CHAPTER 5
RESULTS AND DISCUSSION

This chapter presents and discusses the results from the LAIDS model estimations for clothing and shoes budget shares. For each different LAIDS model (Model 29A and Model 48A), a system of three equations for clothing and shoes was estimated assuming the second-stage of the two-stage budgeting procedure. Total nondurable goods expenditures was one of the independent variables. The demographic variables included were median age of the U.S. population, proportion of non-White population, labor force participation rate of women, and variance of the age distribution of the U.S. population (having dropped the skewness variable from the models, as a result of the Rao Test). In the first section, the results of the two different LAIDS analyses and of the hypothesis tests are discussed. In the second section, the estimated demand elasticities of each economic and demographic variable are presented and discussed.

Results of LAIDS Analyses

In estimating Model 29A, annual data from 1929 to 1994 were used. The demographic variables included were median age of the U.S. population, proportion of non-White population, and variance of the age distribution of the U.S. population. A dummy variable for the period of World War II was also included in Model 29A. In estimating Model 48A, annual data from 1948 to 1994 were used. The demographic variables included were the median age of the U.S. population, labor force participation rate of women, and variance of the age distribution of the U.S. population. Iterative seemingly unrelated regression was used to estimate both models. Adding-up, homogeneity, and symmetry restrictions were imposed. The equation representing consumption of other nondurable goods was deleted from the estimation procedure. The parameters of the deleted equation were recovered using the adding-up restrictions. Tables 5.1 and 5.2 present the estimated parameters.

Table 5.1.
Parameter Estimates of the LAIDS Model 29A for 1929-1994

	Women's and Children's Clothing (WC)	Men's and Boys' Clothing (MB)	Shoes (SH)	Other Nondurables (ON)
Intercept (α_j)	-0.7943* (0.3013)	-0.2260** (0.1190)	-0.2001* (0.0809)	2.2204* (0.4647)
Expenditures (β_j)	0.01695* (0.0060)	0.0059* (0.0022)	0.0034* (0.0015)	-0.0263* (0.0093)
Age (d_{1j})	-10.8503 (39.1367)	235.1067* (87.4929)	159.6341* (72.8242)	47.5953 (43.1828)
Non-White (d_{2j})	31.5534 (78.9155)	331.0805* (140.5440)	238.3230* (119.3450)	89.0630 (72.4978)
Variance (d_{3j})	-137.0111 (150.4679)	86.4303 (129.2276)	16.4841 (110.2394)	-44.3812 (86.0598)
Dummy (κ_j)	0.0045* (0.00178)	0.0080* (0.0011)	-0.0014 (0.0009)	-0.0111* (0.0023)
Price of WC (γ_{1j})	0.0272* (0.0052)	0.0134* (0.0026)	0.0002 (0.0029)	-0.0409* (0.0075)
Price of MB (γ_{2j})		0.0117* (0.0041)	-0.0099* (0.0047)	-0.0153* (1.0E-5)
Price of SH (γ_{3j})			0.0183* (0.0068)	-0.0086* (1.0E-5)
Price of ON (γ_{4j})				0.0648* (0.0203)
R^2	0.936	0.964	0.920	

Note. Standard errors are in parentheses. R^2 is the R-squared statistic. The theoretical restriction of symmetry was imposed for the price estimations. The dependent variables (budget shares of indicated categories) are shown across the top; the independent variables are listed at the left along with the coefficients, where j=WC, MB, SH, ON. Expenditures = per capita total nondurable expenditures. Age = median age of the U.S. population. Non-White = non-White proportion of the U.S. population. Variance = variance of the age distribution of the U.S. population. Dummy = dummy for World War II. The parameters of the deleted equation are linear combination of random variables; thus, their standard errors were determined by using a formula for calculating variance: v(x + y + z) = v(x) + v(y) + v(z) + 2{cov(x, y) + cov(x, z) + cov(y, z)}.
$^{**}p < 0.1$. $^{*}p < 0.05$.

Table 5.2.
Parameter Estimates of the LAIDS Model 48A for 1948-1994

	Women's and Children's Clothing (WC)	Men's and Boys' Clothing (MB)	Shoes (SH)	Other Nondurables (ON)
Intercept (α_j)	-2.7438* (0.5710)	-0.7835* (0.3067)	-1.0155* (0.2458)	5.5428* (0.4647)
Expenditures (β_j)	0.0427* (0.0088)	0.0109* (0.0049)	0.0136* (0.0033)	-0.0672* (0.0141)
Age (d_{1j})	22.1867** (12.7795)	62.6175* (25.1452)	29.2389** (15.6642)	19.9402** (10.5725
Variance (d_{3j})	62.5553 (61.0607)	189.2702 (126.7992)	83.1314 (72.3256)	61.8515 (48.6189)
Labor Force (d_{5j})	22.1439* (9.65)	56.9361 (35.5099)	27.0208 (16.1991)	19.5750 (12.0345)
Price of WC (γ_{1j})	0.0320* (0.0076)	0.0267* (0.0047)	-0.01925* (0.0064)	-0.0394* (0.0071)
Price of MB (γ_{2j})		0.0049 (0.0041)	0.00045 (0.0068)	-0.0321* (0.0080)
Price of SH (γ_{3j})			0.0402* (0.0096)	-0.0214 (0.0164)
Price of ON (γ_{4j})				0.0929* (0.0179)
R^2	0.921	0.929	0.867	

Note. Standard errors are in parentheses. R^2 is the R-squared statistic. The theoretical restriction of symmetry was imposed for the price estimations. The dependent variables (budget shares of indicated categories) are shown across the top; the independent variables are listed at the left along with the coefficients, where j=WC, MB, SH, ON. Expenditures = per capita total nondurable expenditures. Age = median age of the U.S. population. Variance = variance of the age distribution of the U.S. population. Labor Force = labor force participation rate of women. The parameters of the deleted equation are linear combination of random variables; thus, their standard errors were determined by using a formula for calculating variance: $v(x + y + z) = v(x) + v(y) + v(z) + 2\{cov(x, y) + cov(x, z) + cov(y, z)\}$.

$^{**}p < 0.1$. $^{*}p < 0.05$.

Total Expenditure Variables

As indicated by the estimated β_j coefficients (i.e., β_{WC}, β_{MB}, and β_{SH}), the total nondurables expenditures variable is significantly related to all categories of expenditure shares in Models 29A and 48A. Hypothesis 1, stating that per capita total expenditures on nondurables would be significantly related to the nondurables budget shares of women's and children's clothing (WC), men's and boys' clothing (MB), and shoes, was supported.

The expenditure coefficients (β_j) represent 100 times the effect on the budget share of a 1% increase in real total nondurables expenditures. For example, in Model 29A, the nondurable goods budget share for women's and children's clothing increased by 0.0169% with a 1% increase in the expenditures for nondurable goods. The value of the estimated β_{WC} coefficient is the highest among the clothing categories and shoes in both models, which implies that women's and children's clothing is the most sensitive to changes in the consumer's nondurables expenditure budget. The signs of the β_j coefficients are positive for both clothing categories and for shoes in both models, indicating that increased total nondurables expenditures have been accompanied by increased consumer budget allocations for the clothing categories and shoes. Blanciforti, Green, and King (1986) reported a negative coefficient for their clothing variable, although their research is not exactly comparable.

Price Variables

Own Prices

As indicated by the estimated γ_{ij} coefficients (i.e., γ_{1WC}, γ_{2MB}, γ_{3SH}, and γ_{4ON}), the own price variable is significant in Models 29A and 48A except in the case of men's and boys' clothing in Model 48A. Hypothesis 2, stating that own prices of WC, MB, and SH would be significantly related to the nondurables budget shares of WC, MB, and shoes, was supported in Model 29A and for the most part in Model 48A.

The signs of the own price coefficients are positive for clothing categories and shoes in both models, indicating that as the own prices of women's and children's clothing, men's and boys' clothing, and shoes increased the consumer budget allocation on each clothing category and shoes increased. Blanciforti et al. (1986) also reported a positive coefficient for clothing. The price coefficient represents 100 times the effect on the budget share of a 1% increase in the own price. For example, in Model 29A, the nondurable goods budget share for women's and children's clothing increased by 0.0272% with a 1% increase in the women's and children's clothing price. The value of the estimated coefficient γ_{1WC} (0.027) is the highest in Model 29A, but in Model 48A, γ_{3SH} (0.0402) is the highest among the clothing categories and shoes. These results imply that the women's and children's clothing budget share in Model 29A and the shoes budget share in Model 48A are the most sensitive to changes in their own prices.

Cross Prices

As indicated by the estimated γ_{1SH} coefficients, the price of women's and children's clothing is significantly related to the shoes budget shares (and vice versa) in Model 48A, but the relationship is not significant in Model 29A. As indicated by the estimated γ_{2SH} coefficients, the price of men's and boys' clothing is significantly related to the shoes budget shares (and vice versa) in Model 29A, but the relationship is not significant in Model 48A. Hypothesis 3A, stating that prices of WC and MB would be significantly related to the nondurables budget share of shoes (and vice versa), was partially supported in both models. The result indicates that, for example, the budget share for shoes decreased by 0.99% with a 1% increase in the price of men's and boys' clothing in Model 29A.

The estimated γ_{1MB} coefficients show that the price of women's and children's clothing is significantly related to the men's and boys' clothing budget shares (and vice versa) in both Model 29A and Model 48A. Hypothesis 3B, stating that price of WC would be significantly related to the nondurables budget share of MB (and vice versa), was supported in both models. The signs of the estimated coefficients in Model 29A and Model 48A are positive with the values of 0.0134 and 0.0267, respectively. The result indicates that, for example, the budget share for men's and boys' clothing increased by 0.0134% with a 1% increase in the price of women's and children's clothing in Model 29A.

As indicated by the γ_{1ON}, γ_{2ON}, and γ_{3ON} estimated coefficients, the price of other nondurables is significantly related to the budget shares for women's and children's clothing, for men's and boys' clothing, and for shoes (and vice versa) in Model 29A, but only the relationships with the women's and children's clothing and men's and boys' clothing budget shares are significant in Model 48A. Hypothesis 3C, stating that price of other nondurable goods would be significantly related to the nondurables budget shares of WC, MB, and shoes (and vice versa), was supported in Model 29A, but only partially in Model 48A. The signs of all the estimated coefficients are negative, implying that the budget shares of the clothing categories and shoes decreased with an increase in the price of other nondurables. The value of the estimated γ_{1ON} coefficient is the highest among the clothing categories and shoes in both models, which implies that the budget allocation for women's and children's clothing is the most sensitive to changes in the price of other nondurables among the clothing categories and shoes. The result indicates that, with a 1% increase in the other nondurables price, the women's and children's clothing budget share decreased by 4.09% in Model 29A and 3.94% in Model 48A.

Demographic and Dummy Variables

The demographic variables included in both Model 29A and Model 48A were median age of the U.S. population and variance of the age distribution of the U.S. population. The proportion of non-Whites in the population and a dummy for the World War II period also were included in Model 29A; the labor force participation rate of women also was included in Model 48A. The effects of these variables on each budget share were examined by the estimation of the respective parameters in the models.

Median Age of the U.S. Population

As indicated by the estimated d_{1j} coefficients (i.e., d_{1WC}, d_{1MB}, and d_{1SH}) in Model 48A, the U.S. aggregate nondurables budget (ANB) shares for women's and children's clothing, men's and boys' clothing, and shoes increased as the median age of the U.S. population increased. The median age variable had a significant effect on the budget shares for women's and children's clothing ($p < 0.1$), men's and boys' clothing ($p < 0.05$), and shoes ($p < 0.1$). In Model 29A, the ANB shares for men's and boys' clothing and shoes increased as the median age increased, but the effect on the ANB for women's and children's clothing was not statistically significant. The results for Model 48A indicate positive relationships between the median age and the ANB shares for women's and children's clothing, men's and boys' clothing, and shoes. The results for Model 29A also indicate positive relationships between the median age and the ANB shares for men's and boys' clothing and shoes. Hypothesis 4A, stating that the U.S. aggregate nondurables budget shares for WC, MB, and shoes would increase as the median age of the U.S. population increases, was supported in Model 48A and partially in Model 29A. The older the population, the more nondurable expenditures are allocated to women's and children's clothing, men's and boys' clothing, and shoes. Although the median age of the U.S. population has increased, the median age is still in the range where clothing expenditures are higher than for the elderly. Thus, the ANB shares for women's and children's clothing, men's and boys' clothing, and shoes may continuously increase until the median age reaches middle age, 45 to 54, at which income and overall spending peak (Francese, 1995).

The results obtained for Model 48A and Model 29A, except in the case of women's and children's clothing in Model 29A, support the findings and inferences of Fan, Lee, and Hanna's study (1996) in which they used 1980-1990 Consumer Expenditure Survey data set although their research is not exactly comparable with the present study. The findings from Fan et al. (1996) employing the AIDS model suggested that age has a positive relationship with apparel budget shares.

Variance of the Age Distribution of the U.S. Population

As indicated by the estimated d_{3j} coefficients (i.e., d_{3WC}, d_{3MB}, and d_{3SH}), the effects of the variance of the age distribution of the U.S. population on the ANB shares for women's and children's clothing, men's and boys' clothing, and shoes are not statistically significant in either Model 29A or Model 48A. This may be because of lack of variation in the variable or misspecification in capturing age distribution changes. The results imply that changes in the relative number of people in the median age group of the U.S. population have not affected the ANB shares for the clothing categories and shoes during the observation period. The signs of the estimated d_{3j} coefficients are positive in both models, except for d_{3WC} in Model 29A. The Hypothesis 4B, stating that the U.S. aggregate nondurables budget shares for WC, MB, and shoes would decrease as the variance of the age distribution of the U.S. population increased, was not supported.

Proportion of Non-White Population

As indicated by the estimated d_{2j} coefficients (i.e., d_{2WC}, d_{2MB}, and d_{2SH}), the relationships between the proportion of non-White population and the ANB for the clothing categories and shoes are positive in Model 29A where all the coefficients have the expected positive signs. The effect on the ANB for women's and children's clothing is not statistically significant. Hypothesis 5, stating that the U.S. aggregate nondurables budget shares for WC, MB, and shoes would increase as the non-White proportion of the U.S. population increased, was supported in the cases of men's and boys' clothing and shoes. The effect on the ANB share for men's and boys' clothing is the highest among the clothing categories and shoes, and the effect on the ANB share for women's and children's clothing is the lowest.

The findings imply that increased consumption expenditure allocations to clothing categories and shoes in the U.S. occur as the population of non-Whites increases. It is also possible to infer from the findings that non-Whites allocate their expenditure budgets more to clothing categories and shoes than do Whites. Possible explanations of the findings may lie in values and behaviors of racial and ethnic groups, as indicated in the literature. Gans (as cited in Wagner & Soberon-Ferrer, 1990) pointed out that clothing and food are two categories of goods which are thought to carry different symbolic meanings among ethnic groups. Although Hispanics are of mixed race and Blacks constitute the largest proportion of the U.S. non-White group, Hispanics are a major component of non-Whites. Hispanics seem to be oriented toward expressive consumption and to be concerned with status (Hischman, 1982), which are some of the values often expressed in clothing consumption (Horn & Gurel, 1981). Hispanics may spend more than Whites for clothing if they view the consumption of clothing as showing expressiveness and status. Values of Blacks include affect, communalism, and expressive individualism (Boykin, 1983), which are similar to values expressed in clothing consumption (Horn & Gurel, 1981). Yankelovitch (1973) reported that Blacks are much more interested in physical appearance, individuality, and creativity than are other ethnic groups. Various authors (Bauer & Cunningham, 1970; Johnson, 1981; Swartz, 1963) have noted that Blacks use clothing to aid status symbolization. Dalrymple, Yoshino, and Robertson (1971) suggested that Blacks are more likely to purchase new clothing than are Whites. Evidence exists that Black women are more innovative in clothing selection and generally more fashion-conscious than are White women (Robertson, Dalrymple, & Yoshino, 1969). Thus, if Blacks consider clothing consumption as reflecting those values, they may spend more than Whites for clothing.

Labor Force Participation Rate of Women

As indicated by the estimated d_{5j} coefficients (i.e., d_{5WC}, d_{5MB}, and d_{5SH}), the relationships of the labor force participation rate of women to the ANB shares for women’s and children’s clothing, men’s and boys’ clothing, and shoes have the expected positive signs in Model 48A, but only the effect on the ANB for women’s and children’s clothing is significant. Hypothesis 6, stating that the U.S. aggregate nondurables budget shares for WC, MB, and shoes would increase as the labor force participation rate of women increased, was partially supported and only in the case of WC.

The parameter estimates indicate that the larger the percentage of women who are employed in the labor market, the larger the ANB share for the women’s and children’s clothing. It is also possible to infer from the findings that employed women allocate more of their budgets to women’s clothing, which may be partially because of employment-related wardrobe needs (DeWeese & Norton, 1991). Cassill (1990) reported evidence that employed women are more likely to purchase brand name apparel and are willing to pay more for this apparel than are non-employed women; perhaps this is another factor which has contributed to the increased budget allocation for women’s and children’s clothing as women’s employment rate has increased.

Dummy for World War II Period

As indicated by the estimated κ_j coefficients (i.e., κ_{WC}, κ_{MB}, and κ_{SH}), the dummy variable for World War II is significantly related to the ANB shares for women’s and children's clothing and men's and boys' clothing, but not to the ANB for shoes which shows a negative sign. Hypothesis 7, stating that the dummy variable for World War II would be a significant variable in the multiple estimations of the U.S. aggregate nondurables budget shares for WC, MB, and shoes, was supported by the findings for women's and children's clothing and men's and boys' clothing.

The findings imply that World War II significantly influenced the ANB shares for women's and children's clothing and men's and boys' clothing during the wartime. Possible explanations of the findings are as follows. Despite the various efforts of the Office of Price Administration to control the price of clothing categories, clothing was the most difficult and least successful in price control during World War II (Harris, 1976). The price of clothing was very high and U.S. consumers spent larger proportions of their consumption expenditures on clothing during the wartime in comparison with the other periods (see Figure 2.3a). Thus, it is believed that World War II strongly impacted the level of the consumer budget shares for clothing during the wartime.

Demand Elasticities of the LAIDS Model 29A

Total Expenditure and Price

Table 5.3 presents estimated demand elasticities with respect to total nondurables expenditure, price, and the demographic variables. Mean prices and budget shares were used in calculating the elasticities. The total expenditure elasticities for women's and children's clothing (WC), men's and boys' clothing (MB), and shoes (SH) are 1.1695, 1.1019, and 1.1157, respectively. All the elasticities have positive signs, are significantly different from zero, and indicate expenditure elastic demand. The results suggest, for example, that a 10% increase in total nondurables expenditures increases the demand for WC by 11.69%.

The own-price elasticities are shown on the diagonal sloping downward to the right in the price elasticities section of Table 5.3. All the own-price elasticities of demand for the clothing categories and shoes are significant and negative. The negative signs are consistent with the economic theory of demand; that is, when the prices of

Table 5.3.
Estimated Elasticities with respect to Total Nondurables Expenditure, Prices, and Demographics: the LAIDS Model 29A

	Price Elasticities				Expenditure Elasticity
	WC	MB	SH	ON	
WC	-0.7443* (0.0545)	0.1248* (0.0274)	-0.0030 (0.0291)	-0.5466* (0.0780)	1.1695* (0.0608)
MB	0.2219* (0.0463)	-0.8025* (0.0719)	-0.1738* (0.0815)	-0.3472* (0.0682)	1.1019* (0.0389)
SH	-0.0047 (0.0977)	-0.3369* (0.1574)	-0.3908** (0.2270)	-0.3828* (0.1237)	1.1157* (0.0505)
ON	-0.0472* (0.0097)	-0.0170* (0.0051)	-0.0097** (0.0049)	-0.8935* (0.0144)	0.9675* (0.0115)

	Demographic Elasticities		
	AGE	NW	VA
WC	0.0736 (0.2246)	-0.0132 (0.2050)	-0.0226 (0.1492)
MB	-0.2859 (0.1892)	-0.0114 (0.1676)	-0.8075* (0.1649)
SH	-0.1656 (0.3733)	-0.6549* (0.2715)	-1.4455* (0.3608)
ON	0.0174 (0.0426)	0.0266 (0.0383)	0.1140* (0.0287)

Note. Standard errors are in parentheses. Mean prices and budget shares were used in calculating of the elasticities. WC = women's and children's clothing; MB = men's and boys' clothing; SH = shoes; ON = other nondurable goods; AGE = median age of U.S. population; NW = non-White proportion of U.S. population; VA = variance of the age distribution of U.S. population.

**$p < 0.1$. *$p < 0.05$.

goods increase, the quantities demanded of the goods generally decrease. When the own prices of WC, MB, and SH increased, the relative demand for those categories decreased. The estimated own-price elasticities indicate that the clothing categories and shoes are price inelastic. For example, a 10% increase in the prices for WC, MB, and SH decreases the demands by 7.44%, 8.02%, and 3.90%, respectively. MB has the highest own-price elasticity among the clothing categories and shoes; that is, consumers' demand for MB is the most sensitive to its price change among the categories analyzed.

As shown in Table 5.3, the estimated cross-price elasticities vary in their signs and in whether they are significantly different from zero. The cross-price elasticity of WC demand with respect to the price for MB has a positive sign, implying substitutes which indicate that an increase in MB price increases consumers' demand for WC and vice versa. It indicates that a 10% increase in MB price increases WC demand by 1.24%. The cross-price elasticity of MB demand with respect to the price for WC also has a positive sign, implying substitutes, but the price effect of WC on MB demand was a little higher than that of MB on WC demand (i.e., 0.2219 vs. 0.1248). The cross-price effects between WC and MB are both significantly different from zero. The explanation for substitution relationships may lie in family clothing consumption behavior aggregated over the whole U.S. Families allocate their budgets not only among clothing and other consumer goods, but also among individual family members and different clothing categories (Zhang & Norton, 1995), and this family budget allocation and consumption process are completed via family utility maximization (Norton & Park, 1986). Thus, if the market price of women's and children's clothing increases, decision makers in families may decide to reduce purchases of these items and increase purchases of other clothing categories, such as men's and boys' clothing, maintaining the maximum family utility. Table 5.3 also shows that the cross-price effects of SH and ON on WC demand are negative, implying complements which indicate that an increase in SH or ON decreases consumers' demand for WC. But the effect of shoes price on WC demand is not significant. A 10% increase in the price of ON decreases the demand for WC by 5.46%. The cross-price effects of SH and ON on MB demand are also negative, implying complements, and the effects are significant. A 10% increase in the price of ON decreases the demand for MB by 3.47%; a 10% increase in the price of SH decreases the demand for MB by 1.73%. The estimated elasticities of demand for SH with respect to the prices of WC, MB, and ON are also negative, implying complements, but the effect of the price of WC is not significantly different from zero. A 10% increase in the price of ON decreases the demand for SH by 3.82%; A 10% increase in the price of MB decreases the demand for SH by 3.36%.

The estimated own-price elasticities indicate that the price elasticity of demand for MB is the highest among the clothing categories and shoes; that is, the MB demand is the most highly responsive to its own price change. Only between WC and MB do the cross-price elasticities have positive signs, implying substitutes. The effect of ON price is the highest in the case of WC demand. The cross-price effects between the categories are low in most cases (i.e., $|0.0030 < \text{elasticities} < 0.5466|$); the effects are not significant in the cases of WC and SH.

Demographics

Table 5.3 shows that the effects of the median age of the U.S population on the demand for the clothing categories and shoes are negative for MB and SH, but positive for WC. The effects, however, are not significant for any of the categories. The effects of the variance of the U.S. population distribution on the demands for clothing categories and shoes are negative. The effect of the variance is significant only in the cases of MB and SH, and it is highest for shoes. These latter elasticities imply that the demands for MB and SH decrease as the relative number of people in the median age group decreases.

An increase in the non-White proportion of the U.S. population has a relatively small impact on the demand for WC and MB in comparison to the impact on SH demand. Indeed, the effects on WC and MB are not significantly different from zero. It is implied, however, that as the relative number of non-Whites increases, the demand for SH decreases. The estimated elasticity for SH demand indicates that a 10% increase in the non-White population proportion decreases the demand for SH by 6.54%.

Demand Elasticities of the LAIDS Model 48A

Total Expenditure and Price

Table 5.4 presents estimated demand elasticities with respect to total nondurables expenditure, price, and the demographic variables. Mean prices and budget shares were used in calculating the elasticities. The total expenditure elasticities for women's and children's clothing (WC), men's and boys' clothing (MB), and shoes (SH) are 1.4402, 1.2065, and 1.4944, respectively. All these total expenditure elasticities are higher than those of Model 29A. All the elasticities have positive signs, are significantly different from zero, and indicate expenditure elastic demand. The results suggest, for example, that a 10% increase in total nondurables expenditures increases the demand for WC by 14.40%.

The own-price elasticities of demands for the clothing categories and shoes are all negative, and are significant except for SH. The negative signs are consistent with the economic theory of demand; that is, when the prices of goods increase, the quantities demanded for the goods generally decrease. When the own prices of WC and MB increased, the relative demand for those categories decreased. The estimated own-price elasticities indicate that the WC and MB are price inelastic. For example, a 10% increase in the prices for WC and MB decreases the demands by 7.12% and 9.17%, respectively. MB has the highest own-price elasticity among the clothing categories and shoes.

The cross-price elasticity of WC demand with respect to the price for MB has a positive sign, implying substitutes, and it indicates that a 10% increase in MB price increases WC demand by 2.52%. The cross-price elasticity of MB demand with respect to the price for WC also has a positive sign, implying substitutes. The cross-price effects between WC and MB are significantly different from zero. The results of the cross-price elasticities between women's and children's clothing and men's and boys' clothing in Models 48A also show substitution relationships; that is, demand for women's and children's clothing increases with an increase in the price for men's and boys' clothing and vice versa. The explanation for substitution relationships is similar to the case of Model 29A; that is, if the market price of women's and children's clothing increases,

Table 5.4.

Estimated Elasticities with respect to Total Nondurables Expenditure, Prices, and Demographics: the LAIDS Model 48A

	Price Elasticities				Expenditure Elasticity
	WC	MB	SH	ON	
WC	-0.7128* (0.0802)	0.2521* (0.0489)	-0.2106* (0.0667)	-0.7683* (0.0994)	1.4402* (0.0913)
MB	0.4840* (0.0924)	-0.9175* (0.0775)	0.0028 (0.1292)	-0.7757* (0.1094)	1.2065* (0.0935)
SH	-0.7454* (0.2357)	-0.0096 (0.2474)	-0.4458 (0.3558)	-1.1845* (0.2013)	1.4944* (0.1412)
ON	-0.0401* (0.0090)	-0.0347* (0.0058)	-0.0239* (0.0058)	-0.8193* (0.0187)	0.9180* (0.0172)

	Demographic Elasticities		
	AGE	VA	LP
WC	0.6790* (0.1851)	0.6498 (0.4322)	-0.0164 (0.1307)
MB	0.5203* (0.2382)	-1.8496* (0.3396)	0.3102* (0.1481)
SH	1.5092* (0.4963)	-1.5349* (0.6638)	-1.1818* (0.2546)
ON	-0.1645* (0.0363)	0.0942 (0.0816)	0.0216 (0.0242)

Note. Standard errors are in parentheses. Mean prices and budget shares were used in calculating the elasticities. WC = women's and children's clothing; MB = men's and boys' clothing; SH = shoes; ON = other nondurable goods; AGE = median age of U.S. population; VA = variance of the age distribution of U.S. population; LP = labor force participation rate of women in the U.S.

$^{**}p < 0.1$. $^{*}p < 0.05$.

decision makers in families may decide to reduce purchases of these items and increase purchases of other clothing categories, such as men's and boys' clothing, maintaining the maximum family utility.

Table 5.4 also shows that the cross-price effects of SH and ON on WC demand are negative, indicating complements, and the effects are significantly different from zero in all the cases. A 10% increase in the price of ON decreases the demand for WC by 7.68%. A 10 increase in the price of SH decreases the demand for WC by 2.10%. The cross-price effects of SH and ON on MB demand are also negative, implying complements, but the effect of SH price is not significant. A 10% increase in the price of ON decreases the demand for MB by 7.75%. The estimated elasticities of demand for SH with respect to the prices of WC, MB, and ON are also negative, implying complements, but the effect of MB price is not significant. A 10% increase in the price of ON decreases the demand for SH by 11.80%. The effect of ON price is the highest in the case of SH demand.

Demographics

Table 5.4 shows that the effects of the median age of the U.S population on the demand for the clothing categories and shoes are positive and significant in all cases, which are much different results from those for Model 29A. Median age has the highest effect on the SH; the elasticities of demands for WC, MB, and SH are 0.6790, 0.5203, and 1.5092, respectively. The estimated elasticities indicate that a 10% increase in the median age of the U.S. increases the aggregate demands for WC, MB, and SH by 6.79%, 0.52%, and 15.09%, respectively. The effects of the variance of the U.S. population distribution on the demands for MB and SH are negative and significant, but not significant in the case of WC. The MB demand is the most elastic with respect to the variance. The results of the estimated elasticities imply that the demands for MB and SH decrease as the relative number of people in the median age group decreases.

The effects of the labor force participation rate of women in the U.S. on WC and SH demands are negative, but the effect on MB demand is positive. The effects are significantly different from zero only in the cases of MB and SH. The greater the labor force participation rate of women, the less SH is demanded, but the more of MB is demanded. The magnitude of the effect on SH demand is relatively high (i.e., -1.1818). The estimated elasticities indicate that a 10% increase in the labor force participation rate of women decreases the aggregate demand for SH by 11.81% but increases the demand for MB by 3.1%. An increase of the labor force participation rate of women has little impact on the demand for WC (i.e., -0.0164), and the effect is not significantly different from zero.