidden while increased sales provide enough public examples of failures to attract the attention of potential consumers. In a routine case, C_H may merely be the cost of an advertising campaign (for an inferior brand) to produce enough noise to confuse consumers. Or, after a testing organization publishes results, a manufacturer may change only the product identification number - or he may announce that the product is "new". A simple example of C_H is the expense for financing the Tobacco Research Institute which published research down-playing the risk of cancer. Ralph Nader's Unsafe at Any Speed (detailing known defects in the Corvair) provides in this framework, another example of concealment.

There is also a natural condition which makes concealment easy or costly: some malefits are intrinsically harder to see. Disposable bottles may be more visible than tariff malefits. Or hydrogen fluoride may be less easy to "find" than sulphur dioxide, but more harmful. The United States Congress apparently believes this, for, partly in response to 17 million accidents from products used around the home, a 1972 law passed because, among other things: "The Congress finds that - ... (2) complexities of consumer products and the diverse nature and abilities of consumers using them frequently result in an inability of users to anticipate risks and to safeguard themselves adequately ..." (1973).

At a minimum we can pose the condition that "concealment will be less costly when products and services are complex".

The Probability of Being Apprehended, P_A . If concealment is even partly successful, it will reduce the portion of consumers who find out about the malefit. Beyond that is another important factor. The legal system fails to recognize that information lags and prosecution costs (including time and anxiety costs) make it economic for offenders to operate on the assumption that only a few of those afflicted will be willing to bear the expenses of finding out their rights and exercising them. For example, experience shows that some automobile insurance companies, even when their liability is clear, have made a practice "of completely denying small claims or attempting to apportion fault." A consumer who understands this may correctly decide not to complain - reducing P_A . Unfortunately, this structure of incentives is counter-productive because, the lower the probability of being apprehended for concealing a malefit, the more resources will be devoted to concealing the malefit.

Routine methods which may be employed by the firm for lowering P_A are, first, a campaign to delay or reject legislation, and secondly, if necessary, opting for a regulatory agency. Next is the placing of sympathetic persons in the sensitive positions, usually on the grounds that only "interested" people have the expertise needed. There are several dimensions to this problem: first there is widespread doubt that regulators can regulate in the first place. If that is not sufficient, there is the above mentioned problem that those to be regulated have an economic incentive to invest in the selection of "suitable" appointees. This can be handled as part of standard investment theory. Regulatory capture is a singularly effective way to lower the probability of being caught concealing information. In its worst form it would be the lemon producers getting the job of catching themselves - and getting paid for their lack of zeal at public expense. Finally, regulatory boards, for their own bureaucratic reasons (perhaps to "protect" themselves) conceal information as a matter of course. This implication is drawn clearly in Darby and Karni (1973). The upshot is that some alleged policing effort really operates to lower the probability of being caught. In general, the probability of

being apprehended is low whenever the effective policing effort is low.

The Costs of Being Apprehended: C_A and E. Becker's treatment is again a useful start: "Mankind has invented a variety of ingenious punishments to inflict on convicted offenders: death, torture, branding, fines, imprisonment, restrictions on movement and occupation, and loss of citizenship ..." (1968; 179). These pre-require social action to generate the legislative rules which will actually impose the penalty. Anyone who has observed the inability of the courts to conduct economic analysis will agree at least with Stigler's claim that "... the penalty structure is not well designed for either deterrence or guidance of enforcement" [1970; 534]. For the set of consumer problems addressed by the use of courts, C_A can almost always be increased by changing the problem into a simple two party case by allowing class action suits. Further, restitution orders could be more widely used. More importantly, use might be made of lump sum repayments where the members of a class injured by a deceptive practice could not readily be ascertained or where pecuniary loss suffered by the members was too small to justify individual payments. Even so, the best intentions may pave a road which goes astray, as was illustrated by the Profile Bread gambit. The makers of Profile Bread advised weight-watchers that its product had fewer calories per slice - without providing the information that this triumph of twentieth century ingenuity was achieved by cutting the slices thinner. The company was required by the FTC to devote 25% of the next year's advertising budget to correcting the misinformation. This noble intent to increase C_A did not succeed because, under the ruling, the optimal advertising budget quickly went to zero. [See Consumer Reports, 2972; 525-6].

Beyond the court approach to influence C_A is a second set of costs imposed through effects on market shares (discussed above as MR). A third type of costs can be levied by consumers either individually or acting in concert, and many of the policies available are listed as "leverage in seeking redress" in Maynes [1976; pp. 207-245].

Some of these strategies for leverage attempt to raise E, the cost of embarrassment to the seller. Clear gains are often possible, though some sellers are immune to embarrassment, responding only to costs which affect the financial statements. An illustration is provided by the misinformation about breast milk substitutes provided by marketing tactics such as having salespersons dressed as nurses. An effort was made to shame the companies into more ethical behaviour; but policies affecting the E term were less effective than the products boycott directed at the financial variable (MR above). There are many socio-market circumstances where E appears to have a value of zero, implying that in the short run E is not susceptible to consumer policy. In markets in the Philippines sellers often take pride in deceiving consumers (Montiel, 1977). "In Thailand, as in many LDC's, chicanery is not unethical - it is a game" (Thorelli and Sentell, 1982; p. 156).

If P. T. Barnum uttered "There's a sucker born every minute" he may not have felt a high E value. The history of U.S. pharmaceutical regulation shows certain firms to be immune from any pangs of conscience. When Dr. James L. Goddard became commissioner of the Food and Drug Administration in 1966 he was "shocked" at the quality of some of the test data being submitted by drug companies. He protested "... the deliberate choice of clinical investigators known to be more concerned about industry friendships than in developing good data ..." and very much to our point the protested "... conscious withholding of unfavorable" results [Mintz, 1976]. In 1985 the U.S. Justice Department filed charges against Eli Lilly & Co. for failing to tell the government about four deaths and six illnesses related to its arthritis drug Orflex. Lilly pleaded guilty to 25 counts. Business Week (1985) reported that "Lilly down-played the charges as technical misdemeanors." On the basis of the experience of the International Organization of Consumer's Unions, it does appear that the level of conscience exhibited by corporations differs across industries. On average, Lydenberg et al (1986) found that corporations making dog foods rated much higher than companies making remedies (pharmaceuticals etc.) for people. If the standards used in Rating America's Corporate Conscience are consistent, these performance differences may indicate something about "corporate cultures" or perhaps about a disequilibrium consistent with Akerloff's general argument on "lemons".

A high E value has often been evident whenever wine deception has been discovered. Where a family name is at issue, the psychic cost has led to suicide, most recently with the Cruse marque and a self-imposed death penalty administered by jumping from a bridge in Bordeaux. We argue that this psychological cost is an important explanatory variable - but not that it is novel, since it plays a central role in Adam Smith's Theory of Moral Sentiments. In general, and when both psychological and financial costs are included, the condition governing cost factors is as follows: When the cost to be borne by a seller who is apprehended concealing malefit is low, deception is relatively more profitable (π_3 increases), and this is exacerbated whenever the psychic costs of embarrassment are also low.

Conclusion

As Aristophanes indicated, many of the evil events arise not so much from evil persons, but from more fundamental causes. An approach which examines the economics of concealment shows that the set of incentives facing sellers will sometimes lead to a decision to devote resources to hiding negative information (when $\pi_3 > \pi_2 > \pi_1$). Whenever this expenditure is successful, what the consumer sees will be different from what the consumer gets. It affects the way a market functions because the active use of resources to conceal information impedes the shift of purchases toward sellers with superior offerings, making the "lemons" outcome more frequent.

The recognition of this imperative to conceal has importance which is absolutely fundamental for welfare economics. It also has considerable significance for consumer policy because it means that instead of working on a long list of "evil events" piece by piece, we can be more productive by addressing the major variables affecting the incentive structure itself. This paper identifies some of the major variables as (i) the revenue to be gained from concealing information (ii) the technical productivity of the hiding effort (iii) the probability of being apprehended and (iv) different types of costs of being caught. Much research remains to be done on precise policies to address each of these variables. Alternative regulatory regimes need to be re-appraised and information policies need to be re-evaluated. We believe these projects will have a high payoff.

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- Janet L'Abbe, Ann Wendt and a number of other persons have helped with this work and we are most grateful. E. Scott Maynes provided a detailed critique of an earlier version presented at Cornell University. Referees for the A.C.C.I. also helped with a list of very constructive suggestions. Remaining errors, concealed or not, are our own.

INFORMATION AND DISINFORMATION

John Thirlwell, Consumers' Association

These are three interesting and related papers, with mathematical or statistical analytical backgrounds.

Taking the papers in order, Friedman deals with car purchases. For most consumers, this is the second largest purchase. Only after house purchases. However since the life of the automobile is limited, it is a more frequent purchase and one that in many instances means second-hand.

So because of the magnitude and frequency of the purchases good consumer information is essential.

Consumer information is provided regularly by Testing Organisations such as Consumers Union in the US and my organisation Consumers' Association in the United Kingdom. Our magazine, *Which?*, usually considers related models from year to year and improvements or disasters are set out in the text of the report.

However, we would agree with the results adduced by Friedman. Faults tend to persist, arising from defect. In this respect I would commend that both designers and producers should study the newly published Standards ISO 9000-4 for a current view on production procedures. Similarly BS 5760 deals with Reliability and the forthcoming BS 7000 with Design. Many of the emergent problems set out by Friedman are possible to eliminate if the new procedures are used and they should be. But the main criticism of the paper is that the studies are limited to one organisation and it may be that these results are tests of the consistency of the work of Consumers Union rather than of the manufacturer.

Mary Carsky deals with the sale of meat. No doubt marketers are re gratified by these results based on a small sample. Sales did improve as a result of offering information. But did this mean that the total meat purchase by a shopper actually increased or only that the purchase was transferred from one shop to another. And did this mean that there was a reduction in other purchases.

The real criticism is of the predisposition of the shopper. Did the participants really just like meat so that they just had a prejudice confirmed or would they have reacted similarly to an information campaign on Fish or Vegetables? We do need to study this kind of sample much more deeply.

Finally to Kerton. We all suspected these results could be found! And even Bob Kerton took a little time before he actually set out this study.

Clearly the function of a marketing Department is to market a product. If it is a duff product, so be it. It is probably possible to give a bad dog a good name, especially if there is a good commercial profit in sight.

Promotional techniques can be and are used to develop political action, and often without regard to the merit of the product. Criticism of the private standards of Fundamentalist religious leaders illustrate this point contemporaneously. There is a danger that commercial success may be mistaken for moral or practical success.

Kerton shows that deception may well pay.

It is clearly shown that there are three courses of action, and for the consumer the best is to eliminate the defect. If it is retained, at least tell the truth. Consumer movements are based upon the need to tell the truth, but in substance this paper shows that it may well be that deception may well be more profitable.

The obvious examples are the consumption of tobacco, which is known to be damaging to health, but is still promoted extensively and deceptively, and of course alcohol which can be regarded as poison, but which is sold and promoted with remarkably little restriction. These are dangerous products deliberately produced and marketed with little regard to the social and medical consequences.

I enjoyed this task, the papers discuss problems as a whole, as statistical approaches do, and may conceal much detail in their content. The authors should all continue with their works for these are areas where there is plenty to learn.