

CHAPTER 3

SETTING OF THE RESEARCH PURPOSE

Besides the changes in consumption expenditures, income, and prices, marked changes have occurred over time in such demographic characteristics of the U.S. population as age, racial composition, and women's labor force participation rate as discussed in previous chapters. The changes may have important implications for consumption patterns for clothing categories and shoes. Demographic variables frequently are included in demand analyses. Incorporation of demographic variables into a time-series demand analysis is viewed as an approach for rationalizing shifts in demand structure due to consumer taste changes over time. The underlying rationale for including age, racial composition, and women's labor participation rate variables in the present research is that the changes in such demographic characteristics over time may impact current and future demand and consumption expenditure patterns for clothing categories and shoes. Besides providing aggregate parameter estimates for the economic variables of prices and total expenditures, this research yields parameter estimates for demographic changes over time that can help predict future changes in clothing and shoes consumption in the United States. For the most part, U.S. aggregate demands for each category of clothing (i.e., women's and children's clothing, men's and boy's clothing) and shoes remain unexplored. Especially, price effects on demands for those items have not been studied thoroughly. Thus, the present research focuses on analyzing those U.S. aggregate demands, incorporating the selected demographic variables in a demand system.

Assumptions

In this research, clothing and shoes were assumed to be nondurable goods according to the classification of the U.S. Department of Commerce for The National Income and Product Accounts of the United States. The classification is due to the belief that clothing and shoes, unlike durables, have average lives of less than three years and, unlike services, can be stored or inventoried (U.S. Department of Commerce, Bureau of

Economic Analysis, 1992). Weak separability of preferences and two-stage budgeting for the group of nondurable goods were assumed. Thus, the estimated budget-share AIDS model represents conditional demand confined to nondurable goods: men's and boys' clothing, women's and children's clothing, shoes, and other nondurable goods. It was assumed that consumers first allocate their total consumption expenditures to broad groups of products, such as durable goods, nondurable goods, and services; then in the second stage of budgeting, they allocate the nondurable group expenditures to the products within the nondurable group, such as men's and boys' clothing, women's and children's clothing, shoes, and other nondurable goods. Exclusion of durable goods and services in the model is reasonable because these products are less closely related to clothing and shoes than are goods within the nondurable group. For example, houses as service goods and automobiles as durable goods are purchased less frequently and in smaller units than are clothing and other nondurable items. As well, housing involves consumer investment, and mortgage and rent payments are long-term commitments (Winakor, 1989).

The Purposes of the Study

The main purposes of the study are: using annual time series data from 1929 to 1994, (a) to evaluate the effects of the changes in prices and in total expenditures for nondurable goods on the U.S. aggregate budget shares for women's and children's clothing (WC), men's and boys' clothing (MB), and shoes; and (b) to determine the impacts of selected demographic variables on the U.S. aggregate budget shares for WC, MB and shoes. The selected demographic variables are median age of the U.S. population, age distribution of the U.S. population (variance and skewness of age distribution of the U.S. population), proportion of non-Whites in the U.S. population, and labor force participation rate of women. Besides the economic and demographic variables, a dummy variable was included in the study to investigate the impact of World War II on the U.S. aggregate budget shares for the clothing categories and shoes. Based on the literature, several questions guided the study:

1. How are the U.S. aggregate demands for each category of clothing (i.e., WC, MB) and shoes affected by the changes in own prices, prices of other nondurable goods, and total consumption expenditures for nondurable goods?
2. How do U.S. consumers allocate their consumption expenditures for nondurable goods to WC, MB, and shoes when prices and total consumption expenditures for nondurable goods change?
3. How does the change in the U.S. population median age affect the U.S. aggregate expenditure shares for WC, MB, and shoes?
4. How does the change in the U.S. population age distribution (variance and skewness) affect the U.S. aggregate expenditure shares for WC, MB, and shoes?
5. How does the increase in U.S. women's labor force participation affect the U.S. aggregate expenditure shares for WC, MB, and shoes?
6. How does the increased non-White population influence the U.S. aggregate expenditure shares for WC, MB, and shoes?
7. How did World War II impact the expenditure shares for WC, MB, and shoes in the U.S.?

Research Hypotheses

The model relates budget shares as a function of real per capita expenditures for all nondurables, real prices, and demographic variables. For the empirical estimates of the AIDS model, research hypotheses were set for each coefficient.

Total Expenditures for Nondurable Goods and Prices

Hypothesis 1. Per capita total expenditures on nondurables will be significantly related to the nondurables budget shares of WC, MB, and shoes.

Hypothesis 2. Own prices of WC, MB, and shoes will be significantly related to the nondurables budget shares of WC, MB, and shoes, respectively.

Hypothesis 3A. Prices of WC and MB will be significantly related to the nondurables budget share of shoes (and vice versa for the relation of shoes prices to the WC and MB budget shares).

Hypothesis 3B. Price of WC will be significantly related to the nondurables budget share of MB (and vice versa).

Hypothesis 3C. Price of other nondurable goods will be significantly related to the nondurables budget shares of WC, MB, and shoes (and vice versa).

There is no empirical evidence, from using a conditional model like that in this research, of the relationship of the nondurables budget shares of WC, MB, and shoes to per capita total expenditures on nondurables nor to the own and cross prices of WC, MB and shoes. Based on the economic theory of consumer behavior, the total expenditures and the prices are functionally related to the budget shares of any good; for example, budget share of WC, $w_{wc} = p_{wc} * q_{wc}(p_{mb}, p_{sh}, p_{on}, x) / x$, where p_{wc} is price of WC, p_{mb} is price of MB, p_{sh} is price of shoes, p_{on} is price of other nondurables, q_{wc} is quantity demanded of WC and a function of p_{mb} , p_{sh} , p_{on} , and x ; and x is per capita total nondurables expenditures. Not only the per capita total nondurables expenditures and the own price of WC but also the prices of MB, shoes, and other nondurable goods are functionally related to the budget share of WC under the second-stage budget setting confined to the nondurable category. Thus, the per capita total nondurables expenditure and the own and cross prices of WC, MB, shoes and other nondurable goods were considered major determinants of the consumer budget allocation for the goods analyzed in this study.

Median Age, Variance, and Skewness of the Population

Hypothesis 4A. The U.S. aggregate nondurables budget shares for WC, MB, and shoes will increase as the median age of the U.S. population increases.

Positive signs on the coefficients for the median age of the U.S. population were hypothesized. Thus, the U.S. aggregate budget share for each category of clothing and shoes would increase as the population age increases. The underlying rationale for this hypothesis is based on the notion that, although the median age of the U.S. population has increased (see Figure 2.11), the median age is still in the range where clothing expenditures are higher than for the elderly. Bryant and Wang (1990) show that, over the period 1955-1984, the demand for clothing and shoes in the U.S. increased with the

growth in the percentage of the U.S. population ages 20-34. Fan, Lee, and Hanna's study (1996) employing the AIDS model suggests that the age of the household reference person has a positive relationship with clothing and shoes budget shares.

Hypothesis 4B. The U.S. aggregate nondurables budget shares for WC, MB, and shoes will decrease as the variance of the age distribution of the U.S. population increases.

Negative effects of the variance in the age distribution of the population on the clothing and shoes budget shares (i.e., negative signs on the coefficients) were hypothesized. Statistics theory says that a sample distribution with a lower variance (i.e., less dispersed) has relatively higher frequency around the mean or median than does a sample distribution with a higher variance. When examining the relative degrees of variance in the U.S. population distribution over the period 1929-1994, the elderly group with high variance increased and the median age group (age 25-34) with high variance decreased as proportions of the total population (see Tables B.5 and B.6 in Appendix B). The variance in the age distribution of the population measures the dispersion across age levels; the greater the variance, the more the relative number of people in the elderly group, but the less the relative number of people in the median age group. Bryant and Wang (1990) found that the demand for clothing and shoes in the U.S. increased over the period 1955-1984 with the growth in the percentage of the U.S. population ages 20-34.

Hypothesis 4C. The more positively skewed the age distribution of the U.S. population, the greater will be the U.S. aggregate nondurables budget shares for WC, MB, and shoes.

Skewness is a statistical measure of the degree of asymmetry of distribution where a positively skewed distribution has a tail going to the right (toward older age in the present research), and a negatively skewed distribution has a tail going to the left. As seen in the Tables B.5 and B.6 in Appendix B, the trend of the U.S. population distribution over the several decades from 1929 to 1994 shows a decreased proportion of elderly in the population and positive, though variable skewness of the population distribution. The more positive the skewness of the population distribution, the less the relative number of elderly in the population. Positive effects of the skewness in the age distribution of the population on the clothing and shoes budget shares (i.e., positive signs

on the coefficients) were hypothesized. This implies a negative relationship between the relative number of elderly in the population and the aggregate WC, MB, and shoes budget shares. With relatively fewer elderly in the population (i.e., more positively skewed), the U.S. aggregate budget shares for WC, MB, and shoes would increase. Mokhtari's study (1992) shows that the long run effect of a rise in the elderly population ratio is to decrease U.S. clothing expenditures. Clothing expenditures may decline at later stages of life, due to the accumulation of clothing inventories over the life cycle and due to increasing expenditures for health and other age-related services, as suggested by Dardis et al. (1981).

Proportion of Non-White Population

Hypothesis 5. The U.S. aggregate nondurables budget shares for WC, MB, and shoes will increase as the non-White proportion of the U.S. population increases.

Positive signs on the coefficients for the non-White proportion of the U.S. population were hypothesized. It implies a positive relationship between the proportion of the non-White population and the aggregate clothing and shoes budget shares. Whites constituted about 89% of the U.S. population in the 1930s, but the proportion steadily decreased to 83.1% by 1994. As Blacks, Hispanics, and Asians increased their proportions of the U.S. population, the Whites proportion has continually decreased. About 28.5 % of the U.S. population is expected to be non-White by the end of the century ; 45.6% of the total non-White population would be Blacks, 38.6% would be Hispanics, and 15.8% would be Asians (Day, 1992). The study by Fan (1994), on household budget allocation patterns with an AIDS model, indicated that Black and Hispanic households allocate a larger proportion of their expenditure budgets to apparel than do non-Hispanic White households, although Asian households allocate less of their budgets to apparel than do White households. O' Hare (1987) reported that Blacks at all socioeconomic levels spend a greater proportion of their income on clothing than do Whites.

Labor Force Participation of Women

Hypothesis 6. The U.S. aggregate nondurables budget shares for WC, MB, and shoes

will increase as the labor force participation rate of women increases.

There is no empirical or theoretical evidence for the effect of changes in women's labor force participation on the aggregate budget shares for clothing categories and shoes. In this study, positive effects of women's labor participation on the U.S. aggregate budget shares for WC, MB, and shoes (i.e., positive signs on the coefficients) were hypothesized. This is thought to be partially due to employment-related wardrobe needs and increased income earned by employed women (DeWeese & Norton, 1991).

World War II Period

Hypothesis 7. The dummy variable for World War II will be a significant variable in the multiple estimations of the U.S. aggregate nondurables budget shares for WC, MB, and shoes.

The dummy variable for World War II was hypothesized to be significant, implying that the mean levels of the expenditure shares shifted during World War II as compared to the other years over the 1929-1994 period. World War II is believed to have affected the U.S. aggregate nondurables budget shares for clothing and shoes because shortages of raw materials for clothing and shoes led the U.S. government to regulate consumption and production of clothing and shoes, implementing restrictions on clothing production, price controls, and shoes rationing during World War II.

Limitations and Delimitations of the Study

1. This research focuses on the analysis of the U.S. aggregate demands for clothing categories and shoes. Thus, generalizations of the findings are limited to the U.S., not other countries.
2. In the study, the clothing categories are classified in those of women's and children's clothing and men's and boy's clothing due to way the data are reported in The National Income and Product Accounts of the U.S. Thus, the findings of the study may not be generalized to women's clothing, children's clothing, men's clothing, and boys' clothing separately.

3. In the U.S. Census data used in this study, the Hispanic population is mixed into the White population and into the non-White population. Thus, the findings of the study may not be generalized to non-Hispanic Whites nor to non-Hispanic-non-Whites. In general, the nature of the data does not allow anything to be said specifically about any certain non-White groups.
4. Because the budget-share AIDS model estimated in this study is confined to nondurable goods, caution should be made against overgeneralization of the findings in comparison with the results of other demand system analyses.
5. The annual observation period in the study is from 1929 to 1994. Thus, studies with other annual data spans may yield different findings from those of the present study.