

found that increased longevity had not been met by spending cuts which would enable people to maintain their real consumption over longer lifetimes. If such is the case, then asset decumulation should take place at a more rapid rate as a person ages.

Bernheim (1987) used the Longitudinal Retirement History Study data collected from 1969 to 1979 to explore bequeathable wealth. He determined that wealth declined at rates of 3 to 4 percent per year for single persons and at rates of about 1 to 2 percent for married couples. He concluded that retirement aged individuals and couples did not dissave any significant fraction of their total resources. However, he included housing in the wealth measure. While this is a bequeathable asset, it is not an asset retirees usually manage in the same sense that they manage financial assets. Also, during the time of data collection, real estate values escalated and thus the low rates of wealth decline in part reflect higher housing values.

Hogarth (1987) explored changes among assets during retirement. She determined that changes in other assets and socio-economic factors affected the difference over time in a given asset. While she explored changes in total financial assets, she did not focus on whether these changes were positive or negative, nor the relative magnitude of these changes.

In summary, there is evidence that people dissave during retirement although levels of dissaving appear to be low. However, few researchers have explored the factors affecting dissavings and none have considered factors associated with disproportionate dissavings.

MODEL

The model posited for this study follows from that used by Hogarth (1987) to study determinants of changes in assets. Savings or dissavings is expected to be a function of the initial level of financial assets at retirement and a set of socioeconomic variables which are likely to affect asset use:

$$\text{Save} = f(A_t, Z)$$

where

Save = 1, if the sum of financial assets in $t+n$ are greater than or equal to the sum of financial assets in t

A_t = initial value of financial assets in t
 Z = a vector of socioeconomic variables, measured at $t+n$.

The focus of this study is on financial assets (bonds, stocks, cash balances in checking and savings accounts, etc.) over which the household has some control and can manage to provide interest and/or dividend income. It is the case that owner occupied housing represents the largest asset of most retired households, but liquidity and ability to "manage" the house as an asset are problematic. Therefore, only financial assets will be considered.

For this study, t is 1971 and $t+n$ is 1979. The specific probit model to be tested is:

Model 1

$$\text{Prob (Save)} = (A_t, \text{Income, Resources, House, MS, Widow, Health, Urban, Education, Age, Sex, Race, Lambda})$$

where

Save = 1 if sum of holdings in savings bonds, stocks and other bonds, checking accounts, savings accounts, and cash value of life insurance in 1979 is greater than or equal to the sum of those holdings in 1971

A_t = sum of initial values of savings bonds, stocks and other bonds, balances in checking accounts, balances in savings accounts, and cash value of life insurance policies in t

Income = income in 1979 from earnings; railroad retirement; military, government and employer pensions, Social Security, SSI; Public assistance; disability benefits from Social Security and others; survivor's benefits; black lung; interest

Resources = estimated amount of accumulated financial resources at retirement (estimated by respondents)

House = change in the market value of the house from 1971 to 1979

MS = Marital status (1 = married)

Widow = change in marital status from married to widowed during the time of the study (1 = widowed)

Health = perception of health compared to others of same age; 1 = health is better or the same as others

Urban 1 = lives in urban area

Education = number of years of schooling completed

Age = age in 1979

Sex 1 = male

Race 1 = white

Lambda = correction factor to account for probability of survival in the sample from t to $t+n$.

The above model will estimate the probability of saving/dissaving during the first eight years of retirement. As indicated, dissaving may not be a threat to a household's economic security and stability if it is in proportion to life expectancy. Therefore, an OLS model was posited in which the dependent variable was the difference between actual value of financial assets in $t+n$ and the expected value of financial assets in $t+n$ if a household were to annuitize assets and spend them down in proportion to remaining life expectancy:

Model 2

$$\text{Difference} = g(A_t, Z)$$

where

Difference = actual value of total financial assets in 1979 minus expected value of financial assets in 1979

A_t, Z = as described above.

Finally, it was of interest to know what factors differentiate severe dissavers (i.e. those spending down assets at a rate faster than expected) from others. Consequently, a probit model was estimated to determine the factors affecting dissaving at rates higher than expected, given a household's life expectancy:

Model 3

Prob (Severe) = $h(A_t, Z)$

where

Severe = 1 if difference variable is less than 0

A_t, Z = as described above.

DATA AND VARIABLES

The sample for this study was drawn for the Social Security Administration's Longitudinal Retirement History Surveys (LRHS) from 1969 to 1979. The LRHS included men and single, widowed, divorced or separated women who were ages 58 to 63 in 1969; there were 11,153 respondents.

Respondents who were working in 1969 but who reported themselves retired in 1971 were included in this study. This controlled the length of retirement and permitted some evaluation of preretirement data. The potential age range in 1971 was 60 to 65. Data from 1979 were used to determine savings or dissavings during retirement; respondents ages in 1979 ranged from 68 to 73. Because data from both time periods was needed, only respondents with "complete" data from 1969 through 1979 were included; the final sample contained 701 respondents.

Of necessity, this is a study of survivors. Since the LRHS contains information from widows of respondent males, there is some control for married couples. No such control exists for single persons, however. In an attempt to control for this sample selection bias problem, a probit equation estimating survivorship was estimated on the 1000 cases with data in 1971.¹ The Mills ratio (Heckman's lambda) from this analysis was then used as an independent variable in the models. Significant coefficients on this "lambda" variable would be an indication of bias problems created by factors associated with survivorship.

Expected values of financial assets in 1979 were calculated by estimating the household's life expectancy, based on age of head, using actuarial tables. Life expectancy was then used in creating an annuity factor and applying this annuity factor to the value of financial assets in 1971. The difference between the actual value of financial assets in 1979 and the calculated expected value became the "difference" variable. For example, if a household head was 62 in 1971, his life expectancy would be about 21 years (actuarial values based on age and sex were used to determine life expectancy). By 1979, the household should have spent down or dissaved

8/21sts (38 percent) of their financial assets if they were annuitizing them, leaving 13/21sts (62 percent) of the original amount in 1971. The expected value of the assets (in the example, .62 * financial assets in 1971) was then compared to the reported value in 1979 to determine if dissavings had occurred at rates slower or faster than expected.

In Model 2, this difference variable was used as a continuous variable to explore factors associated with dissaving at disproportional rates. In Model 3, the difference variable was a categorical variable, taking on a value of 1 if the difference variable was negative (i.e. if the actual value in 1979 was lower than the expected value in 1979, an indication of severe dissaving).

RESULTS

The results of the probit analysis of Model 1 are presented in Table 1 along with the means and proportions of the independent variables. Nearly half (46 percent) of the sample had higher financial asset holdings in 1979 than in 1971, and thus are defined as "savers."

The initial value of assets held, value of owned housing, marital status, becoming widowed, living in an urban area and education were significant determinants of the probability of saving during retirement. Because probit coefficients are not easily interpreted, the marginal effects of each variable were calculated and are presented in Table 1.

Among the significant variables, a higher initial value of assets was associated with a reduced probability of savings. This is somewhat as expected, since households may purposely built up assets prior to retirement in anticipation of withdrawing and spending down these assets. Higher housing values were associated with increased probabilities of saving, as were being married, becoming widowed, living in an urban area, and having more years of schooling.

It is important to note that the marginal changes in the probability of savings are quite small; for example a \$1000 increase in the initial value of assets would decrease the probability of saving by only .002. The largest marginal effect seems to be for those who are married.

Regression and probit analysis results for Models 2 and 3 are presented in Table 2. The average value of financial assets in 1979 was \$25,862. The average expected value of these assets, assuming respondents annuitized their financial assets and dissaved some amount annually, was \$14,438. The average difference was \$10,966; the fact that this is a positive amount indicates that on average actual values in 1979 were higher than expected values. However, nearly one-fifth (about 19 percent) of the sample dissaved at rates faster than predicted by the life cycle hypothesis.

Table 1
 Model 1: Probability of Saving During Retirement
 (t-values in parens)

Variable	Mean/Prop	B _i (probit)	Marginal Effect
Income	8574.64	.0000275 (1.86)	.00001
Resources	14317.55	.00000104 (.53)	.0000004
Initial Value	25375.04	-.0000076 (3.55)	-.000002
House	14231.83	.000014 (4.02)	.000005
MS	.76	.7599 (2.55)	.056
Widow	.22	-.4411 (2.63)	.036
Health	.69	-.1510 (1.06)	-.004
Urban	.58	-.8971 (6.47)	.002
Education	10.06	.0437 (2.03)	.016
Age	71.28	.0557 (1.27)	.021
Sex	.86	.1596 (.50)	.007
Race	.95	-.6348 (1.92)	.004
Lambda	.48	-1.6214 (1.52)	-.624
Constant		-3.3911 (1.08)	
Save = 1	.46		
N	471		
Log likelihood ratio *-2	142.916		
P(Save), at means/mode	.35		

Table 2
 Models 2 and 3: Dissaving in Proportion to Life Expectancy
 (t-values in parens)

Variable	Mean/Prop.	B _i OLS	B _i (probit)	Marginal Effect
Income	8574.64	1.447 (5.24)	-.00008 (4.10)	-.00003
Resources	14317.55	.069 (1.72)	-.000003 (1.24)	-.000001
Initial value	25375.04	.135 (3.01)	.00001 (5.12)	.000003
House	14231.83	.056 (1.12)	.000002 (.68)	.000007
MS	.76	4194.569 (.76)	-.896 (2.93)	-.052
Widow	.22	-200.862 (.06)	-.033 (.16)	.003
Health	.69	784.315 (.28)	.014 (.08)	.001
Urban	.58	-9275.425 (3.49)	.810 (4.66)	.067
Education	10.06	905.866 (2.18)	-.048 (1.97)	-.018
Age	71.28	613.924 (.72)	-.064 (1.26)	-.024
Sex	.86	-2409.702 (.43)	.218 (.77)	.020
Race	.95	2568.381 (.43)	-.161 (.47)	-.014
Lambda	.48	-19786.062 (.96)	.323 (.26)	.124
Constant		-45958.71 (.75)	4.418 (1.19)	
Actual value of financial assets in 1979	25862.40			
Expected value of financial assets in 1979	14438.80			
Difference	10966.80			
Severe	.185			
N	471			
R ² /Log likelihood * -2		.29	97.121	
Prob(severe), at means/mode	.398			

Turning first to the OLS regression results, income, initial value of assets and education were positively associated with the difference variable, while living in an urban area was negatively associated with the difference variable. Again, many of these effects were quite small; a \$1 increase in income was associated with a \$1.45 increase in the difference between actual and expected values and a \$1 increase in the initial value of assets was associated with a \$.13 increase in the difference variable. Living in an urban area appears to be quite costly for retirees, as the difference between actual and expected values was smaller than the difference for non-urban residents.

A slightly different set of variables achieved significance in the probit analysis of those who experienced severe dissavings (defined as dissaving at a rate faster than expected actuarially). Income, initial value of assets, marital status, and living in an urban area were all significant determinants of the probability of severe dissavings.

Again, marginal effects were calculated and are presented in Table 2. An increase in income was associated with a decrease in the probability of experiencing severe dissaving, as was being married. Higher initial values of assets and living in an urban area were associated with increased probabilities of severe dissaving. This finding with respect to initial values of assets is not as expected, although the increase in probability is quite small. Most of the other marginal effects are quite small; for example, a \$1,000 per year increase in retirement income would decrease the probability of severe dissavings by .03.

DISCUSSION

It is important to note that this study focused on saving and dissaving behaviors during the first 8 years of retirement; since life expectancies ranged from 17 to 26 years, the first 8 years may not provide enough evidence to capture all the factors affecting saving/dissaving behaviors. Also, there are likely cohort effects with this sample which may not make these results generalizable to future generations of retirees.

Nearly half of the retired households in this study continued to save and build assets in retirement. It would be interesting to know why this was the case. Keeping in mind that this study covered the first eight years of retirement, households may have continued to save in response to uncertainty regarding future health expenses and longevity. Given that this cohort was in their 20s during the 1930s Depression, the value and importance of the "nestegg" and of savings may be quite high and old habits die hard. It would be interesting to know if these households experienced any life style or level of living changes in order to maintain some savings.

On the other hand, nearly one-fifth of the sample were dissaving at rates that could not be

sustained during their expected lifetimes. Again, the question is "Why?" Health was not a significant determinant of severe dissaving, nor was becoming widowed. One wonders what will happen to these households if they do not change their rate of resource depletion.

The significant coefficient for income has some implications for consumer educators. If retired households could increase the income generated by their assets, there is less likelihood that they would need to dissave or at least be able to dissave at rates which would not totally deplete their resources. While retirement nesteggs are not venture capital, there are safe, higher return alternatives to the savings passbook. Retirees may benefit from exposure to and education about these alternatives.

Also, the results point to a need for additional information on appropriate financial management techniques in retirement, including information on dissaving strategies. Unfortunately, little research has been done to clarify appropriate liquidation and other dissaving strategies.

The results with regard to initial value of assets have some policy implications. Higher initial values of assets are associated with lower probabilities of saving during retirement, but with positive increases in the differences between actual and expected values of assets. That is, although households may not be actively saving, they are spending down at an appropriate rate. The case can be made that policies should be developed to provide incentives for building savings for retirement, such as continued support of tax-deferred savings plans.

END NOTES

1. Survival from 1969 to 1979 was hypothesized to be a function of 1971 measures of income, self-perception of health, age, marital status, sex, and race. The probit equation estimated on these variables produced an average probability of survival of .55 and an average Mills ratio (Heckman's lambda) of .68.

Probit Coefficients on Survivorship
from 1971 to 1979

Variable	B _i	t
Income (1000s)	.00045	.06
Health compared to others	.2342	2.12
Health compared to self 2 years ago	.1104	1.09
Age	-.0154	.55
Married	.3538	2.81
Male	-.1747	1.11
White	-.0474	.25
Constant	1.1916	
-2* Log Likelihood ratio	17.87	
N	1000	
Prob (survive) at means,modes	.38	
Average Prob (survive)	.55	

Munnell, Alicia H. (1976), "Private Pensions and Savings: New Evidence," Journal of Political Economy, 84 (No. 5): 1013-1032.

Sharrocks, A.F. (1975), "The Age-Wealth Relationship: A Cross Section and Cohort Analysis," Review of Economics and Statistics, 57 (No. 2): 155-163.

Sobol, Marion Gross (1979), "Factors Influencing Private Capital Accumulation on the 'Eve of Retirement'," Review of Economics and Statistics, 61 (No. 8): 585-593.

REFERENCES

Ando, Albert and Franco Modigliani (1963), "The 'Life Cycle' Hypothesis of Saving: Aggregate Implications and Tests," American Economic Review, 53 (No. 1): 55-84.

Bernheim, B. Douglas (1987) Dissavings after Retirement: Testing the Pure Life Cycle Hypothesis, in Bodie, Svi; Shoven, John B.; and Wise, David A., Issues in Pension Economics. Chicago: University of Chicago Press.

Davies, James B. (1981), "Underlain Lifetime, Consumption, and Dissaving in Retirement," Journal of Political Economy, 89 (No. 3): 561-577.

Hammermesh, Daniel S. (1982), Life Cycle Effects on Consumption and Retirement. National Bureau of Economic Research Working Paper Series, No. 976; Cambridge, Mass.

Hemming, R.C.L. (1977), "The Effect of State and Private Pensions on Retirement Behavior and Personal Capital Accumulation," Review of Economic Studies, 44 (No. 1): 169-172.

Hogarth, Jeanne M. (1987) Changes in Asset Resources During Retirement, in Hampton, Vicki, Proceedings of the 33rd Annual Conference of the American Council on Consumer Interests. Columbia MO: University of Missouri.

Kotlikoff, Laurence; Avia Spivak and Lawrence Summers (1982), "The Adequacy of Savings," American Economic Review, 72 (No. 5, December): 1056-1069.

Lydall, Harold F. (1955), "The Life Cycle in Income, Saving and Asset Ownership," Econometrica, 23 (No. 2): 131-150.

Mirer, Thad (1980), "The Dissaving Behavior of the Retired Aged," Southern Economic Journal, 46 (No. 4): 1197-1205.

ANALYSIS OF THE EFFECTS OF CHILDREN ON CONSUMPTION AND SAVINGS DECISIONS OVER THE LIFE CYCLE

Robin A. Douthitt, University of Wisconsin-Madison¹
 Joanne M. Fedyk, University of Saskatchewan¹

This study examines the effect of children on family savings decisions over the life cycle. The model used is a multinomial logit budget share allocation model. The data are from the 1982 Canadian Family Expenditure Survey Data. Results indicate that children do influence family savings decisions as parents seek to meet increased demands placed on resources as the result of adding a child to the family. First children tend to have the largest influence on asset accrual.

INTRODUCTION

In a recent article, Deaton and Muellbauer (1986) identified three possible ways in which families meet the costs of raising children. They show that parents may substitute out of current consumption, leisure time, or future consumption. In a study of the costs of raising children in Canada (1987) the authors confirm these results, finding that Canadian families (1) substitute out of the consumption of goods like adult clothing and food away from home in order to meet increased consumption demands placed on them by children (2) reduce their labour force attachment when children are young, and (3) substitute out of leisure time and into home production activities to minimize the need to increase current consumption. In addition, the authors examined the influence of children on savings behaviour. The purpose of this paper is to present results from the latter component of our work, examining the extent to which families reduce future consumption by saving less in response to the presence of children. To do this, we apply a multinomial logit budget share allocation model (MLBAM) to Canadian family expenditure data.

METHODS

The "new home economics" (see Becker, 1981; Michael and Becker, 1973; and Pollak and Wachter, 1975) serves as the theoretical framework on which we build. We assume that households derive utility from the consumption of home-produced commodities, one of which is child services. The inputs to the production process are 1) time and 2) market goods which the household purchases with either unearned income or earnings obtained from selling its labour in the market. Utility is maximized subject to time, income, and home production technology constraints. Input demand (expenditure) equations are derived by solving the cost function dual problem for the household's

expenditure function. The functional form of our expenditure equations is based on work by Tyrrell (1979). We estimate expenditures in terms of budget shares specified in logit form:

$$(1) w_i = \frac{e^{f_i(M,Z)}}{\sum_{i=1}^n e^{f_i(M,Z)}} \quad i=1,2,\dots,n$$

where w_i is the budget share for the i^{th} good, Y is family income, Z is a vector of family characteristics (which, for this application of the model, are family size and the ages of family members), and f_i is a function linear in the unknown parameters, with the following specification:

$$(2) f_i(M,Z) = B_{i0} + B_{i1} \ln M + B_{i2} \ln S + \sum_{r=1}^4 B_{i2r} \sum_{s=1}^{S_p} L_r(a_s) + \sum_{r=1}^4 B_{i2(r+4)} \sum_{s=1}^{S_k} L_r(a_s)$$

where M is income net taxes, S_p is the number of parents in the family and S_k is the number of children, a_s is the age of family member s , and L_r is a transformation of the ages of family members, designed to approximate a cubic function (a complete exposition of the model is presented in Douthitt and Fedyk, forthcoming).

Features of the multinomial logit budget allocation model include the fact that it satisfies the Engel and Cournot aggregation constraints (it can also be constrained locally to satisfy homogeneity and Slutsky symmetry conditions). It relates commodity expenditures to a nonhomogeneous function of total expenditures and household size thereby allowing for economies and diseconomies of scale. In addition, it allows examination of the effect on commodity expenditures of adding a certain type of person to a specifically defined family type. Since such effects may vary according to the characteristics of other household members, MLBAM's measure of the influence of family composition on family expenditures does not strictly belong to the Engel "class" of equivalence scales; it is a less generally applicable measure.

DATA DESCRIPTION

The data used in this study were collected as part of Statistics Canada's 1982 Survey of Family Expenditures (FES). They include both expenditure and demographic information collected from a random sample of over 10,000 Canadian households. The scope of the study was limited in several respects because Statistics Canada did not

¹Assistant Professors of Family Economics

release the entire survey for public use. For example, gender of children in a family was not revealed, meaning that the differences in costs and expenditures between male and female children which have been shown to exist (Olson, 1983) could not be examined.

In order to minimize the effects of regional taste and price differences, we chose five regions for our analyses: British Columbia, the Prairies, Ontario, Quebec, and the Atlantic provinces. Our final samples consist of husband-wife families (1) with neither spouse older than 64 years of age, (2) not living on a farm, (3) with all members present the entire year and (4) whose income was not comprised of more than one third income-tested government assistance in 1982. The last criterion removes bias caused by the non-linear budget sets of those whose income is comprised primarily of government transfers (Lane, 1978).

We define savings to include moneys allocated to the purchase of durable goods (including automobiles and home furnishings), securities and stocks, private pension contributions as well as conventional savings instruments. Durable purchases are included in savings because they represent assets to the family and one way that families might reallocate monies to meet the costs of children is to forego the replacement of durables. Most notably missing from this definition of "savings" is payments to mortgage principal. A house represents a family's largest asset, and one might expect that payments to mortgage principal would be influenced by the presence of children. For the first stage of this analysis we include principal outlays as current consumption expenditures. Consumption includes expenditures for non-durable items: food, clothing, transportation (excluding the purchase of vehicles), shelter (including payments to mortgage principal), household operation, recreation, health, personal care, alcohol & tobacco, education, and miscellaneous expenditures.

We estimated a two equation system with dependent variables being the budget shares for consumption and savings in the form specified by (1). Maximum likelihood estimates were obtained using a procedure developed by Tyrrell (1979). In order to be able to examine the influence of children on consumption and savings over the life cycle, we used MLBAM parameter estimates to simulate the changes in consumption/savings budget shares over the life cycle. Predicted budget shares were generated for each year of the life cycle with every family member aging accordingly. For purposes of this paper we chose to simulate expenditures for an "average" Canadian family. The average family was identified by using national statistics regarding family economic, fertility and marriage behaviour. For example, it is assumed that our "average" couple marries when the man is 26 and the woman is 23, the 1982 population average ages at first marriage. Simulations are performed for one and two child families, since average family size for couples with children is 2.2. Consistent with population trends, we assume that the first child is born when the mother is 25 and the father is 28 and the

second child is born two years later. Children are assigned an age of 0 in the year of birth since our sample explicitly excludes part year family members. Further, because the oldest child in the sample is 18 years of age, children are assumed to leave home after age 18.

In order to simulate predicted values of consumption and saving by families, it is necessary to specify a flow of income over the life cycle. We estimated a simple age-earnings profile using our sample of FES families. Separate income streams were generated for families with zero, one, and two children. For purposes of analyzing (simulating) the effects of children on family savings decisions we used only the one- and two-child family income estimates. The income stream of a one-child family was used in the simulations comparing childless and one-child allocation decisions. This implies we are examining the expenditures of a childless couple assuming they face the income stream of a one-child family and comparing those expenditures with that of the one-child family. Alternatively stated we compare the expenditures of an average one-child family with how that couple would have otherwise allocated their same income in the absence of a child. In this way we abstract from potential differences in resource allocation due to income rather than family composition effects between the two family types.

The income stream of a two-child family was used in the simulations comparing one-child and two-child allocation decisions. This implies we are examining the expenditures of a one-child family assuming they face the income stream of a two-child family and comparing those expenditures with that of the two-child family. Alternatively stated, we compare the expenditures of an average two-child family with how that couple would have otherwise allocated their same income in the absence of a second child.

The limitations of using cross-sectional data to draw inferences about longitudinal behaviour should be noted. This type of analysis involves the implicit assumption that couples in their twenties today will behave in ten years the way thirty year old couples do today, i.e. no cohort effects. However, given that to date no one has collected panel data on detailed expenditures that would span over any single family life cycle, consumer expenditure studies with their inherent limitations afford the best insight possible into family spending behaviour.

RESULTS AND DISCUSSION

Regional Analysis of the Effects of Children on Consumption/Savings Decisions Over the Life Cycle

Figures 1 through 4 illustrate the changes in savings shares over the life cycle for childless versus one-child, and one-child versus two-child families for the regions who exhibited the most extreme values: British Columbia families reduce savings the least in response to the presence of

FIGURE 1. Comparison of savings shares over the life cycle: Childless versus one-child families living in British Columbia, 1982.

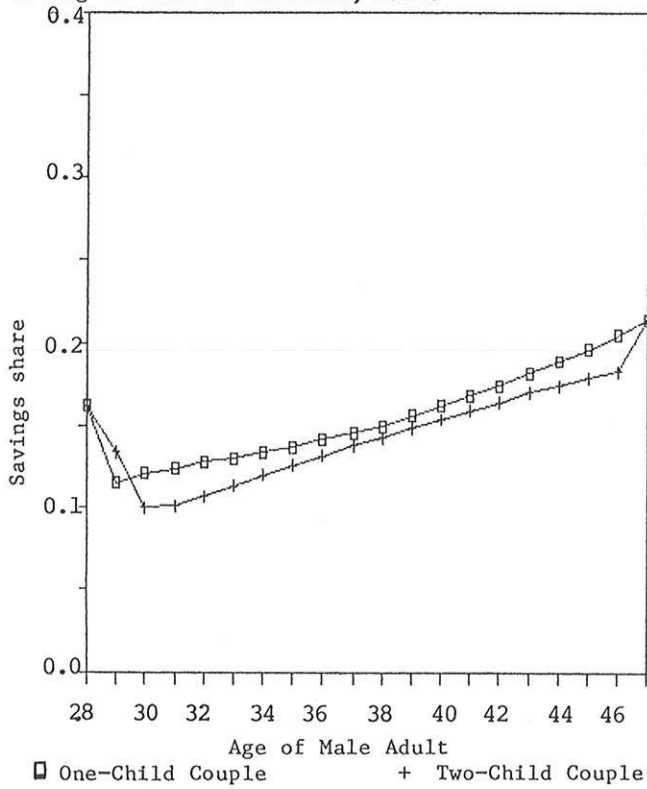


FIGURE 3. Comparison of savings shares over the life cycle: Childless versus one-child families living in Ontario, 1982.

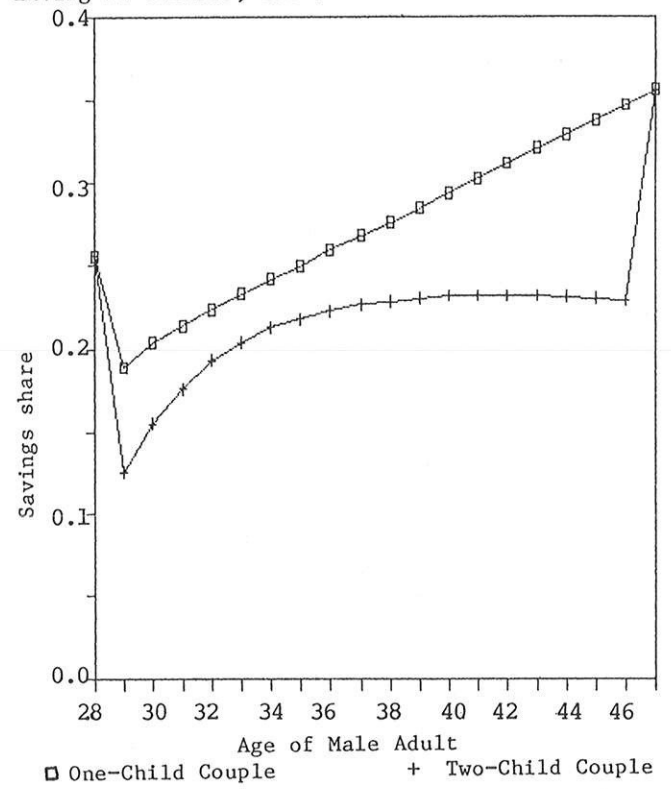


FIGURE 2. Comparison of savings shares over the life cycle: One-child versus two-child families living in British Columbia, 1982.

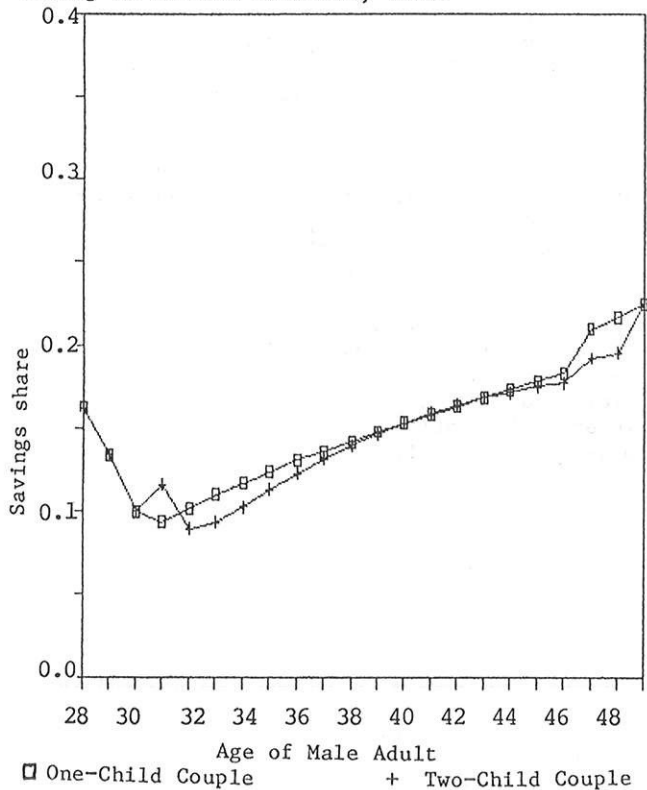
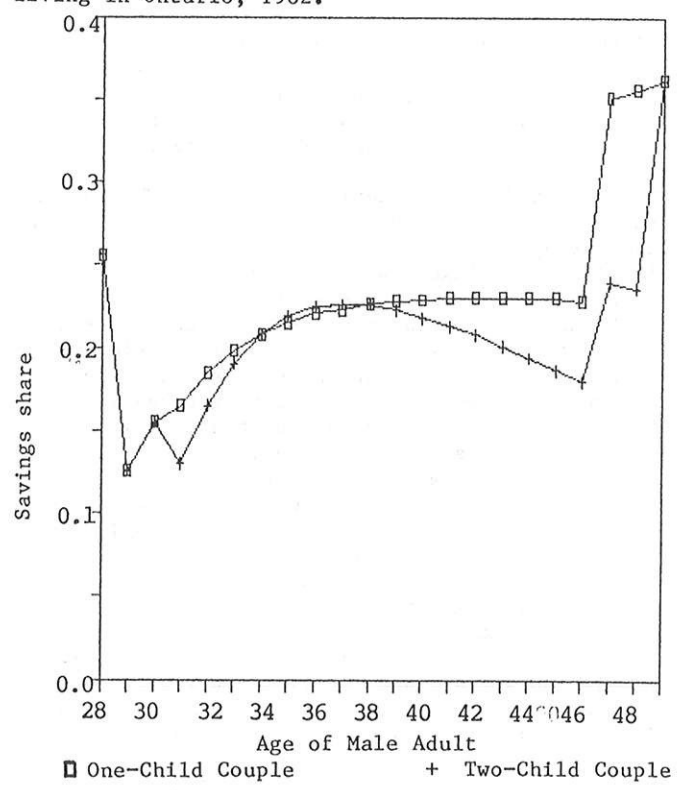


FIGURE 4. Comparison of savings shares over the life cycle: One-child versus two-child families living in Ontario, 1982.



children and Ontario families forego the most savings to meet the costs of raising children. Since consumption and savings budget shares sum to unity, decreases in the savings share represented in these figures can also be thought of as increases in consumption necessary to meet the costs of children. Although magnitudes differ, the basic pattern of change in the savings share for one-child families (Figures 1 and 3) is the same for both regions: dropping initially upon the birth of the child (male adult aged 29), and rising slightly each year, although at all times at a level of savings less than that of their childless counterparts.

Figure 2 reveals that the presence of the second child in British Columbia families precipitates a decrease in savings initially, but that by the time the first child is 10 years of age (male adult aged 39) savings shares for two-child families are identical to those for one-child families, i.e., no additional savings is foregone to meet the cost of the second child. Ontario families respond differently to the presence of a second child (Figure 4). Although savings rates for one- and two-child families coincide, they do so at an earlier point in the life cycle than the savings rates for British Columbia families, and for a shorter period of time. At the point where the shares of British Columbia families converge (first child aged 10), savings shares for Ontario families begin to diverge. Ontario families are more likely to forego savings to meet the costs of their teenage children than are British Columbia families. [Note: the change at male age 46 corresponds to the point where the first child leaves home and at male age 48 to the second child's leaving home.]

Table 1 presents regional comparisons of total foregone savings over the 18 year life cycle. The amounts calculated for one-child families represent the summation of the area between the childless couple simulation curve and that of the one-child family, (see Figure 1). Similarly, figures for the second child include the area between the one- and the two-child simulation curves.

TABLE 1. Net foregone savings over the life cycle by region for one- and two-child families.

	First child	Second Child
British Columbia	\$6,520	\$1,671
Prairies	\$10,181	(\$996)
Ontario	\$33,643	\$13,078
Quebec	\$18,193	\$4,875
Atlantic	\$17,705	\$9,632

Several common trends in net foregone savings emerge across the regions. First, in every region one-child families consistently save less than their childless counterparts. One-child families across all regions forego from \$6,520 to \$33,643 in savings over an 18 year period compared to their childless counterparts with the same after-tax income. Secondly, in all regions with the exception of the Prairies, families further decrease their savings to meet increased need for

current consumption due to the second child's presence. However, they reduce their asset accrual (vis-a-vis what they would have accumulated had they not decided to have a second child) at a rate lower than that induced by the introduction of the first child. Only two-child families in the Prairie region record an actual increase (albeit small) in savings (vis-a-vis their one-child counterparts) over the 18 year period. This result is consistent with higher than average rates of personal savings by families living in especially the provinces of Saskatchewan and Manitoba.

Clearly the effect of one child on total savings varies by region. British Columbia families record making the least adjustment (\$6,520) while Ontario families the greatest adjustment (\$33,643) in asset accrual to meet the costs of increased current family consumption necessitated by the presence of a child. The effect of a second child on net change in assets is similar with regard to order of magnitude by region. However, the marginal effect of the second child (as a percent of the savings foregone as a result of the presence of the first child) follows a different trend. For example, an average family in the Atlantic provinces slows their asset accrual by 54 percent of that necessitated by the birth of the first child as a result of the presence of a second child. Remaining regions record smaller effects (Ontario 39 percent; Quebec 27 percent; British Columbia 26 percent) with Prairie families making virtually no adjustment in their asset accrual as a result of the presence of a second child. The wide regional disparity in asset accrual rates noted across regions was of interest. One possible hypothesis for these regional differences is that families in different regions use different types of assets to meet the costs of children. Thus we decided to examine the effect of children on a savings budget share that includes housing principal.

Analysis of the Effects of Children on Asset Accumulation Over the Life Cycle

In the previous section we discussed the effects of children on savings or asset accrual by families over the life cycle. In that analysis we defined savings to equal expenditures on assets in a given year. Contrary to previous work by other authors, we included mortgage principal in the consumption rather than saving side of the analysis. In general, we found that children have the effect of reducing asset accrual by families throughout the life cycle. The first child had a larger marginal effect on asset accumulation than did the second child. However, we also found that there were wide differences across regions with regard to the level of foregone savings. For example, a first child had the greatest effect on asset accrual by Ontario families (\$33,643) and the smallest effect on British Columbia families (\$6,520) over the life cycle.

In this section of our report we will redefine savings to include payments to mortgage prin-

principal. In this way we can analyze the effect of children on total asset accumulation, and examine whether regional differences noted in savings rates will be further magnified or reduced by including this component.

Tables 2 and 3 present results of our regional analysis for mortgage principal included in savings. The reader may wish to refer back to Table 1 to recall analysis of savings excluding mortgage principal. We will discuss first the regional effects of children on mortgage principal, and finally their effects on total asset accrual.

Effects of children on accrual of mortgage principal.

TABLE 2. Life cycle asset accumulation.

	Number of children		
	0	1 ^a	2
<u>British Columbia</u>			
Assets without housing	\$85,290	\$78,770	\$75,500
Assets with housing	\$133,400	\$118,402	\$109,042
<u>Prairies</u>			
Assets without housing	\$76,426	\$66,245	\$65,563
Assets with housing	\$135,010	\$144,479	\$108,058
<u>Ontario</u>			
Assets without housing	\$98,968	\$65,325	\$50,555
Assets with housing	\$151,327	\$117,195	\$105,983
<u>Quebec</u>			
Assets without housing	\$108,467	\$90,274	\$87,073
Assets with housing	\$132,009	\$117,658	\$111,580
<u>Atlantic</u>			
Assets without housing	\$144,328	\$126,623	\$114,569
Assets with housing	\$177,248	\$156,288	\$145,795

^a Simulation results using income stream of one-child families.

Table 2 reveals that mortgage principal contributes considerably to the total wealth accumulated by all families. Particularly in the Prairie region, inclusion of mortgage principal can add as much as 118% to the total value of assets accumulated over the full nest stage of the life cycle. Housing principal contributes the least to asset accumulation in the Atlantic provinces.

The marginal effects of children on accrual of mortgage principal (first column, Table 3) are similar to their effects on savings less mortgage principal, namely that the marginal effect of the first child exceeds that of the second. One-child families in the Prairies tend to forego the most in home equity compared to their childless counterparts. Over an 18 year period they accumulate \$10,350 less in housing equity than their childless counterparts. Conversely one-child families in Quebec actually accumulate more (\$3,842) housing equity than their childless counterparts over an 18 year period.

Two-child families in British Columbia accumulate \$5,441 less in housing equity than their one-child counterparts during their full nest stage of the life cycle. Conversely, two-child families in the Atlantic provinces accumulate \$2,000 more in home

equity over the same period than their one-child counterparts. The remaining regions lie somewhere in between.

TABLE 3. Effect of children on asset accrual.

	Effects of housing equity on asset accrual	Difference in total asset accrual
<u>British Columbia</u>		
One child ^a	\$8,478	\$14,998
Two children ^b	\$5,441	\$7,115
<u>Prairies</u>		
One child ^a	\$10,350	\$20,531
Two children ^b	\$4,881	\$3,888
<u>Ontario</u>		
One child ^a	\$489	\$34,132
Two children ^b	(\$4,472)	\$8,606
<u>Quebec</u>		
One child ^a	(\$3,842)	\$14,351
Two children ^b	(\$1,368)	\$3,507
<u>Atlantic</u>		
One child ^a	\$3,255	\$20,960
Two children ^b	(\$2,000)	\$7,632

^a The difference between childless and one-child families simulating with the income stream of one-child families.

^b The difference between one-child and two-child families simulating with the income stream of two-child families.

Effects of children on total asset accumulation.

Column 2 of Table 3 presents results regarding the effects of children on total asset accumulation i.e., net change in assets over the life cycle including mortgage principal. Consistent with all our previous findings we see that the marginal effect of a first child on total asset accumulation is greater than that of the second child. Across regions a one-child family saves somewhere in the neighbourhood of \$14,000 to \$21,000 less than their childless counterparts over the life cycle. The marginal effect of a second child (vis-a-vis one-child) is between \$3,500 and \$7,600 over the life cycle.

Perhaps the most striking results are the regional similarities regarding the effects of children on total asset accumulation. Analysis of both net change in assets EXCLUDING mortgage payments and accumulation of housing assets (payments to mortgage principal) alone revealed broad region differences in levels of saving. However, when taken together i.e., when we combine both payments to mortgage principal with other forms of asset accumulation, the effects of children are much more consistent across regions. This implies that the effect of children on total asset accumulation varies only slightly across regions, but that there may be significant regional effects within the asset portfolio. Further investigation of such effects are needed and will be the subject of future analysis.

REFERENCES

- Becker, G.S. (1981). A Treatise on the Family. Cambridge: Harvard University Press.
- Deaton, A. and Muellbauer, J. (1986), "The Costs of Raising Children in Third World Countries." Journal of Political Economy, 90: 345-55.
- Douthitt, R.A. & Fedyk, J.M. (Forthcoming) "The Influence of Children on Family Life-Cycle Spending Behaviour: Theory and Applications" Journal of Consumer Affairs
- Lane, S. (1978). "Food distribution and food stamp programs effects on food consumption and nutritional achievement of low income persons." American Journal of Agricultural Economics, 60: 108-16.
- Michael R.T. & Becker, G.S. (1973). "On the New Theory of Consumer Behavior" Swedish Journal of Economics, 75(4): 378-96.
- Olson, L. (1983). Costs of Children. Toronto: Lexington Books.
- Pollak, R.A. & Wachter, M.L. (1975). "The Relevance of the Household Production Function and Its Implications for the Allocation of Time." Journal of Political Economy, 83(2): 255-77.
- Tyrrell, T.J. (1979). An application of the multinomial logit model to predicting the pattern of food and other household expenditures in the Northeastern United States. Doctoral dissertation, Cornell University.

DISCUSSION: LIFE CYCLE EFFECTS ON SAVING

Barbara M. De Luca, University of Dayton¹

ABSTRACT

The three studies discussed are analyzing some aspect of household saving with respect to life cycle stages. One paper analyzes saving vs. dissaving in retirement, while a second, also considering the retirement stage of the life cycle, investigates the adequacy of levels of savings while working in order to support retirement consumption preferences. The third study analyzes the changes in savings decisions over the life cycle due to the presence of children.

HOGARTH PAPER

The purposes of the Hogarth paper were to "explore determinants of saving and dissaving with regard to financial assets in retirement and (to explore) the factors affecting disproportionate dissavings, relative to life expectancy." In her efforts to study saving and dissaving in retirement, Hogarth first developed a method of comparing dissaving from 1971 to 1979 for the subject households by standardizing dissaving rates. Her method of doing this seems quite appropriate. Using number the years of life expectancy remaining provided a common denominator which was then adjusted for each case depending on the age of the respondent in 1971. She then determined the probability of being a saver using a probit model.

The calculated difference between the actual dissaving rate and the standardized rate (which she referred to as the expected rate) was used in an OLS model to determine factors which would cause the difference between the two rates. It is surprising that health did not surface as a significant factor in distinguishing savers from dissavers. Perhaps it would be more appropriate to pursue an objective measure of health status, rather than the subjective measure used, in order to evaluate its relationship to saving/dissaving status.

The appropriateness of the use of housing values as a determinant of saving/dissaving status is unclear. If the use of house value was inappropriate in similar studies, as Hogarth states, it is not clear why it is appropriate in the present study. In other words, the distinction between including or not including house value as an independent variable in studies exploring saving/dissaving rates in retirement is vague, at best.

The text explaining the findings in the OLS model would be easier to follow if the dependent variable were more completely identified; that is, referring to the "difference between the actual dissaving rate and the expected rate" when explaining the results would enable the reader to

more readily understand the relationships discussed, rather than referring simply to the "difference variable." Again, a more objective measure of the health variable might have led to different findings; a dollar value for average annual health expenditures or a rate of increase in health expenditures from 1971 to 1979, or some factor which assigns a dollar value to health might affect the findings. Considering the great increases in health care costs in the last 20 years and the fact that much of the literature about the elderly and their resource management focuses on health as a critical resource affecting other resources, it seems appropriate to suggest a refinement of the health variable. A more appropriate health variable would perhaps also help to answer questions about those dissaving at "rates that could not be sustained during their expected lifetimes," the intent of her third model. Hogarth makes mention of health expenses in her discussion. Perhaps in further research, this could be investigated.

One final comment regarding the Hogarth paper is in order. Reference is made in the early part of the paper to the use and perhaps misuse of longitudinal and cross-sectional data. Although it is obvious that cross-sectional data cannot be used when attempting to identify changes or effects over time, it is not necessarily true that the researchers cited herein are trying to do this. In the case of some of the research reviewed in the Hogarth paper, she states that, "...it may not be appropriate to infer the behavior of one cohort from the behavior of another." It is suggested by this discussant that this is not the effort of those using cross-sectional data. Rather, they are predicting or explaining behavior, predicting or explaining in an attempt to be more knowledgeable about similiar behavior of future groups. Cross-sectional data are appropriate in such cases.

DOUTHITT AND FEDYK PAPER

Douthitt and Fedyk looked at the effect of children on family savings decisions over the life cycle. They used expenditure data to determine "...the extent to which families reduce future consumption by saving less in response to the presence of children."

Although their analysis is quite interesting, several points regarding their work are vague. The model used, if studied carefully in the appendix, is relatively clear. However, it is much less clear in the text of the paper as is the application of the model to the data. An explicit application of the data to the model would greatly enhance reader comprehension of the paper.

¹Assistant Professor

The goal of the analysis is clearly stated. However, not so clear is why the resultant information is important. In other words, what is the purpose of such a study? Is there a need for this type of information? If there is, what is the need?

Although the need to "...specify a flow of income over the life cycle" is quite clear, it might be informative to include a brief explanation of the disadvantage of using cross-sectional data for the intent of this paper. When a discussion of asset accrual and net change in savings over the life-cycle is undertaken, it seems clear that longitudinal data would be better. Obviously, it is not always available but some mention needs to be made of its advantages.

Reference is made to consumption in both the title and in the original placement of mortgage principal, however, little is actually done with consumption in the research. Considering that households can either save or consume with income, thought might be given to eliminating the consumption aspects of the paper and concentrating only on the savings in future research. Also in future research, inclusion of a literature review on savings patterns in households with children might provide some basis for the reader to better appreciate the study.

Use of traditional subtitles might help make the flow of the paper easier to follow as would a further clarification of footnotes and text review of the second table. Although there is an intuitive understanding of both tables, the source of the values included is not explicit.

Upon reading the paper several times and checking the references, the thought occurred to me that this study is probably part of a much larger research work and perhaps this is why gaps seem to exist and some points seem unclear. If this is the case, it might be beneficial if it were treated exclusively.

Finally, it would be very interesting to repeat the study to compare families which have the first child when the mother is 35 or older and the father 38 or older to those having the first child at 25 and 28 respectively. It seems likely that savings and expenditure patterns prior to having children would affect savings and expenditure patterns after children differently for older "new" parents.

BURNS AND WIDDOWS PAPER

The research question addressed by Burns and Widdows is whether or not baby boomers "...are currently accumulating the funds required for financial security during retirement." By calculating supply of assets available at retirement and demand for assets during retirement and subtracting demand from supply, they were able to quantify a "retirement gap."

Not only was the purpose of the study made quite clear, but the importance of the research was also

explicitly stated. The importance of the research "...in view of the forecasts of impending doom of the Social Security system" is obvious. Less obvious, and quite interesting, is their mention of the depletion of asset levels in private industry and the banking system when boomers begin to draw on retirement savings.

Family income was used in the calculations. The definition of family income is not clear. Does it include the incomes of persons in the household besides the husband and wife? If it does, is this valid? Perhaps a short explanation to delineate the income factor would clarify this point. Also regarding the form of income used, in the needs equation, was gross or disposable income used? Would it have made a difference? Needs would have been smaller if disposable income had been used (assuming it was not). The thought occurs that this figure might be a more realistic one to use for needs assessment since it more realistically mirrors income available for consumption throughout the working years. A short discussion in the paper might clarify this point.

Is the gap as bad as it looks for all families? Do the 75% and 80% adjustments adequately account for differences in family size as well as reduced expenditure patterns usually associated with retirees? For example, needs in retirement might be less than 75% or 80% of working years for retirees with large families when all members were living at home. Future research might investigate a method of accounting for this.

It is not immediately clear when discussing Part 2 of Table 2 if the authors are referring to the supplementary estimate of retirement gap or the original estimate. The explanation of the second part of Table 2 is a bit difficult to follow.

Finally, mention in the discussion section about the effect of the use of average Social Security is sound. It might prove interesting to attempt to develop a method for more accurately determining Social Security benefits, perhaps one consistent with the estimate of permanent income could be calculated.

INSTRUCTIONAL SOFTWARE FOR CONSUMER
AND FINANCIAL PLANNING EDUCATION

Les R. Dlabay, Lake Forest College¹

A wide variety of personal computer software packages can be adapted to instructional settings for consumer education and personal financial planning. These programs range in price from no cost to several hundred dollars, with capabilities ranging from simple calculations to integrated financial planning systems.

INTRODUCTION

As computer technology becomes more available for instructional purposes, consumer education and personal finance teachers are wanting to make greater use of this resource in their classes. Areas of concern that should be addressed when planning and implementing this instructional technique include identification of available software, evaluation of the microcomputer packages, and development of educational experiences.

SOFTWARE INFORMATION SOURCES

The following sources can assist teachers in becoming informed on available software packages that may be used in consumer education or personal finance classes:

- listings in the ACCI Newsletter which presents title, source, cost, type of equipment, and a summary of content and features
- exhibits at the ACCI conference and other professional meetings
- catalogs and advertisements from publishing companies and software distributors
- advertisements and software reviews in professional journals and periodicals
- advertisements and "marketplace" listings (classified advertisements) in computer periodicals such as PC, PC World, Personal Computing, and Family & Home-Office Computing.

EVALUATION FACTORS

In the process of considering software for class use, the following items can provide the basis for evaluating the strengths and weaknesses:

- equipment type and requirements
- availability of a sample or demonstration disk
- ease of operation (data entry; menu vs. command)
- adaptability to teaching situations
- usefulness of documentation and manuals

- printing capabilities
- cost (site licensing vs. individual disk price)

INSTRUCTIONAL SUGGESTIONS

The use of personal computer software in class settings has several possibilities which range from simple, problem-solving calculations to development of a comprehensive personal financial plan.

1. problems, application exercises such as calculations of the cost of credit, an investment yield, time value of money, or creation of a personal balance sheet.
2. simple cases in which students must decide which alternative to accept in a given situation based on different opportunities.
3. comprehensive financial planning case with several components related to setting financial goals, assessing a current financial position, selecting spending and borrowing plans, developing an insurance and investment plan, and planning for retirement and taxes.
4. personal financial planning in which students use software packages to assess and create a direction for their own situation.

RESOURCE CONTACTS

The following individuals may be contacted for information on the type of software listed as well as for ideas for implementing these into instructional settings:

- Sherman Hanna, The Ohio State University, 1787 Neil Ave., Columbus, OH 43210 (spreadsheet templates and expert systems for family resource management)
- Jeanne Hogarth, Dept. of Consumer Economics and Housing, Cornell University, Ithaca, NY 14853 ("Ready...Set...Retire")
- Randy Mullis, University of Wisconsin, 1300 Linden Dr., Madison, WI 53706 ("Andrew Tobias' Managing Your Money")
- Joseph Wysocki, University of Illinois, 551 Bevier Hall, Urbana, IL 61801 ("Home Ownership")

For a comprehensive list of consumer education and personal finance software, contact Les Dlabay, Dept. of Economics and Business, Lake Forest College, Lake Forest, IL 60045.

¹ Assistant Professor, Department of Economics and Business

ESTIMATING DEMAND RELATIONSHIPS BETWEEN CLOSE SUBSTITUTES USING LIMITED
OBSERVATIONS FROM MARKETPLACE EXPERIMENTS

David B. Eastwood, The University of Tennessee¹
John R. Brooker, The University of Tennessee¹

ABSTRACT

Applied demand analysis using marketplace experiments for two close substitutes is discussed. Some theoretical considerations are outlined for the situation in which a treatment good has price and label changes, *ceteris paribus*. Limited sample sizes often accompany experimental situations. The theoretical considerations can facilitate the estimation of market demand relationships for close substitutes. Application is illustrated with the test of a logo for locally-grown tomatoes.

Economists have typically avoided situations in which marketplace experiments are used to generate data for applied demand analyses. The tendency has been to develop theoretical models and to test them using secondary data such as the National Income and Product Accounts, Consumer Expenditure Surveys, and the Nationwide Food Consumption Surveys. However, important consumer demand research relative to the marketing of specific products requires information not contained in these traditional data. Consumers' reactions to promotional efforts and/or the usefulness of product information are examined through marketplace trials. Such experiments usually involve control and treatment groups and the introduction of specific effects to the treatment group. Quite often, time and budget constraints limit the number of trials that can be conducted, and thereby, limit the data available for the testing of hypotheses and for making inferences. This paper considers alternative ways of looking at demand relationships associated with such marketplace experiments.

THEORETICAL CONSIDERATIONS

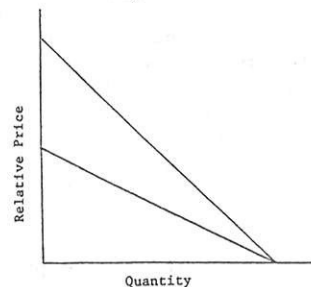
Assume the demand for good i is separable from the other products consumers buy. One way of explaining this condition within the context of marketplace trials for brands of the good in question is to assume that those shoppers who purchase the item have decided to do so prior to entering the store and when confronted with the experiment make decisions among the brands. Given this setting sales data can be viewed as reflecting substitution choices. The experiment's short time period is consistent with consumers having fixed preferences for the product, as well as fixed incomes. Consumers are assumed to face perfectly elastic supplies of the brands, so demand can be estimated.

Classical economic analysis of the consumer's utility maximization problem leads to a demand relationship in which the quantity demanded is a function of prices and income. Several adjustments are made in the demand equation to accommodate the experimental setting. One is that no income change is expected to occur, so there is no effect of this variable on the quantity demanded.

The marketplace experiments considered below have two effects on the demand relationship. One pertains to changing the price of a brand, good i , while holding the price of the other, good j , constant. Even though only one price changes, the relative prices of both goods change in opposite directions. For example, suppose $p_i = p_j = \$1.00$. If p_i increases to $\$1.10$, then its relative price has risen from 1 to 1.1. At the same time the relative price p_j has fallen from 1 to .91. This means that, in this particular experimental setting in which only one price changes, two relative price observations are generated.

The other effect on the demand relationship involves the presence or absence of a promotion. To the extent that it provides relevant, positive information to consumers, a promotion should affect the rate of substitution between the two brands, or the slopes of the demand curves. This is illustrated in Figure 1. The vertical axis measures the relative price, and the horizontal scale measures the quantity of either brand. Since there are only two brands, and only one brand has price changes, the slope of one demand curve is the reciprocal of the other.

Figure 1



Furthermore, the nature of the marketplace experimental setting outlined above suggests a common quantity intercept. The interpretation is that, as (p_i/p_j) falls, q_i is becoming relative cheaper, so more q_i is substituted for q_j . As the consumer moves down and to the right along one demand curve, this person is also moving up and to the left along the other. In the limit as (p_i/p_j)

¹Professors, Dept. of Ag. Econ. & Rur. Soc.

approaches zero, virtually all of the sales are q_i , and q_i is nearly zero. This leads to a common quantity intercept reflecting the situation of either relative price being so low as only that respective brand is purchased. This situation is the familiar one in applied regression analysis in which there is an interaction between a dummy variable and another variable. The hypothesized market experiment demand equation is

$$(1) \quad q_i = a + b(p_i/p_i) + c(p_i/p_i)(\text{PROM}),$$

where PROM = 1 presence of absence of the promotion.

Other functional forms could be considered. Two obvious suggestions have limitations within the context of small samples and estimating levels of sales of close substitutes. One of these is to estimate the demand for each brand separately, but this splits the sample observations into two subgroups which could cause degrees of freedom problems given the few trials. The other is to examine relative quantities (q_i/q_i). But this entails dividing one demand equation by another, and there is no way to separate out the effects of the various independent variables given the ratio.

Another possibility is to express equation (1) in log or semilog form. This really introduces the issue of the appropriate functional form. The conventional way of dealing with it is the Box-Cox estimation procedure. However, this focuses on alternative relationships among a given set of independent variables. Single versus combined equations and the appropriate way to incorporate dummy variables are not amenable to the Box-Cox approach, so it is not used here.

AN EXPERIMENTAL SETTING

Per capita consumption of many fresh produce commodities increased substantially during the past fifteen years (USDA 1986). For example, per capita fresh tomato consumption increased from 10.5 pounds in 1970 to 13.4 pounds in 1985. Consumers' recent interest in fresh produce has fostered interest within the agricultural sector to promote produce production as alternative enterprises for new sources of income (Estes 1985, Henkes 1987). One market outlet that is suggested for growers in nonmajor production regions is the sale of produce directly to retail chain stores. Considerable demand research has been completed regarding direct market outlets (e.g., roadside stands), while little has been published regarding locally-grown produce sold through supermarkets.

State-level sponsorship of produce promotion has taken numerous forms, from national television and magazine advertisements to within-state promotion. These efforts are designed to enable growers to "brand" their products on the basis of the state in which they are grown. Logo-stickers are one of the ways to do this. A 1986 national household survey conducted by The Packer indicated country or region-of-origin labeling of fresh produce was not identified by consumers as a highly important criterion in selecting produce or a produce market (Zind 1986). However, the survey results did

reveal that origin ranked above brand name in position of importance.

A survey conducted by Eastwood, Orr, and Brooker indicated that consumer interest in locally-grown fresh tomatoes was significantly higher than for other fresh produce. The Tennessee Department of Agriculture was also beginning to look at the promotion of state-grown produce through the use of a logo. These considerations led to a study of consumers' supermarket purchases when presented with various pricing and labeling situations with respect to tomatoes.

The decision to use in-store experiments is consistent with the assumption that weekly tomato purchases are separable from other purchases, including fresh produce. Since so many food shoppers buy tomatoes regularly vis-a-vis other fresh produce, the assumption is that a consumer involved with the experiment entered the store with prior expectations about the quantity to purchase and just focused on substitution between the two bins. Also, no other labelled locally-grown fresh produce was available in the stores.

The supermarkets were selected from the Knoxville, Tennessee area to provide some representation from lower income households in the inner city and higher income households in the suburbs. Three supermarkets participated. Within each of the participating retail stores, sales experiments were conducted for four days in each of two consecutive weeks of July, 1986. The experiment days were Wednesday through Saturday. The initial plan involved four experiments, described below. A random assignment of stores and treatments took place.

On one day of each week in each store the base experiment was conducted. This consisted of two bulk bins of tomatoes that were separated by avocados and prepackaged tomatoes. For this base experiment there was no information as to tomato origin of either bin, and the price per pound was the same for the tomatoes in both bins. One of the bins contained the tomatoes supplied by the retailer's own organization, unchanged from what they routinely handled. The other bin was stocked with locally-grown tomatoes delivered to the retailers each morning of the experiment days. These locally-grown tomatoes were purchased from Knoxville area growers by a Knoxville wholesaler. The grade and size of the tomatoes were the same for the treatment and control groups.

In order to gather data on the effectiveness of the Department of Agriculture's logo-sticker alone, one treatment pertained to charging the same price, but the locally-grown tomatoes were identified by individual logo-stickers placed on each tomato. A larger eight inch square logo was also attached to the bin display of locally-grown tomatoes. This experiment was conducted once each week in each store.

The experiments during the remaining two days of each week involved using the logo identification stickers and setting the price of the locally-

grown tomatoes. This experiment was conducted once each week in each store.

The experiments during the remaining two days of each week involved using the logo identification stickers and setting the price of the locally-grown tomatoes 15 cents, and 30 cents, 50 cents per pound above the retailer's price for the other tomatoes (priced at 89 cents per pound). A listing of the experiments conducted in each store is presented in Table 1.

Table 1. In-store tomato sales experiments conducted in three Knoxville metropolitan area supermarkets

Date	Experiment ^a					
	Store No. 1		Store No. 2		Store No. 3	
	Price	Label	Price	Label	Price	Label
July 7-12:						
Wednesday	Equal	no	30 cents	yes	15 cents	yes
Thursday	Equal	yes	Equal	no	30 cents	yes
Friday	15 cents	yes	Equal	yes	Equal	no
Saturday	30 cents	yes	15 cents	yes	Equal	yes
July 16-19:						
Wednesday	50 cents	yes	30 cents	yes	Equal	yes
Thursday	30 cents	yes	50 cents	yes	Equal	no
Friday	Equal	yes	Equal	no	50 cents	yes
Saturday	Equal	no	Equal	yes	30 cents	yes

^aPrices of local and 'other' tomatoes equal to each other or local set 15, 30, or 50 cents per pound above the 'other' tomatoes. Label refers to use of "Tennessee-Country Fresh" logo.

Bulk tomato sales per day varied considerably, which is expected given the typical daily pattern of supermarket sales. Thus, any evaluation of consumers' responses should adjust for this phenomenon. One way to do this is to convert the daily volumes into standard-day equivalents. Saturday is the chosen standard. Sales of the other days were weighted by the reciprocal of the average volume per that day of the week relative to Saturday.

When the prices of the local and other tomatoes were equal, with no labelling as to origin, the local tomatoes accounted for 61 percent of the weighted bulk sales (Table 2). So, just based on appearance, local tomatoes outsold the other tomatoes. This is consistent with an earlier study that revealed the three most important criteria consumers use to judge tomato quality are appearance related (Eastwood, Orr, and Brooker 1986). The proportion of locally-grown tomato sales increased to 69 percent when the logo was placed on each tomato and prices were equal. Setting the price per pound of locally-grown tomatoes 15 cents above the other bulk tomatoes, with the logo present, caused the proportion of local sales to decline to 65 percent. The proportion of local tomato sales was 64 percent when the local tomato price was set 30 cents higher, and proportion fell to 43 percent when the price was 50 cents higher. An inference from these data is that some Knoxville consumers must perceive locally-grown tomatoes as premium produce worth a higher price than the comparable size and grade other tomatoes.

Table 2. Weighted average per day bulk tomato sales by experiment and origin, Knoxville, Tennessee, 1986

Experiment ^a	Bulk tomatoes sold ^b					
	Local		Other		Total	
	pounds	percent	pounds	percent	pounds	percent
Equal price - no label	201.7	61	128.8	39	330.5	100
Equal price - TCF label	226.9	69	100.2	31	327.1	100
15 cents per pound - TCF label	234.4	65	125.7	35	360.1	100
30 cents per pound - TCF label	182.9	64	105.1	36	288.0	100
50 cents per pound - TCF label	106.0	43	142.7	57	248.7	100

^aSee Table 1 for details of the experiments. The base price was 89 cents per pound.

^bWeighted Saturday equivalent of bulk tomato sales per retail chain store.

There is a limited number of observations associated with this marketplace experiment. Three stores, two four-day periods, and local versus out-of-state sales result in 48 price and quantity observations. The limited number of trials and the close association between the presence of the logo and the presence of local tomatoes made it statistically impossible to separate the association between these two events. Consequently, only the local measure is used. Interpretation of the effect of the local variable is considered to reflect the combined impact of local tomatoes which have been labeled.

RESULTS

Equation (1) assumes the consumers' price response to the relative price of local tomatoes is different from the other tomato price response. However, as the relative price approaches zero, in either case the same limiting quantity of tomatoes would be purchased. Since previous surveys have indicated that consumers perceive local tomatoes as having higher quality and freshness, the expectation is that a local promotion would have a positive effect on local sales. Further, our hypothesis is that consumers are less price sensitive to local tomatoes than to other tomatoes. More precisely, the combined effect for labelled local tomatoes is $b + c$ (because $PROM = 1$), while for other tomatoes it is b (because $PROM = 0$). b is hypothesized to be negative and c positive, so $b + c$ is closer to zero than b alone.

Ordinary least squares regression was used to estimate the demand equation. The results are shown as equation (2). Other dummy variable formulations were estimated, and the one presented in this paper generated the best fit. Values in parentheses are t-values. The computed F-value leads to the inference that the set of coefficients is significantly different from zero. The R^2 value indicates that 34 percent of the variation in adjusted sales is explained by the equation.

$$(2) \quad q_i = 276.52 - 178.04(p_i/p_j) + 106.29(p_i/p_j)(PROM)$$

(5.25) (-2.95) (4.65)

$$R^2 = .34 \quad F = 11.46$$

The coefficients have their expected signs and are significantly different from zero. The negative coefficient for (p_i/p_j) indicates that as the relative price of the *i*th tomatoes increases, sales decline. The magnitude of this coefficient reflects the units of measurement. A unit increase in the *i*th relative price, *ceteris paribus*, is estimated to lead to a 178 pound decrease in the *i*th tomato sales. This large change is a result of the nature of the relative price measure. A unit increase entails a doubling of the local price relative to the other price, which is a large price change. The interaction of the relative price and PROM, *ceteris paribus*, is estimated to increase store sales of local tomatoes on a Saturday equivalent basis by over 106 pounds.

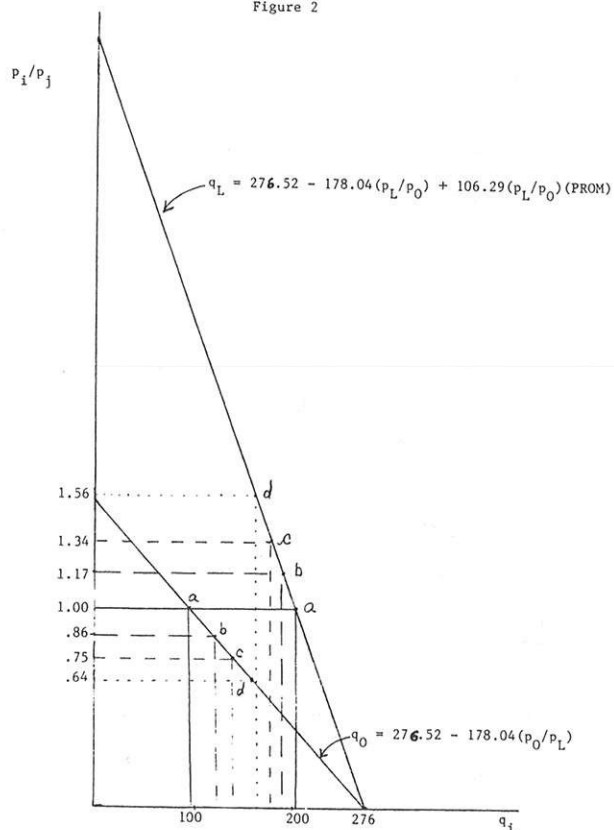
The equation can also be used to generate estimated own-price elasticities of local and other tomatoes. Using the mean relative price and the mean adjusted sales of local and other tomatoes, the respective price elasticities are -.47 and -1.28. The magnitudes of these elasticities places them in the inelastic and elastic ranges. These values reflect the degree of substitution consumers have for local versus other tomatoes and the effect of large relative price changes associated with the trials. Thus, attention is directed toward the relative magnitudes (Nelson and Robinson 1978). Within this context the labeled local tomato elasticity, being approximately, 2.7 times the value of the other tomato elasticity, suggests that consumers are much more willing to substitute local for other tomatoes than vice versa.

Equation (2) is also represented as Figure 2. The local and other demand curves are labeled. They have the common quantity intercept of 276.52 pounds, and both are linear. When the relative price is one, estimated local and other sales are 205 and 98 pounds, respectively. These are determined in the diagram by the intersection of the relative price equal to one line with each demand curve (points a). Increases in the local price raise the relative price of local tomatoes and lower the relative price of other tomatoes. Therefore, each of the three price increases in local tomatoes due to the experiment are associated with a lower relative price of other tomatoes. The corresponding pairs are labeled with the same lower case letters. Notice that movement along one demand curve is associated with an opposite movement along the other. As the relative price of local tomatoes increases, consumers substitute other tomatoes for the relatively higher priced local ones.

CONCLUSIONS

This result also supports the hypothesis that some consumers are willing to pay a relatively higher price for local tomatoes, but the elastic

Figure 2



demand for other tomatoes constrains the magnitude of such adjustments. It is consistent with the sales data from the trials. They indicate a relative price \$.50 above the \$.89 other price leads to substantially decreased local sales, while relative prices involving \$.15 and \$.30 above the other tomato price lead to modest reductions in local sales. An inference is that consumers would like origin information provided by stickers if the tomatoes are of comparable quality and priced competitively.

REFERENCES

- Brothers, Jane R. and Harold G. Love, (1981), "State Oriented In-Store Merchandising Techniques," *Journal of Food Distribution Research*, 11 (February):216-23.
- Eastwood, David B., Robert H. Orr, and John R. Brooker (1986), *Consumer Stated Preferences for Fresh Fruits and Vegetables*, Research Report 86-06, University of Tennessee Agricultural Experiment Station, Knoxville, Tn.
- Estes, Edmund, (1985), "Alternative Cash Crops: How Big Is the Market?" *Analyzing the Potential for Alternative Fruit and Vegetable Crop Production Seminar*, Seminar sponsored by the S-178 Technical Sommittee and Farm Foundation, New Orleans, (November 4).

Henkes, Rollie, (1987), "Light, Lean, and Natural," The Furrow, Southern Edition, John Deere, 1400 Third Ave., Moline, IL (January-February).

Nelson, Glenn, and Tom H. Robinson, (1978), "Retail and Wholesale Demand and Marketing Order Policy for Fresh Naval Oranges," American Journal of Agricultural Economics, 60 (3):

U. S. Department of Agriculture, (1985), Food Consumption, Prices, and Expenditures 1964-84, Economic Research Bulletin 736.

Zind, Tom (1986), "Fresh Trends 1987," The Packer: Focus, Vance Publishing Corporation, 7950 College Boulevard, Overland Park, Kansas (January 10).

DEGREES OF DIFFERENCES IN THE CONSUMPTION OF
GOODS AND THE CONSUMPTION OF SERVICES

Barbara M. Heinzerling, J.D.¹, University of Akron
Janelle K. Hood, University of Akron²

This paper suggests that purchasing consumer services is more difficult than purchasing consumer goods. The differences between the consumption of consumer goods and consumer services are of degree not kind. In five areas of comparison, purchasing consumer services presents more potential problems for the purchaser than exists for purchasing goods. The five points of comparison were developed from marketing literature devoted to marketing of services and consumer education literature on evaluative criteria for purchasing goods.

INTRODUCTION

Other than from a marketing perspective, little is known about consumers and their many interactions with consumer services. There is a need to understand how consumers purchase and use services in order to develop general principles applicable to researching and teaching about consumer services. One proposed framework suggested a six step process to be used for the purchasing of most consumer services (Heinzerling & Barsness 1985; Heinzerling & Barsness 1986). Most of the literature about consumer services is available in popular periodicals but the coverage is limited to only a small number of consumer services and the orientation is generally a "how to" approach with virtually no development of general principles to be transferred to the purchasing of services in general. Academic writing on this topic is limited. Yet, consumers are buying greater quantities of ever expanding service offerings and consumer educators, researchers and writers need to keep pace.

The techniques commonly useful in shopping for consumer goods are probably inadequate in shopping for consumer services. In one study, consumers reported that the purchase of credit and physician care were difficult because of the lack of information, infrequent use of the services and limited numbers of suppliers (ARCO 1983). An observation from a study on financial services was that while consumers were more sophisticated in shopping for financial services, a high level of uncertainty in that area remained (Fernstrom 1984).

On five different points of comparison, the purchasing of consumer services is demonstrated to be more difficult than the purchasing of

¹Associate Professor, School of Home Economics
²Graduate Assistant, School of Home Economics

consumer goods. The five areas of comparison, taken from the marketing and consumer education literature are: the human component; product/performance information; price information; payment procedure; and protection/rights. The differences between the consumption of services and that for goods are ones of degrees not of kind. Within each of the five areas of comparison, more specific facets of differences have been developed.

Many consumer services are linked to consumer goods, for example the permanent used by the hair-dresser or the fertilizer used by the lawn care servicer. Thus, it is useful to see goods and services on a continuum with the majority of consumer purchases actually being a combination of a good and service. However, in the field of economics goods are distinguished from services, and in the marketing literature, "A good is an object, a device, a thing; a service is a deed, a performance, an effort." (Berry 1980) Kotler and Bloom (1984) defined a services as:

...any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical property.

Yet, relatively little attention has been paid to the education of consumers about purchasing services or to researching and writing on consumer services from a purchasing viewpoint. The rapid development and expansion of new services in recent years, for example, the urgent care health centers and personal shopping services, have intensified the need to address purchasing consumer services.

This paper compares purchasing services with the purchasing of goods. As Berry (1986) stated, "The pivotal difference between goods businesses and services businesses is that goods businesses sell things and services businesses sell performances." It is the special characteristics of these performances which need to be developed.

Four characteristics distinguish the marketing of consumer services from that of consumer goods. Intangibility, the lack of being able to use the senses in the same manner as is done with goods, is seen as the major difference (Bateson 1979). The inseparability of production and consumption, heterogeneity, and perishability are the other three characteristics (Zeithaml, Parasuraman and Berry 1985).

The purchasing of goods and of services can be assessed on five major points of comparison. From a purchaser's viewpoint it is the degree of differences on these five points which complicates the purchasing of services. Figure 1 presents a

summary of these five areas and additional facets within each area.

HUMAN COMPONENT

Human factors are prominent in the purchasing of services. The producer is often the service provider and is frequently present when the consumption occurs. Whereas a car may be produced in Detroit but consumed in San Antonio, the lawyer is with the client in court, the waiter is present when serving the meal, and the cosmetologist is cutting the client's hair. Goodwin (1986) proposed a classification of services based on role relationships which evolve in the service encounter. The dimensions of the consumer's perception of the amount of power the consumer is able to exert in the specific situation and the amount of commitment the consumer feels to the service provider were specifically examined. A college student may not feel she has a significant amount of power when dealing with a professor but feels significantly committed to her education whereas, the consumer of dry cleaning services seldom feels significant commitment to the dry cleaning establishment and does not recognize the economic power she possesses.

Due to a lack of objective performance criteria, consumers may overemphasize the human element in the purchasing of services. The human component may be so greatly emphasized that the consumer fails to consider other product and/or performance information which is available. The services of a physician therefore may be chosen because of a good bedside manner not because of board certification or an interior designer selected because he happens to be a friendly neighbor. Zeithaml (1981) proposed eleven different hypotheses delineating differences in consumer evaluation processes between goods and services. She hypothesized that consumers rely more on information from personal sources and perceived greater risks in purchasing services than in purchasing goods.

PRODUCT/PERFORMANCE

From a purchasing viewpoint, it appears that in the area of product and/or performance information the consumer of services has significantly less information and fewer credible sources. The intangibility of services has been stressed in the marketing literature (Bateson 1977; Berry 1980; Dearden 1978; Johnson 1969; Lovelock 1981; Parasuraman 1986; Rothmill 1966; Sasser 1976; and Thomas 1978). Generally, the definition of intangibility includes the idea of a lack of physical properties to be seen, felt, heard, tasted and smelled. The concept can also include the complex cognitive properties which are involved in purchasing many services: using legal and/or medical services for example, involves the exchange of thoughts between the consumer and the service provider and those thoughts may not be easily defined, formulated, or grasped mentally (Berry 1980). A set of evaluative criteria developed for the purchase

of a consumer service cannot rely on tangible elements as can be done for buying a VCR or dishwasher.

Since the provision and consumption of services is a performance, it is frequently difficult to communicate about that performance other than in terms of the individual consumer's own experiences. As Leong (1986) suggested, consumers are less able to communicate to others a knowledgeable representation of services. Consumers of goods have seen many refrigerators, cars, and other products and in discussing specific products they can go beyond just describing their own Chevrolet. Consumers of services, however, tend to communicate by using their own experience as the example of that consumer service because they do not have well developed symbolic representations of services. One result is that the rate of adoption of innovations in services is slower than that for products. Zeithaml (1981) has even hypothesized that consumers attribute some of their dissatisfaction with services to their own inability to specify or perform their part of the service and may even complain less frequently about services due to a belief that they are partly responsible for the dissatisfaction.

Nonstandardization of services is considered as heterogeneity in the field of marketing (Berry 1980; Zeithaml, Parasuraman, & Berry 1985). Standardization in the area of consumer goods is widespread and creates problems of product differentiation for manufacturers and marketers, but fewer problems for consumers. The lack of standardization is common to many service fields. Some service areas have developed licensure and certification to partially address the problem of nonstandardization, but the majority of service fields lack even these means. Even with certification and licensure as potential criteria, however, consumers must learn to question who grants the certificate or license and what standards are used. An additional problem is that a service provider cannot totally standardize his/her behavior. Thus, the performance of a service provider may fluctuate among individual consumers and even with a single consumer, the provider's performance certainly varies over a period of time.

Perishability is defined as the inability to purchase a service prior to need and inventory or store it. The concept also includes the lack of anything to return for refund. While the problem of perishability may not be a major one from a consumer's viewpoint, it does occur when the need for the service arises at a time when the consumer's financial and/or other resources are inadequate to handle the purchase. For example, when a major appliance requires repair or a family needs to purchase mental health counseling. Pre-need sale of funeral services, the extensive development of credit and various forms of insurance can all be viewed as means of combating the problem of perishability.

The independent product testing of consumer goods has existed since the late 1920s. However, performance information on services is extremely

limited. One impediment to measuring services objectively is that the majority of services is generally available only locally or regionally. Since 1974 the Center for the Study of Services has been offering independent assessment of service providers' performances in Washington, D.C. and later in San Francisco. It is thus possible to develop objective criteria for performance assessment of service providers, but such development has not occurred for the majority of consumer services. One result is that the consumer frequently relies on another consumer's opinion, and marketers have responded by encouraging the use of word-of-mouth communications thus further obscuring the use of objective performance criteria (Zeithaml, Parasuraman & Berry 1985).

The majority of consumer services is characterized by simultaneous production and consumption. The consumer becomes a part of the process of production while simultaneously consuming, for example, a haircut or a mental health counseling session. Thus, the consumer is forced into a more intimate contact with the service provider and may only learn part way through the process that this service provider is not appropriate for him. For example, a consumer may engage an attorney to obtain a divorce and become dissatisfied during the process. This may mean that the cost of changing a service provider is higher than it would be for changing a goods provider.

While some national brands do exist in service areas, most notably in the transportation sector and hotel/motel area, brand names and/or labels are uncommon in most service fields. Without specifying any value judgments about brand name labeling, the lack of it does influence the consumer's ability to obtain and use it as a minimum standard of performance. If a satisfactory brand for a particular service has been found, Zeithaml (1981) hypothesized that greater search costs and monetary costs may be involved in the changing of brands and thus, consumers may switch brands less frequently than with goods. Additional problems include monetary fees which may accompany brand switching, for example, the initial deposit or membership fee with the new health spa and the additional time and patronage required before the service provider "knows" the consumer. In the absence of a national brand, it has been suggested that consumers use price and physical facilities as the major cues to service quality. (Zeithaml 1981).

PRICE INFORMATION AND PAYMENT PROCEDURES

Prior to purchase, obtaining definitive price information for goods is generally possible. Obtaining definitive price information in service areas, however, is often quite complex and difficult. The homeowners who desire to add a room to their existing home will generally only receive an estimate from the architect prior to the final rendering. Thus price as an evaluative criteria for selecting an architect has limited usefulness because the lowest estimate may not ultimately be the lowest price. The use of third party payors further complicates discussion and understanding

of prices. Installment credit is not as regularly extended in the services area as in the goods area, and if it is extended the terms might not be clearly stated at the onset despite, in many situations, the availability of protection from the Consumer Credit Protection Act.

While a variety of factors affect the ultimate price of consumer goods, theoretically in a market economy competition is a significant factor. In pricing consumer services, however, cost-oriented pricing strategies may be used more frequently than competition-and-demand oriented pricing strategies (Zeithaml, Parasuraman & Berry 1985). The hair dresser or piano teacher who principally has only his/her time to sell must emphasize that limited time in computing the cost of the service.

CONSUMER PROTECTION, RIGHTS AND RESPONSIBILITIES

This final major area of comparison between purchasing goods and services can be the most crucial area from the consumer's viewpoint. Warranties and readily available redress mechanisms generally exist for consumer goods. Most states have laws on retail selling practices and have adopted the Uniform Commercial Code for sales so that legal rights exist for the consumers of goods. Significant and long standing federal and state laws and regulations govern the production of consumer goods.

For consumers of services, however, few of these protections exist. Where state statutes do exist, the applicability and scope of coverage are generally quite specific, for example, statutes on prepaid entertainment contracts or sales made within the home. Nor have authorities broadly applied and interpreted retail sales practices statutes and other consumer protection laws to cover consumer services. Thus, the consumer who experiences a complaint with an interior designer or a dry cleaner or a home contractor may find no redress mechanism and no specific consumer oriented regulation or law to utilize for assistance.

IMPLICATIONS

This paper has set forth the differences between purchasing consumer goods and purchasing consumer services from a consumer's orientation. Five areas of comparison were discussed. Within each of the five areas additional points of differences in the consumption of services from that of goods was developed. This framework could be utilized in consumer education to: develop curriculum on the topic of consumer services; teach general principles applicable to purchasing consumer services; develop evaluative criteria for consumer services; offer insights and assistance for post-purchase situations; and improve the written materials on the selection of consumer service providers.

Considerably more research from a marketing orientation has been conducted on these points of

comparison than exists in the consumer education literature. Consumer oriented researchers need to verify these points of comparison and research is needed on those points not found in the marketing literature but proposed herein. Research is also needed to determine if these differences actually create problems for consumers and how consumers overcome such problems. The indications are that consumers will continue to increase their purchases of an expanding array of consumer services. Thus consumer educators and researchers need to be more active in the exploration and dissemination of information on consumer services.

REFERENCES

- American Express Company. (1983). Financial services innovation and the American consumer. New York: Author.
- Atlantic Richfield Company. (1983). Consumerism in the Eighties. Los Angeles: Author.
- Bateson, J. E. G. (1977, December). Do we need service marketing. Marketing consumer services: New insights (Report No. 81-1502). Cambridge, MA: Marketing Science Institute.
- _____. (1986). Big ideas in services marketing. In M. Venkatesan, D. Schmalensee, & C. Marshall (Eds.), Creativity in services marketing: What's new, what works, what's developing (pp. 6-8). Chicago: American Marketing Association.
- Booms, B. H. & Bitner, M. J. (1981). Marketing strategies and organization structures for service firms. In J. H. Donnelly and W. R. George (Eds.), Marketing of services (pp. 47-51). Chicago: American Marketing Association.
- Consumers Union. (1977). Guide to consumer services. Mount Vernon, NY: Author.
- Dearden, J. (1978, September-October). Cost accounting comes to service industries. Harvard Business Review, 56, 132-140.
- Fernstrom, M. (1984). Consumerism: Implications and opportunities for financial services. New York: American Express Company.
- Goodwin, C. (1986). Using consumer's roles to classify services. In M. Venkatesan, D. Schmalensee, and C. Marshall (Eds.), Creativity in services marketing: What's new what works, what's developing (pp. 159-163). Chicago: American Marketing Association.
- Heinzerling, B. & Barness, A. (1985). The consumption of services: a proposed framework. In Proceedings, 14th Annual Conference for the Southeastern Regional Conference for Family Economics/Home Management (pp. 81-83) Baton Rouge, LA.
- _____. & Barness, A. (1986). Use of framework for the consumption of services: selecting providers of financial planning services. In K. Schnittgrund (Ed.), Proceedings ACCI 32nd Annual Conference (pp. 215-217). St. Louis, Missouri: American Council on Consumer Interests.
- Johnson, E. M. (1969). Are goods and services different? An exercise in marketing theory. Unpublished doctoral dissertation, Washington University, St. Louis.
- Kotler, P. & Bloom, P. (1984). Marketing professional services. Englewood Cliffs, NJ: Prentice Hall, Inc.
- Leong, S. M. (1986). The effects of knowledge representation on the classification of services: A conceptual analysis from an information processing perspective. In M. Venkatesan, D. Schmalensee, & C. Marshall (Eds.), Creativity in services marketing: What's new, what works, what's developing (pp. 164-168). Chicago: American Marketing Association.
- Lovelock, C. H. (1981). Why marketing management needs to be different for services. In J. H. Donnelly and W. R. George (Eds.), Marketing of services (pp. 5-9). Chicago: American Marketing Association.
- _____. (1984). Services marketing: Text, cases and readings. Englewood Cliffs, NJ: Prentice Hall.
- Parasuraman, A. (1986). Customer oriented organizational culture: A key to successful service marketing. In M. Venkatesan, D. Schmalensee, and C. Marshall (Eds.), Creativity in services marketing: What's new, what works, what's developing (pp. 73-77). Chicago: American Marketing Association.
- Rothmill, J. M. (1966, October). What is meant by services. Journal of Marketing, 30, 32-36.
- Sasser, W. E., Jr. (1976, November-December). Matching supply and demand in services industries. Harvard Business Review, 133-140.
- Thomas, D. R. E. (1978, July-August). Strategy is different in service businesses. Harvard Business Review, 56, 158-165.
- Zeithaml, V. (1981). How consumer evaluation processes differ between goods and services. In J. H. Donnelly and W. R. George (Eds.), Marketing of services (pp. 186-190). Chicago: American Marketing Association.
- _____, Parasuraman, A., & Berry, L. L. (1985, Spring). Problems and strategies in services marketing. Journal of Marketing, 49, 33-45.

FIGURE 1

CONSUMPTION OF SERVICES
DIFFERENCES BETWEEN PURCHASING GOODS AND PURCHASING SERVICES

Points of Comparison

<u>Human Component:</u>	<u>Goods</u>	<u>Services</u>
Perception of Control	With consumer	With provider
Degree of Commitment	Low	Wide range
Role of Human Relations	Not dominant	Dominant
Perception of Roles	Insignificant	Significance varies
<u>Product/Performance:</u>		
Tangible	yes	Lack of physical properties, complex cognitive properties
Communicable	Easy	Difficult
Standardized	Common	Nonstandardized within a service area and by a service provider
Perishability	Not a problem	Cannot inventory nor return or refund
Product testing	Readily available	Limited performance information
Prepurchase Information	Readily available	Simultaneous production and consumption
<u>Price Information:</u>		
Availability	Readily	Difficult to obtain and compare
Determination of	Competition and demand oriented	Regulated, may be monopolies and cost oriented
<u>Payment Procedure:</u>		
Knowledge of procedure	Clearly stated	Appropriateness of discussion
Credit	Generally available	Infrequent and third party payment
<u>Protection, Rights:</u>		
Warranties	Generally available	Limited
Redress mechanisms	Generally available	Limited
Legally available	Generally available	Limited
Consumer rights		
Federal and State regulation	Widespread	Limited State regulation