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# Factors Influencing the Willingness-to-Pay for Ethnic Specialty Produce in the Eastern Coastal United States

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Given the significance of the Asian and Hispanic population in the U.S., this study was carried out to assess the factors that influence the willingness-to-pay for ethnic specialty produce by these ethnic groups. Based on over 13,000 potential interviewee leads, 1,084 Chinese, Asian Indian, Mexican, and Puerto Rican respondents were randomly selected from the East Coast. Multinomial logit analysis was performed to determine the factors that influence the willingness-to-pay. Chinese and Indians were more likely to pay a premium for ethnic specialty produce than were the Puerto Ricans. Income, age, and period of stay in the U.S. had significant influences on the willingness-to-pay. This study highlights the need to target this high-premium group in terms of ethnic specialty produce.

The U.S. is a racially and ethnically diverse country. Hispanics and Asians contribute significantly to this ethnic diversity. According to the U.S. Census Bureau, the Hispanic population is projected to nearly triple from 46.7 to 132.8 million during the period from 2008 to 2050. Its share in the nation's total population is projected to double from 15 to 30 percent. Similarly, the Asian population is also projected to rise from 15.5 to 40.6 million, with an expected increase in its share in the nation's total population from 5.1 to 9.2 percent. The majority of these ethnic minorities<sup>1</sup> who have settled in the U.S. have migrated primarily seeking better opportunities, especially advancement in career opportunities, education, and security.

When an individual migrates from one country to another s/he undergoes a cultural change process. This involves two dimensions: ethnic identification and acculturation (Laroche et al. 1996). Ethnic identification is a broader, multi-dimensional concept that could be defined simply as the strength of at-

tachment and belonging to a specific ethnic group (Barry 2005; Bojanic and Xu 2006). According to Laroche, Kim, and Tomiuk (1998), the most accepted dimensions of ethnic identification is the retention of language, food habits or preferences, and friendship networks. Acculturation is the modification of groups' and individuals' culture, behavior, beliefs, and values by borrowing from or adapting to the alternative society (Ogden, Ogden, and Schau 2004). Consumer acculturation is a sub-component of acculturation. According to Peñaloza (1994), the term "consumer acculturation" is the general process of movement and adaptation to the cultural environment in one country by persons from another country.

A number of previous studies have shown that in the process of consumer acculturation, people like to maintain some pre-migration patterns of consumption (Ogden, Ogden, and Schau 2004; Jamal and Chapman 2000; Laroche, Kim, and Tomiuk 1998; Peñaloza 1994; Wallendorf and Reilly 1983). This shows that there will be a creation of an ethnic market segment within the country of settlement. Goldfrank (2005) referred this as an emergence of a market segment called "ethnic." As highlighted above, significant changes in the ethnic composition in the U.S. population could open up a number of opportunities for fruit and vegetable producers along the East Coast to take advantage of their close proximity to densely populated areas of the U.S. Therefore a broader study was undertaken to provide production and marketing guidelines for several ethnic specialty produce items that are highly demanded by the ethnic minority population. In this paper we discuss the factors that influence the willingness-to-pay (WTP) for ethnic specialty

<sup>1</sup> Ethnic minority is a term used to refer to population groups that are small in number and less than the majority mainstream population (Omar, Hirst, and Blankson 2004). However, in this study "ethnic minority" refers to the non-original settlers of U.S. or the people who have migrated from other countries for various reasons.

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This project was supported by the National Research Initiative (NRI) of the Cooperative State Research, Education and Extension Service, United States Department of Agriculture, Award # 2005-35618-15735.

produce by four ethnic groups living in the East Coast of the U.S.

A number of studies have analyzed ethnic group behavior in multicultural countries like the U.S. (Bojanic and Xu 2006; Peñaloza and Gilly 1999; Stayman and Deshpande 1998; Kang and Kim 1998; Seitz 1998; Ho, Ong, and Lee 1997; Peñaloza 1994), the UK (Hamlett et al. 2008; Ogden, Ogden, and Schau 2004; Omar, Hirst, and Blankson 2004; Lindridge, Hogg, and Shah 2004; Jamal 2003, Jamal and Chapman 2000; Nwankwo and Lindridge 1998), Canada (Wang 2004; Kim, Laroche, and Tomiuk 2001; Laroche, Kim, and Tomiuk 1998), Belgium (Verbeke and López 2005) and Italy (Carrus, Nenci, and Caddeo 2009). These studies have analyzed issues such as influence of ethnicity, ethnic identification, acculturation, and assimilation on perceptions, food consumption, consumer purchase decisions, marketing, marketing services, and shopping behavior.

A study based on Mexican-Americans highlighted that there is an emergence of a unique cultural style among Mexican-Americans in the Southwest of the U.S. which consists of a combination of Mexican and American cuisine (Wallendorf and Reilly 1983). They argue that assimilation process is more complex than a simple linear progression from one culture to another. Similarly, by adopting an ethnographic approach, Peñaloza (1994) showed that Mexican immigrants in the U.S. assimilate consumption patterns associated with the U.S. consumer culture while maintaining some pre-migration patterns of consumption. Jamal and Chapman (2000) by analyzing the acculturation and inter-ethnic consumer perceptions among first-generation Muslims in Bradford, UK pointed out that there is no single everlasting outcome of acculturation. Their findings were consistent with Peñaloza (1994), which revealed that a particular group of people could be described either as "segregated" at one moment of their lives or as "assimilated" in other moments of their lives depending upon how they experience their place of living. All these studies reveal that consumer acculturation is a multidimensional and complex process which needs careful analysis.

Consumer acculturation has been measured directly by using different attitudinal scales and indirectly by using proxy variables. The most widely used indicators of acculturation have been language, mass media usage, and social interaction (Verbeke

and López 2005; Laroche, Kim, and Tomiuk 1998). However, some studies have used length of stay in host environment, age, gender, place of residence, and income as proxy variables for consumer acculturation. Kang and Kim (1998) conceptualized the level of acculturation based on the length of stay in a country, where length of stay was adjusted according to the individual's age, language use, and media use.

Mendoza (1989) pointed out that demographic factors were good predictors of group trends but they were not good indicators of individual differences. Similarly, Peñaloza (1994) also highlighted that demographic differences in age, social class, rural/urban residence, gender, work status, and length of stay in the U.S. may provide participants with diverse skills to adapt to the consumer environment in the U.S. The adaptation process is considered to be easier for the migrants who are male, young, from a middle-class background, and urban than for others. Bermudez, Falcon, and Tucker (2000), by using a language-based acculturation scale, showed that older people have low levels of acculturation. However, based on the elderly Hispanic population they concluded that an extended period of living in the U.S. and having a lower level of education predicts a slow process of assimilation to the mainstream culture. By analyzing the dining-out behavior of Chinese living in the U.S., Bojanic and Xu (2006) showed that the length of stay in U.S., level of education, and age have significant influences on acculturation. However, income, marital status, and gender had no significant influences. They concluded that the longer the Chinese live in the U.S., the more they were Americanized. Therefore in this study it was hypothesized that the ethnicity and the level of consumer acculturation will significantly influence the WTP for ethnic specialty produce. Income, level of education, place of residence, age, and period of stay were used in this study as proxy variables for consumer acculturation.

## Methods

### *Procedure*

Chinese, Asian Indians, Mexicans, and Puerto Ricans who live in 16 East Coast states and the District of Columbia were selected as the study population and were identified based on the 2000

Census population. Sample sizes of 271 surveys for each of the four ethnic groups were statistically determined, for a total of 1,084 surveys of ethnic produce consumers. Sampling error associated with the sample of 271 people from each of the four ethnic groups is approximately  $\pm 5$  percent with a 90 percent confidence interval.

A list of ethnic specialty produce<sup>2</sup> commonly marketed and has the potential to be grown in the U.S. was identified based on a combination of a review of literature and focus group meetings. A panel of twelve marketing, field/extension, and crop specialists scrutinized the initial list of ethnic crops to eliminate those with existing production barriers that could impede their local production and/or marketplace success. Through this process, ten produce types each that are commonly consumed by Asian Indians, Mexicans, and Puerto Ricans and 12 produce types commonly consumed by Chinese were selected.

A questionnaire was prepared with the intention of gathering marketing information on the proverbial "4 P's" of marketing (Product, Placement, Price, and Promotion), the level of acculturation, and respondent's purchase patterns. Questions on typical socio-demographic details such as age, education, and income and information such as birthplace, length of residency in the U.S., and age at immigration to the U.S. were included to measure the level of acculturation. In addition, questions were included to gather their food expenditure, shopping patterns, preferences, and average WTP for ethnic specialty produce over traditional American produce.

An outsourced firm specializing in telephone and internet data collection was contracted to conduct the telephone interviews using Computer-Assisted Telephone Interview (CATI) technology. Qualified (bi-lingual) interviewers received on-site Human Subjects Certification Program (HSCP) training per federal assurance guidelines, in addition to survey-specific training and practice prior to conducting actual interviews. Surveys were conducted by phone to ensure that a statistically significant randomized

sample was obtained. This entailed targeting and achieving the required sample sizes by ethnicity and state while minimizing any costs associated with sample surpluses in certain states and deficits in others. The phone-administered questionnaires were completed by the principal grocery shopper in each household as identified by each respondent with prompting from the interviewer between 5:00 p.m. and 9:00 p.m. In order to minimize the response bias due to potential language barriers, English, Mandarin, and Cantonese were used in administering the questionnaires to the Chinese respondents, English and Hindi were used in administering the questionnaires to the Indian respondents, and English and Spanish were used in administering the questionnaires to the Mexican and Puerto Rican respondents.

### *Measures*

In the empirical model it was assumed that a decision maker's choice on a given WTP value is influenced by his/her ethnicity, level of acculturation, and perceptions toward ethnic specialty produce over traditional American produce. The length of stay in the U.S., area of residence, household income, level of education, and age were considered as proxy variables of consumer acculturation. Consumer perceptions toward ethnic specialty produce available at the ethnic stores were assessed by using six qualities: availability, selection, freshness, quality, packaging, and price. Consumer perceptions about fruits and vegetables available at the ethnic stores compared to those available at traditional American stores were measured on a four-point scale that ranged from 1 = very good to 4 = very bad. An aggregate score that ranged from six to 24 was calculated as an indicator to represent consumer perceptions. Three interaction variables were also used in the analysis to test whether the perceptions of an individual were influenced by his/her ethnicity. In addition, the decision maker's gender and marital status were also assumed to influence the choice. The variable specifications are illustrated in Table 1.

### *Method of Analysis*

A multinomial logit regression was preferred over an ordered logistic regression due to the violations

<sup>2</sup> Based on Tubene (2004), ethnic and specialty vegetables were identified as exotic, high-value vegetables and/or herbs that are not traditionally grown in the U.S. but are imported or grown on a limited scale in the U.S. It was assumed that the consumption of these ethnic and specialty vegetables varies across different ethnic groups.

**Table 1. Variable Specifications (Total sample size = 1084).**

Variable specification	
<i>WTP</i>	WTP for ethnic specialty produce over traditional American produce 0 for not WTP, 1 for 1–10 percent WTP and 2 for more than 10 percent WTP
Chinese	1 if the ethnicity of the individual is Chinese and 0 otherwise
Indian	1 if the ethnicity of the individual is Asian Indian and 0 otherwise
Mexican	1 if the ethnicity of the individual is Mexican and 0 otherwise
Income	1 if the total household income is above \$40,000 and 0 otherwise
Education	1 if the level of education is four-year college degree or above and 0 otherwise
Urban	1 if the respondent resides in urban areas and 0 otherwise
Age	1 if the respondent's age is more than 35 years and 0 otherwise
Period of stay	1 if the respondent has stayed for more than ten years and 0 otherwise
Origin	1 if the respondent highly prefers country of origin label and 0 otherwise
Gender	1 if the respondent is female and 0 otherwise
Marital status	1 if the respondent is married and 0 otherwise
Family no	Total number in the family
Place	1 if the respondent highly prefers ethnic outlets and 0 otherwise
Perceptions	Perceptions toward ethnic specialty produce over traditional American produce
Perceptions x Chinese	Interaction effect of <i>Chinese ethnicity x Perceptions</i>
Perceptions x Indian	Interaction effect of <i>Indian ethnicity x Perceptions</i>
Perceptions x Mexican	Interaction effect of <i>Mexican ethnicity x Perceptions</i>

of parallel line assumption. According to Green (2003) the utility of choice  $j$  for the  $i^{\text{th}}$  consumer faced with  $J$  choices can be represented as

$$(1) U_{ij} = x'_{ij}\beta + \varepsilon_{ij},$$

where  $x'$  represents the vector of specific household characteristics and other variables,  $\beta$  represents the vector of parameters to be estimated, and  $\varepsilon_{ij}$  denotes

the error term. If the consumer makes choice  $j$  in particular, then we assume that  $U_{ij}$  is the maximum among the  $j$  utilities. Hence the statistical model is driven by the probability that choice  $j$  would be made, which is  $\text{Prob}(U_{ij} > U_{ik})$  for all other  $k \neq j$ .

Let  $P_{ij}$  be the probability that household  $i$  selects the  $j^{\text{th}}$  primary choice, where  $j = 0, 1,$  and  $2$  choices on WTP, representing zero percent, one to ten percent, and more than ten percent WTP for



ethnic specialty produce over traditional American produce respectively. Then the MNL model for the WTP choice is expressed as

$$(2) P_{ij} = \frac{e^{\beta_j' x_i}}{\sum_{k=0}^2 e^{\beta_k' x_i}}, \quad j = 0, 1, 2.$$

The estimated equations provide a set of probabilities for the  $j + 1$  choices for a decision maker with characteristics of  $x_i$ . The model expressed in current form is under identified because an identical set of probabilities result if we define  $\beta_j^* = \beta_j + q$  for any vector of  $q$ . A convenient normalization of  $\beta_j = 0$  is imposed in order to identify the parameters of the model. Therefore, the probabilities are

$$(3) P_{ij} = \frac{e^{\beta_j' x_i}}{\sum_{k=0}^2 e^{\beta_k' x_i}} \quad \text{for } j = 1, 2, \dots, J, \beta_j = 0.$$

By using Equation 3 we can compute  $j$  log-odds ratios:

$$(4) \ln \left[ \frac{P_{ij}}{P_{ik}} \right] = x_i' (\beta_j - \beta_k) = x_i' \beta_j \quad \text{if } k = 0.$$

The log-likelihood function for Equation 3 can be written as

$$(5) \ln L = \sum_{i=0}^n \sum_{j=0}^J d_{ij} \ln P_{ij}.$$

The marginal effects can be calculated by differentiating Equation 3 as it is difficult to interpret the coefficients in the model. The marginal effects of the characteristics on the probabilities are

$$(6) \delta_j = \frac{\partial P_j}{\partial x_i} = P_j \left[ \beta_j - \sum_{k=0}^J P_k \beta_k \right] = P_j [\beta_j - \tilde{\beta}].$$

## Results

### Sample Characteristics

Table 2 summarizes the ethnic consumer profile of the survey data. In majority of the households shopping is done by women, many of whom were

married. The Chinese ethnic group had relatively older primary household shoppers than did the other ethnic groups. This is consistent with national-level statistics, which show a higher median age for Chinese (35 years) compared to other ethnic groups (30, 24, and 27 years for Asian Indians, Mexicans, and Puerto Ricans, respectively). The age distribution of the sample was also consistent with the national distribution. The mean household size of the sample was 4 with 3.55, 3.66, 3.94, and 3.78 mean household sizes for Chinese, Indians, Mexicans, and Puerto Ricans, respectively. A greater percentage of the Indians had higher levels of education compared to the other ethnic groups. This could be the primary reason for a greater proportion of Indians having a household income of \$80,000 and above. This is consistent with the national median household incomes of the Asian Indians, which exceeded the annual income of the other three ethnic groups and whites by \$10,000 or more.

### Expenditure on Ethnic Produce and Consumer Perceptions

On average, the Chinese had the highest monthly expenditure (\$98) on ethnic specialty produce, followed by Indians (\$91 per month). Mexicans had the lowest expenditure on ethnic specialty produce (Table 3). Based on spending baby pak choy, pak choy, and oriental eggplant were ranked as the three most important ethnic produce items by Chinese. Bitter melon, eggplant, and fenugreek leaves were ranked as the three most important ethnic produce items by Indians. Chili jalapeño (chili pepper), tomatillo (husk tomato), and calabaza (pumpkin) were ranked as the three most important ethnic produce items by Mexicans. Batata (sweet potato), cilantro (coriander), and aji dulce (capsicum) were ranked as the three most important ethnic produce items by Puerto Ricans. Eighty-one percent of the Chinese respondents indicated that they buy ethnic specialty produce from ethnic grocery stores. However, only 26 percent of Mexicans and 36 percent of Puerto Ricans indicated that they buy ethnic specialty produce from ethnic grocery stores; a majority of them shopped for these items at typical American grocery stores. Indians showed a mixed pattern—they buy ethnic specialty produce from both ethnic and American groceries. Table 3 shows the consumer perceptions toward ethnic specialty

**Table 2. Ethnic Consumer Profile (n = 1084).**

Variable	Ethnicity							
	Chinese		Asian Indians		Mexican		Puerto Rican	
	No.	percent	No.	percent	No.	percent	No.	percent
<b>Gender</b>								
Female	178	66	170	63	204	75	209	77
Male	93	34	101	37	67	25	62	23
<b>Marital status</b>								
Married	222	85	211	83	185	71	138	52
Other	40	15	43	17	77	29	127	48
<b>Age group (years)</b>								
>35	53	21	88	36	122	46	116	44
36–50	117	47	92	37	111	43	115	43
51–65	54	22	54	22	25	10	32	12
< 65	25	10	12	5	3	1	3	1
<b>Household size</b>								
≥ 4	199	77	189	74	180	67	184	69
5–7	52	20	62	24	80	30	74	28
≤ 8	6	3	5	2	8	3	9	3
<b>Level of education</b>								
High school or less	116	47	55	21	121	47	121	45
2-year college degree	16	7	27	11	54	21	55	21
4-year college degree	53	22	91	36	49	19	58	22
Postgraduate degree	61	25	79	31	38	15	33	12
<b>Household income (\$/year)</b>								
> \$40,000	79	44	33	24	84	42	103	49
\$40,000–\$79,999	51	28	52	38	78	39	67	32
\$80,000–\$124,999	38	21	34	24	30	15	29	14
< \$125,000	12	7	20	14	7	4	10	5
<b>Length of stay (years)</b>								
≥ 10	152	58	155	59	167	63	130	49
11–30	104	40	93	35	85	32	96	36
≤ 31	4	2	13	5	13	5	41	15

**Table 3. Shopping Details and Perceptions about Ethnic Specialty Produce over Traditional American Produce.**

Variable	Ethnicity			
	Chinese	Asian Indians	Mexican	Puerto Rican
Average expenditure/month (\$)	98	91	77	86
Place of purchase <sup>a</sup> (%)				
Typical American grocery store	16	35	49	42
Ethnic grocery store	81	51	26	36
Community farmers market	2	9	14	15
On farm/road-side	1	5	11	7
Distance to the nearest ethnic grocery (%)				
≥ 11 miles	72	77	74	79
11–20 miles	13	12	7	6
≤ 20 miles	15	11	20	14
Availability <sup>b</sup> (%)				
Very good	75	75	68	68
Very bad	11	8	8	10
Selection <sup>b</sup> (percent)				
Very good	85	73	73	72
Very bad	6	8	8	10
Freshness <sup>b</sup> (percent)				
Very good	94	93	92	95
Very bad	1	1	0	2
Quality <sup>b</sup> (%)				
Very good	92	96	92	94
Very bad	1	0	0	1
Packaging <sup>b</sup> (%)				
Very good	20	30	28	63
Very bad	36	37	30	9
Price <sup>b</sup> (%)				
Very good	61	49	60	94
Very bad	18	11	7	1

<sup>a</sup>Multiple responses<sup>b</sup>Only the two polar options are presented



produce available at ethnic grocery stores compared to traditional American grocery stores. A majority of the respondents in all four ethnic groups had very good perceptions about the availability, selection, freshness, and quality of ethnic produce available at ethnic grocery stores. Mixed perceptions were revealed with respect to price. Most importantly, except for Puerto Ricans the majority of the ethnic groups had bad perceptions about the packaging of ethnic produce.

#### Factors that Influence WTP

Estimated results of the MNL model calculated based on WTP for ethnic specialty produce are presented in Table 4. Due to missing data, only 663 observations were used in the MNL analysis. According to the  $\chi^2$  criterion the model is significant at a probability level of 0.0000. The likelihood-ratio test statistic revealed that the variables representing ethnic groups—Chinese and Indian, income, age,

**Table 4. Parameter Estimates of the MNL Model.**

Variable	Not WTP vs. more than 10 percent WTP		1–10 percent WTP vs. more than 10 percent WTP	
	Coefficient	Std. error	Coefficient	Std. error
Chinese	-8.1437**	2.5686	-6.0553**	2.2231
Indian	-2.5184	2.8749	-10.5278**	3.3966
Mexican	-2.0804	2.4645	-4.4797**	2.5185
Income	-0.6034**	0.2632	0.0920	0.2529
Education	0.2896	0.2613	-0.0001	0.2514
Urban	0.2557	0.2379	0.1702	0.2295
Age	0.6701**	0.2551	0.1931	0.2430
Period of stay	0.2330	0.2416	-0.2205	0.2372
Origin	-0.0602	0.2394	0.2594	0.2274
Gender	-0.1072	0.2526	0.1077	0.2488
Marital status	-0.4864**	0.2944	-0.1316	0.2900
Family no	-0.0930	0.0603	-0.2089**	0.0655
Place	-0.1252	0.2753	0.0532	0.2638
Perceptions	-0.0674	0.0826	-0.0804	0.0782
Perceptions x Chinese	0.3867**	0.1224	0.2854**	0.1067
Perceptions x Indian	0.1780	0.1390	0.5148**	0.1616
Perceptions x Mexican	0.1179	0.1160	0.2133***	0.1182
Constant	2.2841	1.8101	3.0646***	1.7183

*Log-likelihood ratio* = -645.5565

*Pseudo R*<sup>2</sup> = 0.0729

*N* = 663

*LR*  $\chi^2$  = 101.47

Prob. >  $\chi^2$  = 0.0000

\*\* and \*\*\* indicate the significance level of five percent and ten percent, respectively.

and perceptions of Chinese and Indians—were statistically significant at the five percent probability level and the period of stay is significant at the ten percent probability level. The first equation shows that the variables Chinese, income, age, and marital status and the interaction variable between perceptions and Chinese ethnicity have significant influences on WTP. The second equation shows that variables representing ethnicity and their interaction effect with perceptions and family number significantly influence the household's choice of the one-to-ten percent WTP option for ethnic specialty produce.

According to Green (2003), interpretation of coefficients in the MNL regression is not straightforward and hence marginal effect values should be used for interpretation. Table 5 presents the mar-

ginal effect values of the MNL regression model. These marginal effects show the impact of a unit change in the independent variables,  $x_i$  on the choice of alternative  $j$ , the three categories of WTP. Results revealed that compared to Puerto Ricans, Chinese and Indians are more likely to pay a premium of more than ten percent for ethnic specialty produce, while Mexicans are less likely to pay a premium for ethnic specialty produce. The marginal effect value with respect to income reveals that a respondent's willingness in paying a premium of one to ten percent for ethnic specialty produce increases by 12 percent when their income increases from less than \$40,000 to above \$40,000. However, income has no significant impact on paying a premium of more than ten percent. The marginal effect value for age (-0.06) indicates that a respondent's willingness

**Table 5. Marginal Effects.**

Variable	Choice set		
	Not WTP	1–10 percent WTP	>10 percent WTP
Chinese <sup>a</sup>	-0.5567**	-0.3765**	0.9332**
Indian <sup>a</sup>	0.0569	-0.8054**	0.7486***
Mexican <sup>a</sup>	0.0013	-0.5773**	0.5760
Income <sup>a</sup>	-0.1573**	0.1214**	0.0359
Education <sup>a</sup>	0.0679	-0.0475	-0.0205
Urban <sup>a</sup>	0.0319	-0.0001	-0.0319
Age <sup>a</sup>	0.1227**	-0.0589	-0.0638**
Period of stay <sup>a</sup>	0.0906**	-0.0920**	0.0013
Origin <sup>a</sup>	-0.0564	0.0737***	-0.0173
Gender <sup>a</sup>	-0.0429	0.0439	-0.0010
Marital status <sup>a</sup>	-0.0937***	0.0495	0.0442
Family No	0.0124	-0.0362**	0.0238**
Place <sup>a</sup>	-0.0378	0.0335	0.0043
Perceptions	-0.0026	-0.0088	0.0114
Perceptions x Chinese	0.0438**	0.0071	-0.0509**
Perceptions x Indian	-0.0425***	0.0976**	-0.0551**
Perceptions x Mexican	-0.0073	0.0332	-0.0260

<sup>a</sup>dy/dx is for discrete change of dummy variable from 0 to 1

\*\* and \*\*\* indicate the significance level of five percent and ten percent, respectively.

in paying a premium of more than ten percent for ethnic specialty produce decreases by six percent when their age increases to over 35 years. The marginal effect value for period of stay shows that the length of stay in the U.S. has a significant negative influence on the WTP option. The marginal effect value of  $-0.09$  shows that when a respondent's period of stay in the U.S. increases to more than ten years their willingness to pay a premium of one to ten percent for ethnic specialty produce decreases by nine percent. These findings are consistent with the findings of Bojanic and Xu (2006); Verbeke and López (2005); Bermudez, Falcon, and Tucker (2000); and Penazola (1994), who have pointed out that length of stay and age positively influence the level of acculturation.

The marginal effect value of 0.07 with respect to origin highlights that a respondent's willingness to pay a premium of one to ten percent for ethnic specialty produce increases by seven percent when the ethnic specialty produce has an ethnic origin label. Similarly, the marginal effect values for family number indicate that as the family number increases by one unit, they are more likely to pay a premium of more than ten percent for ethnic specialty produce. One reason for this could be the presence of extended family members in the household who would like to retain their own food consumption patterns. Similarly, taking Hispanics as the case, Bermudez, Falcon, and Tucker (2000) also showed that elderly Hispanics have a slow rate of assimilation to the mainstream culture. However, the marginal effect value of  $-0.09$  for marital status indicates that when a respondent is married their willingness to pay a premium for ethnic specialty produce decreases by nine percent.

Only two of the variables that were intended to capture the interaction effect of ethnicity and perceptions toward ethnic specialty produce were significant. With an increase of one unit in the perception of ethnic specialty produce by one, Chinese and Indians are less likely to pay a premium of more than ten percent for ethnic specialty produce, compared to the base Puerto Rican ethnicity.

## Conclusions

Based on a sample of 1,084 respondents representing four ethnic groups—Chinese, Asian Indians, Mexicans, and Puerto Ricans—this study

investigated how these ethnic groups perceive and are willing to pay a premium for ethnic specialty produce over traditional American produce. Socio-economic characteristics revealed that Asian Indians are more educated and a greater proportion has a household income of above US\$80,000 compared to other ethnic groups. Chinese have a large number of older people in their households and the family sizes were bigger. Mexicans and Puerto Ricans have the lowest level of education compared to the other groups. A greater number of Chinese respondents indicated that they buy ethnic specialty produce from ethnic grocery stores, whereas more Mexicans and Puerto Ricans indicated that they buy ethnic specialty produce from typical American grocery stores. A majority of the respondents in all four ethnic groups have very good perceptions about the availability, selection, freshness, and quality of ethnic produce. However, except for Puerto Ricans, a majority of the ethnic groups have bad perceptions about packaging.

The MNL regression analysis revealed that a number of factors significantly influence WTP for ethnic specialty produce. Marginal effect values showed that in terms of ethnicity, Chinese and Indians are more likely to be in the high-premium group than are the Puerto Ricans. The study also showed that the interaction effect between ethnicity and the level of perceptions of ethnic specialty produce has a significant influence on the level of WTP. Of the variables that were used as proxy variables for consumer acculturation, income, age, and period of stay had significant marginal effects. The income variable showed that with higher income, individuals have a higher WTP for ethnic specialty produce compared to the lower-income group. Although this study shows that education, area of residence, gender, and place of purchase have no significant influence on the WTP, marital status and family number have a positive influence on WTP.

As pointed out by Goldfranck (2005), this study clearly shows that there will be a creation of an ethnic market segment within the U.S. It highlights the fact that there is an opportunity to target specific consumer segments that are more likely to pay a premium for ethnic specialty produce. The population projections have also revealed that in the future this segment will show a significantly high growth rate compared to others. Therefore in the short run marketers should see the possibilities of capturing

the benefits of this ethnic segment. However, in the long run more stable production and marketing planning are necessary to capture these benefits. As pointed out earlier, this paper is a component of a broader study conducted to identify the opportunities for U.S. farmers to grow possible ethnic specialty produce. Since Chinese and Indians are more willing to pay for ethnic specialty produce it is advantageous to look for opportunities to cultivate specific ethnic specialty produce that meets their demands.

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