State and Origin Branding in Hispanic Food Markets

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Evaluations on the effectiveness of state and origin branding programs remain relatively scant and generally have not focused on specific target populations, including Hispanic consumers, the fastest-growing group. This study evaluates the effectiveness of the *Arizona Grown* brand and the nascent *Mexico Selected Quality* brand in differentiating and promoting food products in Hispanic markets. It was found that Hispanic consumers tend to view these food-product brands as nearly identical in perceived quality. Furthermore, they are willing to pay nearly equal premiums for products branded as such. These consumers saw no value in country-of-origin information alone.

Arizona is one of the fastest-growing states in the nation, with its population increasing by nearly 40 percent during the past decade. As with the entire nation, much of this growth in population is attributable to growth in minorities, notably Hispanics. Nationally, the Hispanic population grew from about 22.4 million, or 9 percent of the U.S. population, in 1990 to 35.3 million, or 12.5 percent, in 2000 (U.S. Department of Commerce 2001b). In Arizona, minorities now account for 36.2 percent of the state's population; persons of Hispanic or Latino origin account for 25.3 percent of the population (U.S. Department of Commerce 2001a). This rapid growth in population has also been accompanied by growth in income, with the Latino middle class growing by more than 80 percent during the past 20 years (Bean et al. 2001).

Marketers have long watched the growing Hispanic market with interest. Hispanics are often cited as being attractive target markets, as they tend to be brand loyal, particularly with regard to food purchases (Leah 1994). Latino household expenditures for food consumed at home averaged $3,643 in 2002, compared to $3,047 for non-Latino households (U.S. Department of Labor 2002). The difference in expenditures is due in part to more at-home food consumption and perhaps to greater average household size (3.5 for Hispanics vs. 2.5 for non-Hispanics: U.S. Department of Commerce 2002), but it has also been attributed to purchases of higher-quality products and branded products (Mulhern and Williams 1994). Despite these favorable market trends for the Hispanic market, little is known about the possibilities Hispanic markets hold for local food processors or producers.

Since 1993, the primary goal of the *Arizona Grown* program has been to increase the consumption of locally grown or processed agricultural products. Like most other state branding programs, the Arizona Grown program has operated on a fairly nominal budget, supported primarily through appropriations from the state legislature (Patterson et al. 2003). Past promotional efforts sought to raise the public's awareness of Arizona products and consequently to encourage their consumption. These promotions, however, were not directly targeted toward minority consumers either through the media used or the retail outlets. Thus a better understanding of the opportunities presented by minority markets for locally produced and branded products is warranted.

However, the *Arizona Grown* brand is potentially not the only origin brand of importance in this market. In September 2001 the Mexican government announced that it would launch the *Mexico Selected Quality* branding program. Figure 1 presents the logos used for this brand and the *Arizona Grown* brand. This program was designed by the Mexican government to enhance the perception of products exported from Mexico. Although the program began with the brand *Mexico Selected Quality*, used in the study, it has since been changed to *Mexico Supreme Quality.* Today, 12 products have been certified to be marketed under the *Mexico Supreme Quality* brand: coffee, bananas, lime, breadfruit, rice, peppers, mango, grapes, avocados, honey, pork, and

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Figure 1. The *Arizona Grown* and *Mexico Selected Quality* Brand Logos.

beef. Certification requires adherence to certain quality standards, including food-safety standards. However, to date there has been no significant promotion of the program, nor any products shipped under this brand logo to the United States. Still, given the shifts in U.S. demographics with a larger Hispanic population composed of a large number of Mexican immigrants, the *Mexican Supreme Quality* program could serve as a significant rival to U.S.-based branding programs, particularly for U.S. border states with growing seasons that overlap with those in Mexico.

Past studies on state branding programs have found that residents of a particular state are often found to prefer products from their home state when they perceive them to be of better quality or succumb to sentimental parochial interests (Patterson et al. 1999; Jekanowski, Williams, and Schiek 2000). A promotion urging consumers to patronize a state's brand is expected to encourage brand loyalty and increase use even if the state's product is not unique and does not command a large market share (Brooker, Eastwood, and Orr 1987). In a study on the *Arizona Grown* program, race and ethnicity were not found to have a significant affect on awareness of this program. However, non-Caucasians were found to be 8.7 percent more likely than Caucasians to express a positive preference for products of Arizona origin (Patterson et al. 1999). However, non-Caucasians made up a small portion of the sample; furthermore, they were not directly targeted in the promotion campaign. Still, this limited evidence suggests that promotion efforts targeted at minorities may hold promise.

Hispanics are already the largest minority group in Arizona and nationally are nearly equal in size to African-Americans (Hispanic Heritage Awards Foundation 2004). The importance of Hispanic consumers in Arizona was emphasized recently when the Association of Hispanic Advertisers established an office in the Phoenix metropolitan area (Golfen and Rozemberg 2001). It is projected that the Hispanic population will triple in size by 2050, reaching 24 percent of the total U.S. population (Strategy Research Corporation 2003). Therefore it is important to explore the potential market opportunities that exist for local producers of food and agricultural products in targeting Hispanic consumers. This information would prove useful not only for Arizona producers but also for producers in other states experiencing rapid growth in minority populations, especially Hispanics.

This study evaluates the effectiveness of the state brand *Arizona Grown* in promoting locally produced products in minority markets, specifically the Hispanic market, while accounting for the potential competitive influence offered by the *Mexico Selected Quality* brand. We first determine the level of awareness among targeted minority consumers of the *Arizona Grown* and *Mexico Selected Quality* brands and their expressed preferences toward the brand and products branded as such. Second, we determine the influence these brands have on expressed preferences for food products, as measured by the consumer's willingness to pay for branded products. In the next section we review the broad concept of origin differentiation, of which state branding is an example. This is followed by a discussion of the research methods employed in this study. The study's empirical results are then presented, followed by the paper's concluding comments.

Origin Differentiation

Efforts to promote a product from a particular state or country are simply a form of origin differentiation. Recently there has been a convergence of discussions on origin differentiation emanating from several issues, including discussions on designation of origin under European Union legislation (Protected Designation of Origin and Protected Geographical Indication; see Babcock and Clemens 2004), ongoing debates on country-of-origin legislation in the United States (Loureiro and Umberger 2003), and analyses of state branding programs, such as *Arizona Grown*.

From a consumer perspective, origin information is often perceived as an implicit warranty of quality, indicating particular processing or production practices or a certain level of intrinsic product attributes. For food products, information on origin and the corresponding perception of quality is particularly important, as most important food-product attributes (e.g., flavor or texture) are experience attributes, which are only assessed after the product is purchased and consumed. Other food-product attributes (process attributes), such as organic production methods, are credence attributes, which can only be assessed by consumers through assurances offered by others. To the extent that origin information truly connotes a level of quality or verifies a process attribute, consumer search costs may be reduced. However, for origin information to truly be a credible signal of quality—especially for food products, where frequent and repeated purchases are made—standards must be established and enforced (Boccaletti). This is the proposed practice for the *Mexico Selected Quality* program, but it has not been proposed or implemented under the *Arizona Grown* program.

However, origin information is a crude and inefficient measure of quality. At best it is simply a proxy for quality, subject to measurement error. In the absence of enforced standards, the market will not reward high-quality producers, since consumers can only infer the average quality available. In this case a typical adverse-selection problem arises, where bad products drive out good products since the buyer cannot distinguish between the two (Akerloff 1970; Boccaletti). If consumers desire information on product or process attributes, it would be more efficient to provide this information directly to the consumer, either by a private or government mechanism. In the ongoing debate over country-of-origin legislation, it is argued that traceability systems are superior to origin information, as they make (*ex post*) investigations into the source of food borne illnesses more effective and less costly and enhance the effectiveness or tort liability law, while still providing consumers information on credence and experience attributes (Hobbs 2003).

However, proponents of origin information, as applied to state branding programs or geographical-indication requirements, recognize that consumer demands for products from certain regions may be due to ethnocentric or ethical desires to support domestic (local) industries. This motivation has been revealed in past studies on state branding programs (Jekanowski, Williams, and Schiek 2000). In this case, the region name alone has value. This is certainly part of the underlying motivation on the part of the European Union to "claw back" the exclusive rights to names associated with certain regions that are currently commonly used to designate product types, such as Champagne (Babcock 2003). The value associated with origin names, though, is an empirical question that is addressed in this study.

Methods

To assess consumer perceptions and valuations of the *Arizona Grown* and *Mexico Selected Quality* programs, consumer-intercept surveys were conducted at a grocery retail chain in the Phoenix metropolitan area which caters to Hispanic consumers. Two tasks were performed during these surveys. First, the consumers completed a questionnaire that collected information on the consumer's awareness of the *Arizona Grown* and *Mexico Selected Quality* brands and their views towards products branded as such. Second, the consumers were presented depictions of products that were potentially produced in Arizona or Mexico and possibly labeled as *Arizona Grown* or *Mexico Selected Quality*. These depictions were part of a conjoint experiment, wherein price, origin information, and brand were systematically varied. After viewing each product depiction, consumers were asked to indicate their likelihood of purchasing the product.

This survey was conducted in 2003 between October 12 and November 5 in five cities in the Phoenix metropolitan area (Phoenix, Mesa, Chandler, Glendale, and Avondale) and the city of Casa Grande, located approximately 50 miles southeast

of Phoenix. All the surveys were conducted at Food City Supermarkets. Food City Supermarkets caters to Hispanic consumers through merchandise assortment (meat cuts, spices, imported goods from Hispanic countries), as well as promotional activities, which target Spanish-speaking customers. This supermarket also pursues a low-price strategy for their products. The store sites used for the interviews were selected with consultation from the management of Food City to provide some geographic diversity across the Phoenix metropolitan area and demographic diversity in regards to household income. The annual median household income across the selected areas was $35,206, and ranged from $24,934 to $55,767 (U.S. Department of Commerce, 2001b).

Thirty surveys were conducted at each location, for a total of 360 interviews. The surveys were conducted as customers entered the store. In an effort to prevent any selection bias, every third person was approached to take the survey. The surveys were conducted in either English or Spanish. The survey respondents were given a $10 gift certificate to be used in the supermarket at the end of the interview. After responding to questions on their awareness of the *Arizona Grown* and *Mexico Selected Quality* brands and their preferences toward products branded as such, the survey respondents were presented with cards depicting products from Arizona or Mexico as part of a conjoint analysis.

Conjoint analysis is used extensively in marketing research, notably for analyses on new product development, market segmentation, or product differentiation (Green 1974). By 1982, it was estimated that there had been over 1,000 industrial applications of conjoint analysis (Cattin and Wittink 1982). Economists recognized that this stated-preference methodology could be used as an alternative to traditional open-ended contingent-valuation methods (CVMs), where respondents are directly asked to place a value on a particular product attribute, or closed-ended CVMs, where respondents are asked whether they would pay a specified amount for a particular attribute (MacKenzie 1992). In conjoint experiments, price may be included as one of the product attributes. After viewing a product depiction, the respondent provides a rating or ranking which is used to form an indirect utility index. By regressing this index value (ratings or rankings) on the corresponding product attributes, estimates of the consumer's marginal utility for the attributes are obtained directly from the regression model coefficients. The ratio of two marginal-utility values provides a measure of the consumer's marginal rate of substitution for the two product attributes. The negative of the ratio of the coefficient for an attribute and the price coefficient is a compensated measure of the consumer's marginal willingness to pay or the implicit price for the attribute ($-b_i/b_p$). The estimated implicit prices provide an intuitive measure of consumer valuations of product attributes, which are analogous to the shadow prices derived through hedonic price model estimation. The appendix to this paper provides a complete derivation of this implicit price measure.

One of the major advantages of conjoint analysis, compared to contingent valuation methods, is the high degree of realism with which consumer choices may be portrayed (Hausman 1993). The method also allows for a richer analysis of more product attributes. Survey respondents appear to be more comfortable responding to survey questions where price is treated as another attribute of a composite good rather than having to directly place a value on a certain attribute or accept a single attribute at a specified price, as in CVMs (MacKenzie 1992). This makes conjoint analysis an attractive research method. However, some respondents could have a tendency to underweight the price variable, "since they do not have to actually pay the price," leading to an upward bias in the implicit price estimates (Goett and Hudson 2000, p. 13). Thus, as with any research results, estimated implicit prices should be evaluated against the manager's and researcher's experience and intuition.

The products used in this conjoint experiment were tomatoes, grapes, cantaloupes, and cilantro. These products have economic importance for Arizona produce growers and are also important Mexican exports to the Arizona market. They are also products consumed traditionally in the Hispanic diet. For each product, four characteristics were varied in the experiment: the presence of the *Arizona Grown* or the *Mexican Selected Quality* program logo in English or Spanish, country-of-origin information ("Product of Mexico"), and price. Figure 2 provides a sample product-depiction card for cantaloupes. The origin brands were either present or not and did not appear simultaneously. Similarly, the country of origin information was either present or not. Three price points were used for each product (high, medium, and low), based on actual

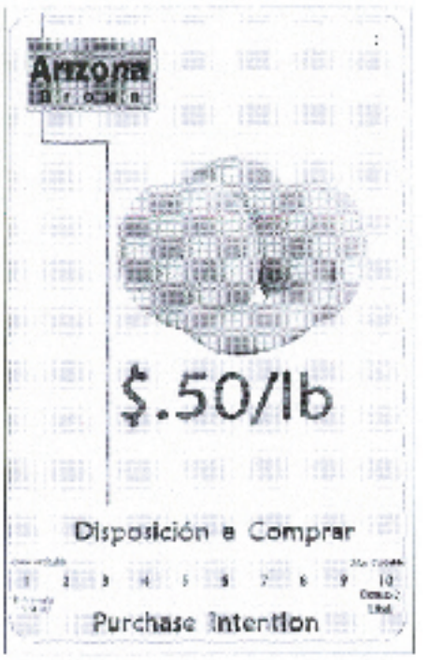

Figure 2. Example Conjoint-Analysis Product Card.

price strategies used by Food City Supermarkets. The selected prices are shown in Table 1.

Using all possible attribute combinations would result in 30 combinations for each product. This is equivalent to a 5x2x3 experiment (5 logos, 2 country-of-origin levels, and 3 price points). If each respondent were shown all 30 cards for each product, they would be required to view 120 cards. Such a large number of product combinations is far too many to be successfully used during an interview. For this experiment it was decided to first reduce the number of cards from 30 to 18 combinations for each product. Second, each respondent was then only shown cards for two products. The products shown to the respondents at each location were developed through a randomized design, which specified the product combination before the interviews. Furthermore, the order of the product cards was randomly arranged before each interview to avoid any bias that could arise due to card sequence.

Typically, the number of product depictions or cards that a respondent is shown may be reduced by developing a fractional-factorial design, which is a subset of the full-factorial design, where all the information needed for determining the marginal valuations of certain attributes is preserved. Assuming a linear additive model of product attributes, an orthogonal experimental design can be developed whereby the subset of factor levels is orthogonal and balanced. Each level in a factor appears the same number of times and there is no collinearity among the variables in the design matrix or the matrix of independent variables, resulting in efficient parameter estimates (Hair et al. 1998).

For the current experiment, some attributes logically would not appear together. Specifically, a product labeled as *Mexico Selected Quality* would not appear without a country-of-origin label ("Product of Mexico"). Similarly, a product labeled as *Arizona Grown*, would not appear with a "Product of Mexico" label. These restrictions prohibited the development of an orthogonal design. Using the experimental design tool in the SAS statistical software package, a nearly orthogonal design was developed using the D-efficiency design criteria, allowing the number of profiles to be reduced to

Table 1. Products and Price Points used in the Conjoint Experiment.

Product	Low Price	Medium Price	High Price
Cantaloupe	$0.25/lb	$0.33/lb	$0.50/lb
Cilantro	4 for $0.99	3 for $0.99	2 for $0.99
Grapes	$0.99/lb	$1.49/lb	$1.99/lb
Tomatoes	$0.49/lb	$0.89/lb	$0.99/lb

18 for each product (SAS Institute 1993).[1] This criterion finds the subset of attribute combinations such that the design-matrix variables exhibit a minimum amount of collinearity, making it nearly orthogonal (Kuhfeld, Tobias, and Garratt 1994).

The survey respondents were presented with cards containing depictions of the products. All the cards had a 10-point purchase-likelihood scale printed on them (1=extremely unlikely, 10=extremely likely). The respondents were asked to respond to the card using this rating scale, which becomes the dependent variable (r_{ij}) in the conjoint model:

$$(1)\quad r_{ij} = \beta_0 + \beta_1 AZ_{Sp} + \beta_2 AZ_{En} + \beta_3 MX_{Sp} + \beta_4 MX_{lEn} + \beta_5 COO + \beta_6 P + e_1 ,$$

where r_{ij} is the rating assigned to the ith profile for product j; AZ_{Sp} denotes the *Arizona Grown* logo in Spanish; AZ_{En} is the *Arizona Grown* logo in English; MX_{Sp} is the *Mexico Selected Quality* logo in Spanish; MX_{En} is the *Mexico Selected Quality* logo in English; *COO* is the country-of-origin information ("Product of Mexico"); and *P* is price. The variables AZ_{Sp}, AZ_{En}, MX_{Sp}, MX_{En}, and *COO* are 0-1 binary variables (dummy variables) which are equal to one when the attribute is present in the product depiction.

The model was estimated by ordinary least squares using the data from all survey respondents in a pooled sample. The implicit prices were evaluated using a Wald test under the null hypothesis that the ratio of the attribute coefficient and the price coefficient equals zero. These model results are given in the following section after a discussion of consumers' views on the *Arizona Grown* and *Mexico Selected Quality* brands.

Empirical Results

Most of the survey respondents were women (64%). However, this is to be expected, since women continue to be the primary food shopper in most households (Food Institute 2003). The survey locations proved to be very effective in reaching Hispanic consumers with 81 percent of the sample composed of individuals who identified themselves as being of Hispanic background. Approximately 93 percent of the sample reported being residents of the state of Arizona. Nearly 57 percent, though, reported having previously lived in Mexico. About 28 percent of the respondents claimed the United States as their country of origin. Other countries of origin in the sample include Argentina, Chile, Colombia, Cuba, Guatemala, Honduras, Puerto Rico, and Venezuela.

The level of education in the sample varied from some high school or less (43 percent of the respondents), to some college or technical school (13%) or college graduate (13%). Similarly, household income varied from less than $10,000 (20%) to $75,000 or more (2%). The majority of the sample (58%), though, had a total household income in the $10,000–$40,000 range. Compared to the U.S. Census data for these same areas, this sample draws a little more heavily from the lower end of the income distribution. This is likely due to the target market of the supermarket chain. In addition to targeting Hispanic consumers, Food City also targets value-conscious consumers. So while these stores provide excellent sites to interview Hispanic shoppers, it is acknowledged that many of these shoppers tend to be from lower-income households. However, it should also be recognized that the regions (zip codes) used to collect the Census data encompass large geographic areas, which will tend to include a broader distribution of income levels compared to a sample of shoppers at Food City.

Survey Analysis

Most *Arizona Grown* promotions in the past focused primarily on fruits and vegetables. These promotional efforts could prove to be effective in reaching the shoppers in this sample, as 81 percent indicated that they buy produce once a week. Also, among the weekly produce buyers, 87 percent are Hispanic. This is consistent with previous studies, which show that Hispanics tend to be frequent produce buyers (McCracken 1992). Among the Hispanic shoppers, 32.8 percent revealed that that they tend to always buy the same brand, compared with 24.24 percent for non-Hispanics. This offers some corroborating

[1] Measures on the efficiency of a design matrix **X** are based on the inverse of the information matrix, $(\mathbf{X}'\mathbf{X})^{-1}$. The variance-covariance matrix of parameter estimates β is proportional to $(\mathbf{X}'\mathbf{X})^{-1}$. An efficient design will have a relatively small variance matrix and the eigenvalues of $(\mathbf{X}'\mathbf{X})^{-1}$ provide a measure of the "size" of the variance matrix. The D-efficiency measure is a function of the geometric mean of the eigenvalues of the inverse of the information matrix (Kuhfeld, Tobias, and Garratt 1994).

evidence for the assertion that Hispanic shoppers tend to be brand loyal.

However, the shoppers in this sample were not particularly familiar with the *Arizona Grown* brand—only 33 percent indicated an awareness of this program. Compared to awareness levels of 23.3 percent measured by Patterson et al. (1999) in 1997, the level of awareness among the current sample of predominantly Hispanic shoppers is higher than awareness levels in a broader market. This may be attributable to the longer time the brand has had a presence in the market and to frequent purchases of produce by these consumers. Among the Food City shoppers who do recognize the *Arizona Grown* program, 61 percent said that they learned about the program through in-store display material.

Surprisingly, about 36 percent of the sample indicated an awareness of the *Mexico Selected Quality* program, nearly equal to those expressing an awareness of *Arizona Grown*. This is a curious finding given the program's limited exposure to date, which has primarily occurred only in trade publications such as *The Packer*. Obviously, interviewer bias is one possibility, with the respondents giving answers in a manner meant to please the interviewer. Alternatively, some respondents indicated that the brand logo was very similar to an existing food brand in Mexico. Nevertheless, the respondents appeared to infer that the brand and the *Arizona Grown* brand represent higher levels of quality.

When asked if a product branded as *Arizona Grown* is superior in quality, 39 percent strongly agreed and 45 percent agreed. When asked if a product branded as *Mexico Selected Quality* is superior in quality, 41 percent strongly agreed and 40 percent agreed. Thus, in addition to having nearly equal levels of awareness, the *Arizona Grown* and *Mexico Selected Quality* programs were also viewed nearly equally by the respondents in terms of quality.

The last survey question was "If given a choice on similar food products at similar price and quality from Mexico, Arizona, another state from the US or other country. Which one would you purchase? Rank them in order of preference." Overall, Arizona-origin products edged out Mexico-origin products, but by only a small margin. Arizona was the most-preferred origin by 51.25 percent of the sample; Mexico was the most-preferred origin by 43.45 percent of the sample. Among those who ranked Arizona as their first choice, 44 percent are non-Hispanic and 40 percent are Hispanics from Mexico who on average have been in the U.S. more than ten years. On the other hand, among those who ranked Mexico as their first choice, 93 percent are Hispanic and 81 percent are from Mexico. This provides some preliminary evidence that an individual's country of origin and tenure in the U.S. can temper their views on products from different origins

Conjoint Analysis

For this experiment, each product was evaluated individually using the model described above. The parameter estimates for each model are given in Table 2 along with the estimated implicit prices. The coefficient of determination (R^2) is relatively low for each model. However, this is frequently found when using cross-sectional data. More importantly, the null hypothesis that all independent variables equal zero (F-value) is rejected in each case. This provides some confidence in the ability of the model to explain consumer preferences for these products with these various attributes. Finally, nearly all the estimated parameters in each model are significantly different from zero and have the expected sign. For each model, we use the estimated implicit prices to assess consumers' preferences for these product attributes.

Starting with the cantaloupe model, it is found that a product labeled *Arizona Grown* using the English version of this label could sell at a premium of about $0.13 per pound compared to a product with no label, holding all other factors constant. Similarly, a product labeled with the Spanish version of the *Arizona Grown* label would also sell at a premium of $0.13. Products labeled *Mexico Selected Quality*, whether in English or Spanish, would sell at a $0.12 premium. Compared to the median price for this product ($0.33/lb), these results suggest premiums of about 41 percent and 36 percent for the Arizona and Mexico brands, respectively. These results also show that consumers readily accept either the English or Spanish versions of these branding-program labels. Furthermore, they value the brands in nearly the same way. Indeed, we could not reject the null hypothesis that the difference in the premiums for the *Arizona Grown* and *Mexico Selected Quality* brands (English versions) is equal to zero. So, while consumers value the *Arizona Grown* and the *Mexico Selected Quality* brands, they value them nearly identically. Furthermore, information on

Table 2. Conjoint-Model Estimates for Grocery Products in Hispanic Markets.

			Implicit price	
Product -model variable	Coefficient	t-ratio	Estimate	t-ratio
Cantaloupe				
Constant	9.074**	35.008		
Az. Grown – English	0.911**	4.826	0.134**	4.305
Az. Grown – Spanish	0.851**	4.506	0.125**	4.056
Mex. Sel. – English	0.803**	3.524	0.118**	3.554
Mex. Sel. – Spanish	0.786**	3.450	0.116**	3.481
Origin (Mexico)	-0.013	-0.058	-0.002	-0.058
Price	-6.795**	-11.761		
Az. Eng - Mex.Eng.			0.016	0.358
N	3,186			
R^2	0.06			
$F_{(6,3179)}$	32.67**			
Cilantro				
Constant	9.771**	45.448		
Az. Grown – English	0.811**	5.181	0.099**	4.817
Az. Grown – Spanish	0.771**	4.927	0.094**	4.605
Mex. Sel. – English	0.571**	3.021	0.070**	3.070
Mex. Sel. – Spanish	0.756**	3.997	0.092**	4.054
Origin (Mexico)	0.075	0.410	0.009	0.407
Price	-8.199**	-17.106		
Az. Eng - Mex.Eng.			0.029	-0.956
N	3,167			
R^2	0.11			
$F_{(6,3160)}$	62.51**			
Grapes				
Constant	9.412**	36.561		
Az. Grown – English	0.832**	4.571	0.337**	4.321
Az. Grown – Spanish	1.084**	5.952	0.438**	5.475
Mex. Sel. – English	0.765**	3.485	0.309**	3.529
Mex. Sel. – Spanish	0.833**	3.798	0.337**	3.842
Origin (Mexico)	0.043	0.201	0.017	0.200
Price	-2.473**	-17.480		
Az. Eng - Mex.Eng.			0.027	-0.234
N	3,150			
R^2	0.11			
$F_{(6,3143)}$	64.35**			
Tomatoes				
Constant	8.802**	35.107		
Az. Grown – English	0.898**	4.950	0.317**	4.378
Az. Grown – Spanish	1.132**	6.239	0.400**	5.236
Mex. Sel. – English	0.733**	3.367	0.259**	3.330
Mex. Sel. – Spanish	0.717**	3.296	0.254**	3.264
Origin (Mexico)	0.188	0.900	0.066**	0.883
Price	-2.830**	-10.756		
Az. Eng - Mex.Eng.			0.058	-0.574
N	3,112			
R^2	0.06			
$F_{(6,3105)}$	30.74**			

** and * denote significance at the five- and ten-percent levels, respectively. N indicates the number of observations. The F-values test the null hypothesis that all model coefficients equal zero; the critical value at a five-percent level of significance for all tests with six degrees of freedom in the numerator is 2.10.

origin—Mexican origin specifically—is not particularly important to these consumers. Although the coefficient on origin (Mexico) and the estimated implicit price are negative, they are not significantly different from zero.

This pattern of results was found for the other products as well. Branded Arizona or Mexico products would sell at a premium, but their premiums are nearly identical, while information on origin alone is of little value. The only differences in the result are in the magnitude of the premiums for each product. Relative to the products' median prices, these premiums range between 21 to 36 percent.

In the cilantro case it was found that the *Arizona Grown* brand has a premium of $0.10 and the *Mexico Selected Quality* brand has a $0.07–$.08 premium on a per-unit basis. Again, the premiums for the English version of these competing brands were not significantly different. For grapes, the *Arizona Grown* premium was $0.34 and $0.44 for the English and Spanish labels, respectively. Meanwhile, the *Mexico Selected Quality* grapes had premiums of $0.31 to $0.34 (English or Spanish). For tomatoes, the *Arizona Grown* premiums ranged between $0.32 and $0.40 (English and Spanish), while the *Mexico Selected Quality* premiums ranged between $0.26 and $0.25 (English and Spanish)

Summary and Conclusions

This study provides new evidence on the effectiveness of origin-branding programs when targeted at Hispanic consumers. It also provides some new evidence on the food-shopping behavior of these consumers. These results were obtained through interviews of consumers in the Phoenix metropolitan area. During the interviews, a traditional attitudinal survey was conducted along with a conjoint experiment, where consumer responses to the origin-branding programs sponsored by the State of Arizona and the Mexican government were recorded.

The results showed that the consumers, who were predominantly of Hispanic origin and from the country of Mexico, tended to view food products branded as *Arizona Grown* or *Mexico Selected Quality* as nearly identical in perceived quality. Furthermore, if given a choice among a food product from Arizona, Mexico, or other states or countries, the Arizona product was selected as the most-preferred by 51.25 percent of the sample, while the Mexican product was selected as the most-preferred by 43.33 percent of the sample. Thus the Arizona product is most-preferred by a only slightly higher share of the sample. It was also revealed that the tendency to favor the Arizona product was more dominant among Mexican immigrants who have lived in the United States for more than 10 years, so length of residency tends to have an affect on preferences with respect to product origin.

Next, experiments were conducted to determine the premium consumers would be willing to pay for food products branded as *Arizona Grown* or *Mexico Selected Quality*. Consistently across all four products (cantaloupe, cilantro, grapes, and tomatoes), the premiums offered for these competing brands were statistically significant and in the range of 21 percent to 41 percent compared to the products' median prices. However, when the competing brand premiums were compared to one another on a product-by-product basis, they were not significantly different from one another. So while Hispanic consumers will pay a premium for a food product branded as *Arizona Grown* or *Mexico Selected Quality*, they view these brands as virtually identical.

Also, these consumers saw no value in information on product-origin alone. Although there was a slight discount for products from Mexico, the discount was not statistically significant, so future information on country of origin, as required under recent U.S. legislation, will not affect product sales and will be of no real value to the consumers in this sample.

These findings suggest some impending challenges for the Arizona Grown program. Recall that only 33 percent of the sample mentioned awareness on the Arizona brand. If the Mexican government launches an aggressive promotion campaign in the United States, this could result in a more advantageous position for the Mexican products, particularly among Hispanic consumers. At the same time, the findings show that consumers do value the Arizona brand. This offers additional evidence that could be used in supporting proposals to collect licensing fees for the use of the *Arizona Grown* brand. This new form of revenue could be used to defend this brand.

However, for the *Arizona Grown* brand to be successful, steps must be taken to insure that only high-quality products are sold under this brand name. Consumers expect these branded products

to be high quality and are in fact wiling to pay a premium for them. Any consumer experience with a less-than-high-quality product will over time diminish the implicit value of the brand.

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Appendix

Consider a composite good Z with N attributes, $Z(z_1, z_2, ..., z_N)$, where z_i refers to the quantity of the i^{th} attribute. Assuming that utility, $U[Z(z_1,..., z_N); X]$, is additively separable in Z and other goods, $\boldsymbol{X}$, the marginal rates of substitution between any pair of attributes is independent of the level of any other goods, $\boldsymbol{X}$. Now, let two attributes, z_i and z_j, be varied across alternative bundles Z^0 and Z^1, while all other attributes are held constant, and let an individual compare bundles $Z^0(...z_i^0, z_j^0...)$ and $Z^1(...z_i^1, z_j^1...)$. When these two attributes are varied in proportions so that the individual is left indifferent between bundles Z^0 and Z^1, the implied marginal rate of substitution between attributes z_i and z_j is the ratio of the marginal utilities $-U_{zi}/U_{zj}$ (Freeman 1991).

If the composite good Z has a defined price or cost, P_Z, the utility function may be expressed in the indirect form $V[z_1, ... z_N, P_z, I]$ where I represents the individual's income. Presented with a particular bundle of attributes, Z^0, a consumer could be asked to provide a rating of the desirability of that bundle, r^0. Utility may then be transformed by a transformation function $\{.\}$ such that

$$(A.1) \quad r^0 = \phi\{V[z_1, ... z_N, P_z, I]\} .$$

The transformation function is a monotonic function such that $v^0 > v^1 \Leftrightarrow r^0 > r^1$. The transformation function is necessary, since the relative utility for different bundles is mapped to the bounded, integer-rating scale (Roe, Boyle, and Teisl 1996). Assuming that the indirect utility function may be represented by a linear specification gives

$$(A.2) \quad r = b_0 + b_1 z_1 + ... + b_N z_N + b_P P_Z + b_I I ,$$

which is the traditional conjoint-analysis equation. If the marginal utility of income is assumed constant, $b_p = - b_I$, the income term drops out upon estimation of this function, since an individual's income does not vary across alternative bundles of attributes (Hanemann 1984). Suppose an individual compares bundles $Z^0(...z_i^0, ...P_Z^0)$ and $Z^1(...z_i^1, ...P_Z^1)$, with other attributes held constant. When z_i and P_Z are varied so that the individual is indifferent between Z^0 and Z^1, the ratio $- V_{Zi}/V_{Zp}$ represents the marginal willingness to pay (implicit price) for attribute z_i (MacKenzie 1992).

Estimates of the implicit price for product attributes for non-market and market goods have been developed using conjoint analysis. For example,

MacKenzie (1992) evaluates the implicit price (or marginal valuation) of various attributes of a deer-hunting trip. In this non-market-good application, the estimated cost of the trip is a measure of the trip's price. While this methodological approach has gained acceptance in the resource economics literature, it has also been extended to hypothetical market goods, as demonstrated by select studies in the health economics literature (e.g., Ryan and Hughes 1997; San Miguel, Ryan, and McIntosh 2000; Aristides et al. 2002; among others).