Demand for Meats: A Comparison of Ethnic Groups

Forrest Stegelin

The diversity of ethnic groups within communities is rapidly becoming a marketing challenge as well as an opportunity. For instance, the Hispanic population has had the most dramatic growth during the past decade, now numbering 33 million and accounting for 12 percent of the U.S. population. According to U.S. Census Bureau projections the Hispanic community is expected to compose about 14 percent of the U.S. population by 2010. Their buying power has also been growing, at a compound rate of 7.5 percent over the past ten years. These factors suggest that the Hispanic population of the U.S. be considered the leading growth market in the U.S. This is not to deny the growth of the other ethnic markets such as African-American, Asian, and other ethnic minority groups.

As communities experience an influx of diverse ethnic minorities food purveyors must re-evaluate the product mix they carry and the susceptibility to prices and price levels of these new customers. Within the grocery store trade many communities have seen small, independent grocers specializing in particular ethnic foods—e.g., Hispanic or Latino or Asian—open within walking distance of many of the communities new ethnic residents, as the chain store and large independent grocers either cannot or will not provide the products, services, and prices that these residents expect. For some of the established grocery businesses the daunting task is to understand the purchase habits of these ethnic minorities.

Prior studies by Holcomb, Park, and Capps (1995) have estimated that the average U.S. household devotes approximately 15 percent of its income to total food expenditures—9 percent to food eaten at home and 6 percent eaten away from home. The results obtained by Lanfranco, Ames, and Huang (2001) indicate Hispanics and African-American households committed a greater share of their budget to total food expenditures than non-Hispanic white (primarily Asian) households, 29

percent, 26 percent, and 18 percent, respectively. As expected, Hispanic and African-American households, which reported lower income levels than non-Hispanic white households, spent relatively more on food consumed at home, 26 percent, 23 percent, and 15 percent, respectively.

Income and household size played an important role in explaining most of these differences in food-expenditure patterns. Analyzing household weekly expenditures on a per-adult-equivalent basis, Lanfranco, Ames, and Huang found that both Hispanics and African-Americans spent almost the same amount of money per adult equivalent on total food, food eaten at home, and food eaten away from home. On the other hand, non-Hispanic white households allocated a substantially higher amount of their income for food per adult equivalent, especially for food consumed away from home.

This paper reports the effects of demographic and socioeconomic characteristics of selected ethnic households on their demand for meats—an important component in the diet of U.S. households and a large source of gross income to U.S. farmers. A study of this nature offers improved information to farm-level producers, food processors and meat packers, wholesalers, and retailers about the meat-consumption patterns of these ethnic groups and the role of socioeconomic factors and income-transfer payments in the demand for meats in the U.S.

Estimation Procedures

Demand equations of the LinQuad form were estimated for ten meat products using an incomplete system of censored equations. The meat products chosen for this study included four types of beef (ground beef, roast, steak, and other beef), four types of pork (bacon, pork chops, ham, and other pork), one type of poultry (fresh and frozen chicken), and one seafood category (canned fish and seafood).

The population sample was selected from the 1998 Consumer Expenditure Survey which provided detailed expenditure and household-income data about specific consumer units along with other

Forrest Stegelin is assistant professor, Department of Agricultural and Applied Economics, The University of Georgia

demographic characteristics. The data was aggregated at the household level and divided into different sub-samples corresponding to the primary ethnic groups used for estimation and comparison purpose. Regional consumer-price indices were utilized to obtain price variation for the ten meat products.

The demand equations were implemented using a two-step procedure for estimation of systems of censored equations to circumvent the selectivity-bias problem due to households reporting zero consumption for a particular item. The probit equation representing the decision to consume positive amounts of a certain meat product was estimated by MLE for each item. The estimated probit parameters were used to construct a correction factor that was included in the system of demand functions, which was then jointly estimated by MLE.

Results and Implications

Because of the importance of the Hispanic community to the Southeastern U.S. economy, the results of the study will be couched in terms of the Hispanic households relative to the other ethnic minorities evaluated in the study. Hispanic households reported the second lowest level of average weekly income ($623), with the African-American households having the lowest income and the non-Hispanic whites and other minorities having the highest total household income. On a per-capita income basis, however, the Hispanics had the lowest income level at $264 per week.

Hispanic households spent 21 percent of their total expenditures on food (15 percent for food consumed at home and 6 percent for food consumed away from home). By comparison, non-Hispanic white households allocated 15 percent of their household income for food (10 percent at home; 5 percent away from home). Meats composed 22½ percent of Hispanic households' expenditures on food eaten at home. African-American households allocated 26 percent toward meat consumption, whereas non-Hispanic whites allocated only 18 percent of their food expenditures to meats.

The Hispanic households spent the highest amount of their meat expenditures on beef (39 percent), followed by pork (25 percent), poultry (24 percent), and seafood (12 percent). Non-Hispanic whites committed 25 percent of their meat expen-

ditures to beef, 26 percent to pork, 24 percent to poultry, and 15 percent to seafood. African-American households preferred comparatively more pork (31 percent) and poultry (27 percent), with beef and seafood assuming only 26 percent and 16 percent, respectively, of their food expenditures on meats. Other minority household preferences were more uniformly distributed among the meat categories: 27 percent to seafood, 26 percent to beef, 25 percent to poultry, and 23 percent to pork.

The size of the household was more influential on a household's decision to consume a particular item than the level of income, regardless of the ethnic origin. The analysis of the estimated marginal change in the probability of spending on a specific food item due to a marginal change in income or household size reveals that both ground beef and chicken were the most responsive items with respect to changes in the size of the household for all ethnic groups. Canned fish was the least responsive item for Hispanic, African-American, and other minority households, while other beef products (a rather weakly defined food category) was the least responsive for non-Hispanic white households.

The income-elasticity results indicated that households of non-Hispanic white origin were less responsive to changes in total income than households of the other three ethnic groups. This is an expected result since households of this group exhibited the highest level of per-capita income. The demand for beef roast appeared to be most responsive to changes in income for all groups. On the other hand, ground beef and chicken were the least responsive. Several meat items with negative income elasticities could be considered inferior goods for some ethnic groups. Other beef products, other pork products, and chicken had negative point estimations for income elasticities for non-Hispanic white and African-American households. Canned fish was an inferior good for non-Hispanic white and other ethnic households. Beef steak appeared to be an inferior good for African-American households. Pork chops were also found to be an inferior good for Hispanics, African-Americans, and other minorities.

The estimated-household-size elasticities exhibited negative signs in most cases, even with magnitudes greater than one in absolute value. Household size has a negative effect on the level of consumption, although the probability of con-

suming a positive amount of the good increases with the size of the household. Holding total income constant, households spend more on food as the size of the family increases. It is possible that households purchase a wider variety of meats, thus diminishing the amount of income available to purchase higher priced meats. Thus the amount spent on a particular meat product may decrease as household size increases, especially if it is a high-priced item.

With respect to price elasticities estimated in the study, all the meat items were considered as normal when the point estimates were evaluated at the means. The sign of the own-price elasticity for other beef was positive for Hispanics and African-Americans while other pork was positive for non-Hispanic whites and other minority origins. Possible substitution effects within the aggregated items of "other" may be responsible for net increments on the expenditures even when the corresponding aggregate price index increases, leading to the results in the first two cases cited.

The examination of cross-price elasticities revealed that most meats varied in their responsiveness with respect to changes in the price of other meat items. The magnitudes of the cross-price elasticities were in general smaller than the magnitudes of own-price elasticities. Both chicken and ground beef were again the least responsive items. Among the beef categories, beef steak and ground beef behaved as complements for all groups, as did beef roast and other beef. Beef roast and other beef were, however, substitutes of beef steak, and vice versa, for Hispanic and non-Hispanic white households. Beef roast and ground beef were also substitutes for other ethnic households, while ground beef and other beef were substitutes for households of non-Hispanic white and other ethnic households.

Within the pork categories, ham and bacon were complements for all four ethnic groups. Substitution relationships were evident between ham and pork chops, bacon and other pork, and pork chops and other pork for Hispanic households. Pork chops and bacon appeared to be substitutes for non-Hispanic white and other ethnic households; ham and other pork, and bacon and other pork were substitutes for African-American households, while pork chops and ham, and pork chops and other pork were found to be substitutes for other ethnic households.

The evidence of substitution and complementarity relationships among meat items also varied extensively among ethnic groups. The only pair of meats found to be complements for households of all groups were beef roast and other pork, and bacon and canned fish. Consistent substitutability conditions for all groups were found only between other pork and ground beef, other beef and fish, ham and fish, and chicken and fish.

Conclusions

The generalized conclusions from the research are that (1) the ethnic households studied appear to have different food consumption patterns compared to other ethnic communities in the U.S.; (2) the amount and proportion of the expenditures for the particular meat products revealed other household preferences, some influenced by cultural characteristics linked to their ethnic origins; (3) the size of the household showed a positive effect on the probability of consuming a particular meat product; (4) the expenditure levels on ground beef and chicken were the least responsive with respect to changes in total household income; and (5) the role played by the socioeconomic and demographic characteristics included in this research was not consistent among groups.

References

Holcomb, R. B., J. L. Park and O. Capps, Jr. 1995. "Revisiting Engel's Law: Examining Expenditure Patterns for Food at Home and Away from Home." *Journal of Food Distribution Research* September:1-8.

Lanfranco, B. A. (Dissertation). 2001. *Characteristics of Hispanic Households' Demand for Meats: A Comparison With Other Ethnic Groups Utilizing an Incomplete System of Censored Equations.* Department of Agricultural and Applied Economics, The University of Georgia, Athens, GA.

Lanfranco, B. A., C. W. Ames and C. L. Huang. 2001. "A Censored System Estimation of Hispanic Households Food Consumption Patterns." FS-01-01. Department of Agricultural and Applied Economics, The University of Georgia, Athens, GA.