

Level of Income and Its Distribution as Determinants of Korean Expenditure Patterns

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Even though the permanent income and relative income hypotheses have been utilized in past research to explain consumer behavior, no previous attempt has been made to integrate them into one model in explaining household expenditure behavior. In this article, the hypotheses are synthesized into a single model. The model was empirically tested using data from the 1996 Korean National Survey of Family Income and Expenditures. The results indicate that household expenditure behavior is generally explained by both hypotheses when integrated in one model. However, the impact of relative income and permanent income varies by expenditure categories.

The household as a consuming and decision-making unit is a focus unit of analysis in consumer behavior. Economists have tried over the years to explain consumer behavior through the introduction of various theories. Two of the major theories are the relative income hypothesis and the permanent income hypothesis.

Brady and Friedman (1947) suggested that consumption and savings are dependent on the relation of individual family income to the average income level of the city or town in which the family lives. Their results indicate that consumption is positively correlated with community income—that is, that consumption expenditures are actually greater in communities with higher incomes. Food and housing expenditures, in particular, were positively correlated, at given income brackets, with this community income. They suggested that as total

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income for the economy rises, and a given household moves into a higher income bracket, the household will tend to save less than those households who previously occupied that income bracket. As a consequence, consumption expenditures depend on the household's relative position in the income distribution, not the absolute level of income.

The motivation for higher consumption standards, according to Duesenberry (1949), stems from the desire to emulate and initiate the behavior of others, and the motivation is particularly strong if the household in question is located toward the bottom of the income distribution. Households who emulate the higher consumption levels of their neighbors sacrifice future consumption for current consumption and consequently consume a large portion of their income. Therefore, those who believe in relative income insist that consumers do not spend their money on the basis of current income but on the basis of its relationship to their previous peak income or to the income of the community in which they live.

Following Hirsch (1976), Frank (1985) used the term *positional good* to refer to those consumer items whose value is significantly affected by interpersonal comparisons and that are easily observed by other consumers (Kosicki, 1990). Many consumer items are identified as positional items (such as food away from home and automobiles).

Friedman (1957) introduced the permanent income hypothesis to explain consumer behavior. He concluded that permanent consumption is a stable function of permanent income. He defined permanent income as the constant annual income that the consumption unit's net worth would yield if invested at the market rate of interest in perpetuity. Permanent income, therefore, is the income which an individual or family expects to have over their lifetime.

Permanent income is unobservable and is to be interpreted as reflecting the effect of those factors that the consumer unit regards as determining its capital value or wealth. The factors include the non-human wealth that the consumer unit owns; the personal attributes of the earners in the unit, such as their training, ability, education, gender, and race; the attributes of the economic activity of the earners, such as the occupation followed; and the location of the economic activity.

Kosicki (1987) presented a framework in which concern for the relative standing in the current consumption hierarchy was integrated with a permanent income framework. The results revealed that perma-

nent income as well as income rank were important determinants of the saving rate.

The purpose of this article is to expand the application of the Kosicki (1987) model and test the importance of the integrated permanent and relative income in explaining household expenditure behavior, specifically, in determining budget allocations in major expenditure categories among Korean households.

METHOD

Data

Data for the study are drawn from the 1996 Korean National Survey of Family Income and Expenditures, which was sponsored by the Korean National Statistical Office (National Statistical Office of Korea, 1997b). A stratified random sampling technique was used to select 48,580 households. The survey obtained detailed information on household income, expenditures, and demographic characteristics.

Most of the homes in Korea are purchased without mortgage or rented by providing a large sum as a deposit to the landlord. The renters with a large sum of deposit do not have monthly payments, whereas the renters with a small sum of deposit pay monthly rent. Thus, renters with monthly rents tend to have higher levels of housing expenditures than do either homeowners or renters with a lump sum deposit. The latter group has substantially different characteristics and expenditure patterns compared with the other two groups because it is composed mainly of low-income families and students. Such differences warrant treating this group of monthly payment renters separately from the other two groups in expenditure analyses. Given the purpose of our article, we opted to keep our focus on the majority of the Korean households and exclude the renters with monthly rents, about 17% of the total sample. The final sample size for this study was 40,062 households.

Estimation of Permanent Income

The instrumental variable approach was used to estimate the household's permanent income. The idea behind the technique is to find a variable that is correlated with permanent income but not transitory income to replace measured income in the consumption function.

Because permanent income is not directly observable, total expenditure was used as a proxy. Using total expenditure as a proxy for permanent income is done for theoretical and empirical reasons. From theory, Milton Friedman's (1957) permanent income hypothesis suggests that consumers make expenditure decisions based not only on their current income but also on expectations of future income. Thus, consideration of future income is already embedded in total expenditure figures. Also, expenditure data are typically more trustworthy than income data, which often have missing observations. Empirically, many researchers have used total expenditure as a proxy for permanent income in their analyses (e.g., Abdel-Ghany & Sharpe, 1997; Paulin, 2000; Rubin & Nieswiadomy, 1997).

Total expenditure, as a proxy for permanent income, was regressed on the following variables: age, age squared, number of earners, education of the reference person, family type, occupation of the reference person, and the residing region. The results of this regression are presented in Table 1. The predicted values from this regression then became the estimates of the average permanent income of households having those specific characteristics.

Estimation of Relative Income

Relative income was estimated by creating the rank variable *G*, which is the rank within the subgroup's actual per-capita household income. There were 15 subgroups: Seoul, Pusan, Taegye, Incheon, Kwangju, Taejeon, Kyungki, Kangwon, Choogbuk, Choognam, Chonbuk, Chonnam, Kyungbuk, Kyungnam, and Cheju. Within each subgroup, the family-size adjusted-income values were ordered from low to high and then assigned a relative rank equal to the household's rank divided by the total number of families in that subgroup and multiplied by 100. For example, suppose there were 200 households in the sample that resided in Cheju. Household A's per-capita income was the 50th lowest among these 200 households. Then Household A's relative income rank is $(50/200) \times 100 = 25$.

Dependent Variables

To examine Korean household consumption behavior, 14 expenditure categories were used as the dependent variables in this study. They were food at home, food away from home, housing, fuel and utilities, appliances, household services, apparel, health care,

TABLE 1: Regression Results Predicting Permanent Income (in 100,000 won)

<i>Variable</i>	<i>Coefficient</i>
Constant	−6.62***
Age	0.72***
Age squared	−0.01***
Number of earners	1.88***
Education of the reference person (less than high school)	
High school graduate	2.77***
College or more	5.77***
Family type (married)	
Single male headed	−2.63***
Single female headed	−3.73***
Occupation of the reference person (managerial)	
Production	−1.66***
Self-employed	0.23
Not working	0.87***
Residing region (Seoul)	
Pusan	−1.88***
Taegue	−1.83***
Inchon	−2.29***
Kwangju	−0.99***
Taejeon	−2.08***
Kyungki	−1.57***
Kangwon	−1.97***
Choogbuk	−2.23***
Choognam	−1.49***
Chonbuk	−1.18***
Choonnam	−2.15***
Kyungbuk	−2.67***
Kyungnam	−2.12***
Cheju	−0.39

NOTE: Reference groups are in parentheses.

*** $p < .01$.

reading/education, recreation, transportation, communication, personal care/miscellaneous, and ceremony/gifts. These represent all major consumption categories that are available in the data set. See the appendix for a list of commodities and services included in each category.

The Estimated Equation and Specification Issues

A system of equations was estimated, with the budget share for each expenditure category as the dependent variables. Budget shares

were used as dependent variables to correct for heteroskedasticity problems commonly found in demand equations using expenditures as dependent variables (Maddala, 1992). The form of the equation is as follows:

$$W = \beta_0 + \beta_1 \ln G + \beta_2 (HP) + \beta_3 (HP)^2 + \beta_4 D + e, \quad (1)$$

where W = budget share of a particular expenditure category, $\ln G$ = natural log of the ranking variable, HP = estimated permanent income, and D = a vector of demographic variables representing household preferences. Betas are regression coefficients, and e is the error term, which is assumed to have a normal distribution.

A problem with including the level of income and income rank in the same equation is collinearity between the two variables. A method to resolve the problem, employed by Kosicki (1987), is to include both variables in the equation and at the same time generate as much variation in rank independent of variation in the level of income as possible. To this end, the rank variable was estimated within each of the 15 residing regions. Also, the use of the natural log of the rank instead of the absolute value reduces the possibility of collinearity and allows for any nonlinear relationship between the dependent and the independent variables.

The preference shifters in the D vector in Equation 1 include age and age squared, education (less than high school [reference group], high school graduate, college or more), family type (married [reference group], single male headed, single female headed), occupation (managerial [reference group], production, self-employed, not working), housing tenure (owner [reference group], renter), residing region (Seoul [reference group], Pusan, Taegye, Incheon, Kwangju, Taejeon, Kyungki, Kangwon, Choogbuk, Choognam, Chonbuk, Chonnam, Kyungbuk, Kyungnam, Cheju). When appropriate, information for the reference person is used. For husband-wife families, the husband is usually the reference person. The set of variables in the D vector is generally similar to ones used in most expenditure studies.

To satisfy the adding-up restriction, one equation in the system had to be dropped in the estimation process. Because the personal care/miscellaneous expenditure category included many miscellaneous items, it could be considered the residual category. Thus, this expenditure category was dropped in the estimation process.

Some of the expenditure categories included in this study had a large number of zero expenditure observations. Table 2 presents the percentage of households that reported non-zero expenditures in each of the 14 expenditure categories. To correct for this limited dependent variable problem, a two-stage tobit method was used (Fan, 1997; Greene, 1997; Maddala, 1983) for any expenditure categories with more than 15% zero observations. The 15% cutoff point was used because smaller percentages caused a floating-point problem in the estimation. This is a computational problem in which the regression equations are not estimable due to nonconvergence. A two-stage tobit method was used because a simple tobit method would not have allowed for system estimation.

Specifically, probit models were estimated first with the probability of nonzero expenditure on relevant categories as the dependent variables. The probit estimates were then used to compute a sample-selection bias correction term to be included in the second stage regression analysis. Five expenditure categories needed correction for limited dependent variable problems: housing, household services, health care, education, and gifts.

The error terms in the demand equation system are assumed to be correlated. The system was thus estimated using an iterated, seeming unrelated regression method with the SAS PROC MODEL procedure (SAS Institute Inc., 1988).

RESULTS AND DISCUSSION

Descriptive statistics of the sample are shown in Table 2 and Table 3. Expenditures on food at home represent the largest share in the Korean household budget (23%). Housing expenditures, on the other hand, represent only slightly more than 2% of the total budget. The reason for the small share of the Korean household budget allocated to housing is that a large percentage of homeowners in the sample have totally paid off their homes. Approximately the same share of the budget is allocated to food away from home, fuel and utilities, apparel, and reading/education.

The average age of the reference person is 44 years. Almost half of the reference persons have a high school diploma. Married households represent the majority of the sample (80%). Employment in the production sector represents the most prevalent occupation (36%).

TABLE 2: Descriptive Statistics of the Sample (dependent variables)

<i>Dependent variable</i>	<i>Statistics</i>	
	<i>Budget Share (%)</i>	<i>Proportion Nonzero Expenditure</i>
Food at home	23.15	1.00
Food away from home	8.43	0.88
Housing	1.89	0.38
Fuel and utilities	7.23	0.99
Appliances	3.49	0.90
Household services	0.62	0.45
Apparel	8.27	0.86
Health care	5.13	0.82
Reading/education	7.98	0.61
Recreation	2.78	0.97
Transportation	3.59	0.89
Communication	7.75	0.98
Personal care/miscellaneous	14.01	0.99
Ceremony/gifts	5.68	0.60

Regression estimates of the parameters testing the null hypothesis that a particular parameter value equals zero are presented in Table 4. The results strongly support the hypothesis that relative income is an important determinant of household expenditure behavior. The variable "rank" has a statistically significant effect on budget shares of all 13 categories estimated. When a household's relative income rank increases, less of its budget share is allocated to food at home, fuel and utilities, and transportation, whereas more is allocated to food away from home, housing, appliances, household services, apparel, health care, education, recreation, communication, and gifts, holding permanent income and other preference shifters constant.

Because both permanent income and permanent income squared were entered in the model as independent variables, the interpretation of the results regarding the relationship between budget shares and permanent income needs to take both coefficients into consideration. For 5 out of the 13 expenditure categories estimated, only one of the two coefficients was statistically significant. Thus, the relationship between permanent income and the budget share for these categories is monotonic. Holding relative income rank and other demographic variables constant, as permanent income increases, budget share decreases for food at home and health care, whereas it increases

TABLE 3: Descriptive Statistics of the Sample (independent variables)

<i>Independent variable</i>	<i>Statistics</i>	
	<i>Mean</i>	<i>Percentage</i>
Predicted permanent income (in 100,000 won)	12.47	
Age	43.99	
Family size	3.39	
Number of earners	1.38	
Education of reference person		
Less than high school		34.57
High school graduate		47.79
College or more		17.64
Family type		
Married		79.79
Single male headed		6.13
Single female headed		14.08
Occupation of the reference person		
Managerial		25.64
Production		35.87
Self-employed		25.17
Not working		12.93
Housing tenure		
Owner		66.32
Renter		33.68
Residing region		
Seoul		13.41
Pusan		9.69
Taegue		7.27
Inchon		9.44
Kwangju		7.15
Taejeon		7.13
Kyungki		11.26
Kangwon		4.95
Choogbuk		4.70
Choognam		4.33
Chonbuk		3.82
Chonnam		4.06
Kyungbuk		4.63
Kyungnam		6.26
Cheju		1.88

for food away from home, appliances, and transportation. For the other 8 expenditure categories estimated, both coefficients were significant. Budget share for fuel and utilities and reading/education first decreases and then increases with permanent income, forming a

TABLE 4: Regression Results for 14 Consumption Categories

<i>Variable</i>	<i>Log (G) Coefficient</i>	<i>Permanent Income Coefficient</i>	<i>Permanent Income Squared Coefficient</i>	<i>Max./Min. Points for Permanent Income</i>
Food at home	-5.22***	-0.73***	0.10×10^{-2}	
Food away from home	0.76***	0.94***	0.22×10^{-2}	
Housing	0.63***	-0.13**	$-0.39 \times 10^{-2**}$	
Fuel and utilities	-1.80***	-0.47***	$1.27 \times 10^{-2***}$	18.50 min.
Appliances	0.71***	0.07	$-0.41 \times 10^{-2**}$	
Household services	0.23***	0.20***	$-0.48 \times 10^{-2***}$	20.83 max.
Apparel	1.57***	0.40***	$0.77 \times 10^{-2***}$	
Health care	0.43***	-0.01	$-1.30 \times 10^{-2***}$	
Reading/education	0.81***	-3.82***	$7.52 \times 10^{-2***}$	25.40 min.
Recreation	0.21***	0.34***	$-0.86 \times 10^{-2***}$	19.77 max.
Transportation	-0.42***	0.36***	0.11×10^{-2}	
Communication	0.24***	0.43***	$-0.45 \times 10^{-2*}$	47.78 max.
Personal care/ miscellaneous ^a	0.18	2.11	-2.65×10^{-2}	
Ceremony/gifts	1.67***	1.31***	$-3.45 \times 10^{-2***}$	18.99 max.

NOTE: lnG is the log of relative ranking of household-size adjusted income.

a. Personal care/miscellaneous was the omitted category in the estimation to impose adding-up restriction. Thus, the significance of the coefficients was not estimated.

* $p < .10$. ** $p < .05$. *** $p < .01$.

U-shaped relationship. Budget share for household services, recreation, communication, and ceremony/gifts first increases and then decreases with permanent income, forming an inverse-U relationship. In the last column, the critical points of permanent income are listed. Those are the values at which the budget share is estimated to be maximized or minimized. For example, the budget share for ceremony / gifts increases first as permanent income increases, until a family reaches a permanent income of 1,899,000 won. Then the budget share decreases as permanent income increases, other things being equal. It is worth noting that both coefficients of permanent income were significantly positive for budget shares for apparel, implying that the budget share for apparel increases with permanent income at an increasing rate. For the housing budget share, both permanent income coefficients are negative and statistically significant, indicating that the budget share for housing decreases with permanent income at an increasing rate.

DISCUSSION AND CONCLUDING REMARKS

When considered separately, the permanent income and relative income hypotheses have made important contributions to understanding the consumption function. However, in past research, they were often treated as mutually exclusive concepts. In this article, a synthesis of the permanent income and relative income hypotheses in one model was directly tested as an explanation of household expenditure behavior.

The results of the integrated model indicate that both hypotheses are important determinants of household consumption behavior and, when considered together, make an important and independent contribution to explaining expenditure behavior.

In the past two decades in Korea, the budget allocated to necessities such as housing and food decreased, whereas budget shares for transportation, recreation, education, and personal care categories increased substantially (National Statistical Office of Korea, 1997a). There is little information about Korean household consumption behavior particularly as it relates to the relative income hypothesis. The results of this study indicate that less of the household budget is allocated to food at home, fuel and utilities, and transportation as a household's relative income rank increases. On the other hand, the budget shares for food away from home, housing, appliances, household services, apparel, health care, reading/education, recreation, communication, and ceremony/gifts increase as a household's relative income rank increases, implying that expenditure on these categories is influenced by relative income.

Korean society is shaped by Confucianism, which highly values responsibility for parents and family interdependence. Following this tradition, family rituals and gatherings are considered to be important activities among many Korean families. These values may be reflected in the budget share for ceremony/gifts, a category that includes household spending on weddings, funerals, ancestral ceremonies, birthdays, and gift giving to other households with those ceremonies. Ancestral ceremonies are held several times each year. Overspending on weddings, where the average cost of a wedding was \$4,598 per couple in 1997 has been a great social concern (Korean Consumer Protection Board, 1997). It has also been argued that conspicuous consumption behavior on weddings by a certain group could affect their neighbors' or their reference groups' spending on weddings. From the regression results of this study, the budget share

for ceremony/gifts is found to be positively associated with relative income ranking, implying that the ceremony/gifts category is a positional item of consumption that is affected by relative income. The results of this study therefore support such criticism.

Korean families also emphasize the value placed on education. Whereas American households spend about 2% of the average household budget on education for books, school supplies, and tuition (Fan, 1998), Korean households allocate about 10% of the household budget on education, including paying for private tutors and special supplementary classes for their children to prepare them for university entrance exams (National Statistical Office of Korea, 1997a). Many Koreans believe a bachelor degree from a prestigious university will play a key role in securing a well-paying job; therefore, entrance to the best universities in Korea is very competitive. As the regression results of this study indicate, the budget share for education is found to be positively associated with relative income ranking, implying that education has features of status consumption in Korea.

Unlike in the United States, where rent or mortgage payments account for the largest household expenditure category, many Korean households purchase their homes without a mortgage. And many households rent their homes without paying a monthly payment but by providing a large deposit to the landlord when signing the rent contract (usually 2 years). The amount of this lump sum deposit varies between less than 50% to as much as 80% of the housing price. The renters with a large sum of deposit will receive exactly the same amount of money from their landlords when the contract period ends. Meanwhile, the landlords use that lump sum money as a private source of borrowing money. Thus, the budget share for housing in Korea is generally much less than that in the United States.

Policy implications related to the results of this study concern the debate over income distribution and the importance of the marginal valuation placed on upward social mobility in various ranges of income distribution and its interaction with the elasticity of the marginal utility of consumption. Boskin and Sheshinski (1978) explored the structure of optimal income taxation redistribution in an economy where the welfare of individuals depends not only on absolute income but also on relative after-tax consumption. The results of this study seem to encourage the revisiting of the design of optimal redistribution of income schemes based on absolute as well as relative income. Another implication related to this study stems from the fact that relative standing causes consumers to allocate fewer resources to

nonpositional items and more to positional items, regardless of their practical importance in enhancing quality of life.

APPENDIX **Definitions of Expenditure Categories**

<i>Consumption Categories</i>	<i>Definition</i>
Food at home	Cereal, bread, fish, meat, nonalcoholic beverages, and alcoholic drinks for home consumption.
Food away from home	Dining out, nonalcoholic beverages, and alcoholic drinks away from home.
Housing	Rent fees, repair costs, and housing maintenance fees.
Fuel and utilities	Heat and water.
Appliances	Household equipment and furniture.
Household services	Expenditures for maid, waste disposal, cleaning house, and child care.
Apparel	Purchase of clothing, footwear, dry cleaning, alterations, and shoe repair.
Health care	Physician visits, hospital services, drugs, and dental care.
Reading/education	Newspapers, magazines, other reading materials, fees for public education and private lessons, and stationery.
Recreation	Entertainment, pet and gardening, and recreation-related goods and services.
Transportation	Public and private transportation services, auto insurance, auto repair and maintenance, and parking fees.
Communication	Telephone fees and postage costs.
Personal care/miscellaneous	Cosmetics, jewelry and accessories, tobacco, and other expenses not otherwise accounted for.
Ceremony/gifts	Ceremonial expenses including weddings, funerals, ancestor worship, birthdays, and gift giving.

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