Westernization in China: A Case Study in Processed Potatoes

by

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Abstract: The demand for convenience foods is growing around the world, especially in China. However, the contributing factors of this change in food preferences are still largely unknown. To measure this westernization trend, data from a survey of Chinese consumers in Beijing is evaluated using a multinomial ordered logit model to determine which consumer attributes influence the probability of consuming western foods such as French fries, mashed potatoes, and potato chips. Results show that higher income levels and positive opinions concerning western food taste have a significant influence on increased consumption of all three processed potato products. Additionally, younger ages and female gender were highly significant indicators of increased French fry and potato chip consumption.

1. Introduction

The changes that have taken place in food consumption patterns and tastes in China over the last two decades are well documented in the literature. The most notable changes are increased consumption of dietary fat including meats, oils, and dairy products (Guo et al.; Ito, Peterson, and Grant; Gould; Fun and Agcouli-Sombilla),[1] decreased consumption of grains including rice, flour, and course grains (Ito, Peterson, and Grant; Guo et al.),[2] and increased consumption of fruit and vegetables (Ahmadi-Esfahani and Stanmore; Han and Wahl; Gould; Guo et al.).[3] However, one change which has only been touched upon, is the increased consumption of convenience foods including processed and pre-prepared meals (Veeck and Veeck; Huang, David, and Duff, 1991).

What is of current concern, is whether this move to convenience foods is an indicator of westernization in China. Or more specifically, is Chinese food demand headed towards that of the developed western countries? Shone, Nobuhiro, and Kaiser, concluded that China's dietary patters were moving more toward those of developed Asian countries such as Japan and Korea, rather than developed western countries of North American and Europe. However, their study considered the per capita daily supply of grain, potatoes, vegetables, meats, dairy products, and seafood, but did not consider consumption of processed products. In order to evaluate western influences on Chinese food demand, this study will use the results of a survey of Chinese consumers in the greater Beijing area completed in August of 2002 to evaluate consumer attributes affecting the probability of consuming processed western foods including French fries, mashed potatoes, and potato chips. Processed potato products were chosen as symbols of

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[1] Authors found significantly positive income elasticities for these products in China. Guo et al. show that from 1989 to 1993 dietary fat went from 19% to 26% of total daily caloric intake in China.
[2] Authors found significant negative income elasticities for these products in China.
[3] Authors found significantly positive income elasticities for these products in China.

western food due to their popularity in the United States. Cutler et al. points out, "Today, the French fry is the dominant form of potato and America's favorite vegetable. From 1977 to 1995, total potato consumption increased by 30%, accounted for almost exclusively by increased consumption of potato chips and French fries."

As China now represents a market of 1.3 billion consumers, who devote 60% of their expenditures on food, manufacturers and retailers of convenience food products are likely to benefit from marketing strategies aimed at consumers exhibiting preferences for western foods. In fact, U.S. exporters have already taken advantage of the Chinese market, exporting fruits, vegetables, red meats, and snack foods to China at a value of U.S. $216 million in 2000 (AgExporter, May 2001). Corporations such as Quaker Oats, Proctor & Gamble, and Philip Morris have increased their presence in China and have managed to compete alongside many of the stronger Chinese food companies (Veeck and Veeck). The U.S. potato industry has especially benefited as frozen potato exports to China increased from 6,600 metric tons to 64,700 metric tons, a total value of U.S. $49 million, from 1991 to 2000 (FAOStat).

In the following sections we will discuss the trends in the demand for convenience foods in China and the rational behind those trends, previous studies aimed at identifying western influences on food demand and the consumer attributes associated with western food consumption, data collection methodology and the survey statistics, and the multinomial ordered logit model under consideration, as well as relevant econometric results.

2. Convenience Food Consumption in China

The movement towards the consumption of convenience foods in China is the likely result of increased incomes, busier lifestyles, and the availability of a greater variety of food

options. Chinese income levels have increased dramatically over the last two decades primarily due to average annual growth rates in per capita GDP of nearly 10% since the early 1980's. The result is an ever broadening middle class, composed primarily of singles and two working spouse households. Not only are processed and pre-prepared meals now affordable for this segment of Chinese society, it is highly likely that they are seen as a necessity. In the cities where employment opportunities for women are good, the opportunity cost of food preparation time is higher, thus creating a need for quick meal solutions (Sahn and Alderman). Additionally, as rural to urban movement continues in China, food preferences are likely to adjust simply due to the increased availability of foods in urban markets (Hung and Rozelle, 1998). As Pollak (1970) notes, demand functions often adjust when the consumer is alleviated of his/her ignorance of goods outside of his/her past consumption.

The increased demand for convenience foods has led to a higher frequency of dining out, increased patronage of grocery stores (vs. traditional wet markets), and increased consumption of snack foods. The increased frequency of dining out or away from home represents a growing need to save time as well as a higher level of disposable income. Western quick service restaurants such as McDonalds and KFC, have moved to fill this increased demand for meals away from home. In fact, both McDonalds and KFC, now have over 500 locations each in China, primarily in urban areas where population growth is high. These restaurants provide low cost and easy meal solutions for busy families.

Non-alcoholic beverages, meats, cereals, fruits, and vegetables account for the majority of Chinese expenditures on processed foods, which tend to be western in orientation (Bhandari and Smith). Hence, western food retailers, in search of new markets, have turned to China as a solution to future growth concerns stemming from flat markets in the U.S. and Europe. Western

retail chains like Carrefour SA of France and Walmart Inc. of the U.S. have 31 and 22 locations respectively in China and both plan to double that number by 2004 (WSJ, 2002). Mega stores such as these, as well a large influx of small convenience stores, often open 24 hours a day, provide packaged meal solutions as well as a large variety of both eastern and western snack foods (AgExporter, March 2002). A recent survey of Chinese consumers in Shanghai found that respondents spent on average nine percent of their total grocery bill on snacks alone. The western style snacks available included potato chips, chocolates, crackers, popcorn, hard candy, and ice cream. Pringles potato chips were the most popular even though they were sold at a price higher than local brands. The study attributes Pringles' loyal following to the use of in-store displays at every retail outlet, rather than print or television advertising (FAS, 2001).

3. Previous Studies

Previous studies aimed at identifying consumer attributes which lead to increased consumption of western foods, include a study by Veeck and Veeck and Jassaume. The first study uses data from a 1993 survey of 150 household primary shoppers in Nanjing, PRC. Cluster analysis is used to group the respondents into convenience shoppers, frequent shoppers, and traditional shoppers. The results show that convenience shoppers are younger single adults, primarily male, still living at home with good incomes. These consumers purchase more convenience foods than the other two groups and eat out of the house more often. Frequent shoppers include younger adults, primarily married, who still shop for food often and eat out and purchase food at grocery stores moderately, with the final group consisting of lower income older individuals. The variables considered in this study include many of those that we use in our study.

The second study by Jussaume used data from a 1996 food consumption survey in Qingdao, PRC of 542 households. This study considered high consumption of either meats or fruits as an indication of modern patterns of food consumption. The results of the logistic model found higher incomes and the use of supermarkets associated with higher probabilities of consuming the dependent food variables. Food price sensitivity was associated with lower consumption levels of the dependent food variables.

Additionally, two previous studies evaluated western influences on the food consumption patterns of Chinese nationals, but focused on expatriates living in western countries such as the U.S. and Australia. Although it is plausible to consider western influences on expatriates living in western countries, it is doubtful that these studies could in any way replicate the experience of western influences in the home country, which would likely be more subtle. One study conducted by Hu, Duval, and Wahl, considered several staple foods as well as processed products, including pizza and hamburgers. The data used in the study came from a survey conducted by internet on Chinese students at universities in the U.S. Almost half of the survey respondents indicated their consumption of pizza and hamburgers had increased since they moved to the U.S. and close to 30% of the respondents ate these products at least weekly. However, the respondents indicated that they ate these products to save time, not because they preferred them to traditional Chinese foods. Another study conducted by Lees and Yuan considered the food consumption habits of Chinese speaking Asians in Australia. Their results indicated little or no change in eating habits due to the western influences in Australia.

4. Data Collection

The data for this study originates from a consumer survey completed in Beijing, China in August of 2002. The survey format is based on those previously used by McCluskey et al. and Grimsrud et al. and updated to encompass western influences and the use of processed potato products. The survey was pre-tested with expatriate Chinese university students in the United States before being conducted through in-person interviews by four Chinese nationals in Chinese. The survey was performed in four separate locations, including a supermarket, two outdoor markets, and one shopping area. These locations were chosen to ensure a random sample encompassing a cross section of the Chinese population. Also, in an effort to better elicit the consumers' true preferences concerning the products in question data collection was done at the same time and place where actual purchase decisions were made. Respondents were selected randomly with the criterion, that the interviewer, solicit every third consumer that came into the survey area. Every respondent was given a gift pack of green tea (worth approximately $.65 in Chinese yuan) or a bottled soft drink (worth $.50 in Chinese yuan) as a reward for participating in the survey.

The survey respondents were asked questions concerning various socioeconomic and demographic factors such as income, employment status, gender, marital status, education level, age, number of children, and if married, their spouse's education and employment levels. In a second level of questions respondents were asked about their food shopping habits and attitudes. These questions related to identification of the primary shopper for the household, the frequency of food shopping, the number of household members, attitudes toward food safety and the importance of pricing in their buying decisions, as well as preferences for domestic and imported foods.

The third level of questions related to the respondents consumption levels of processed potato products and attitudes toward processed foods. Respondents were asked about their consumption frequency of French fries, mashed potatoes, and potato chips, segregated into the levels of never, seldom, monthly, weekly, or daily. Additionally, they were asked where they purchased these products, if their purchases of these products had changed in the last two years, how often they frequent quick service restaurants, and if they had seen advertising for these products. Finally, respondents were asked to give their opinion on the taste and health of these products over traditional Chinese foods such as rice and soy.

Survey Results

In total, 599 Chinese consumers were surveyed. The majority of the respondents were the primary food buyers of the household (69%) and female (63.3%). Seventy-four percent of those shoppers purchased groceries two or more times per week, for an average of four people. The majority of the respondents were in their late 30's or early 40's, with a mean age of 38.8 years. The average household income ranged from 10,000 yuan (US$1,200) to 25,000 yuan (US$3,038)[4]. The average education level of the respondents was equivalent to a high school graduate, which is above the Chinese average of a middle school education. Initial analysis of the data shows that of the 599 consumers surveyed, 41% had seen an increase in their annual household income in the previous two years, 76% of those surveyed were married with 65% full or part-time employed, and 53% with a spouse also full or part-time employed. Complete summary statistics on socioeconomic and demographic variable descriptions are listed in Table 1.

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[4] At an exchange rate of U.S. $1=8.23 Chinese yuan.

Concerning consumption levels of processed potato products, 26% of the respondents had increased their consumption of processed potato products in the last year, while 58% had level consumption of processed potato products. Of those who purchased processed potato products 51.4% purchased them in grocery stores, 8.3% purchased them in restaurants, and 31.7% purchased them in both grocery stores and restaurants. Eighty percent of the respondents had eaten at a McDonalds or KFC restaurant in the last year. Additionally, 15.5% of those surveyed preferred imported foods to domestic foods and 65% had seen advertising for various fast and snack-food potato products. Forty-one percent of the respondents ate French fries at least monthly, 23.4% ate mashed potatoes at least monthly, and 48.4% ate potato chips at least monthly. Thirty-one percent of the respondents felt that western foods tasted better or the same as traditional Chinese foods and 44.1% felt that western foods were equally healthy or healthier than traditional Chinese foods (See Table 2 for full summary statistics).

5. Research Methodology

Since the multinomial-choice variables of surveys are inherently ordered, ordered logit models are now a common framework for analyzing survey responses. Hence, in this study an ordered multinomial-choice model with a logistic distribution, fully described by Mittelhammer, Judge, and Miller, is used to evaluate the consumer attributes influencing the probability of consuming processed western foods. The qualitative choices of the processed potato products of either French fries, mashed potatoes, and potato chips, or y_i for $i=0,1,2,3$ may be modeled as a linear function of the observable explanatory variables, x_i, and the unobservable variables, ε_i.

$$y_i^* = x_i \beta + \varepsilon_i \tag{1}$$

The respondent's consumption behavior can be segregated into thresholds, α_i, comparable to censoring the data. Each respondent classified his/her consumption of French fries, mashed potatoes, and potato chips as seldom to never, monthly, weekly, or daily. Hence we observe

$$
\begin{aligned}
&y = 0 \text{ (seldom/never)} &&\text{if } y_i^* \le \alpha_1 \\
&y = 1 \text{ (monthly)} &&\text{if } \alpha_1 < y_i^* \le \alpha_2 &&(2)\\
&y = 2 \text{ (weekly)} &&\text{if } \alpha_2 < y_i^* \le \alpha_3 \\
&y = 3 \text{ (daily)} &&\text{if } \alpha_3 > y_i^*
\end{aligned}
$$

where the unknown α_i's are estimated along with the β's. Assuming that the ε_i's are iid logistic in distribution, the ordered multinomial maximum likelihood estimator results and the probabilities are such that

$$
\begin{aligned}
&\text{Prob } (y = 0) = F_{\varepsilon_i}(\alpha_1 - x_i\beta) \\
&\text{Prob } (y = 1) = F_{\varepsilon_i}(\alpha_2 - x_i\beta) - F_{\varepsilon_i}(\alpha_1 - x_i\beta) &&(3)\\
&\text{Prob } (y = 2) = F_{\varepsilon_i}(\alpha_3 - x_i\beta) - F_{\varepsilon_i}(\alpha_2 - x_i\beta) \\
&\text{Prob } (y = 3) = 1 - F_{\varepsilon_i}(\alpha_3 - x_i\beta).
\end{aligned}
$$

In the empirical implementation of the model, we define $F(.)$ to be the standard logistic distribution with mean zero and standard deviation $\sigma = \pi / \sqrt{3}$. The marginal effects of changes in the explanatory variables are calculated as follows:

$$
\begin{aligned}
&\frac{\partial Prob(y=0)}{\partial x_i} = -f_{\varepsilon_i}(\alpha_1 - x_i\beta)\beta \\[2mm]
&\frac{\partial Prob(y=1)}{\partial x_i} = [f_{\varepsilon_i}(\alpha_1 - x_i\beta) - f_{\varepsilon_i}(\alpha_2 - x_i\beta)]\beta &&(4)\\[2mm]
&\frac{\partial Prob(y=2)}{\partial x_i} = [f_{\varepsilon_i}(\alpha_2 - x_i\beta) - f_{\varepsilon_i}(\alpha_3 - x_i\beta)]\beta \\[2mm]
&\frac{\partial Prob(y=3)}{\partial x_i} = f_{\varepsilon_i}(\alpha_3 - x_i\beta)\beta
\end{aligned}
$$

As with binary models, the marginal effects of the regressors on the probabilities are not equal to the coefficients, only the signs of the changes in the probabilities are unambiguous. It can be seen from marginal effects equations above, the change in the Prob (y = 0) with a change in the variable value x_i, has the opposite sign of beta. Additionally, the change in the Prob (y = 3) has the same sign as beta. Hence, the marginal effects of these two probabilities are unambiguous. The change in the Prob (y = 1) and (y = 2) are dependent on the two densities and hence, their signs are ambiguous making the signs of their marginal effects un-interpretable.

Explanatory Variables

The following vector of explanatory variables will be considered for their effect on the probability of consuming each of the processed potato alternatives.

$$x_i = \{GD, INC, EDU, AGE, EMP, MS, TWHH, ADV, CHI, RTU, DVSI, TST, HL\} \quad (5)$$

The first variable, *GD*, denotes the gender selection of the respondent. *INC* is the variable for the stated income level of the respondent. *EDU* is the educational level of the respondent. *AGE* is the age level of the respondent. *EMP* is the stated employment level of the respondent, indicating working or not working. *MS* is simply a variable for the respondent's marital status. *TWHH* is a variable denoting that both spouses are working. *ADV* is a variable for whether or not the respondent has seen advertising for the processed potato products in question. *CHI* is a variable indicating the presence of children in the household. *RTU* is a variable indicating the respondent moved from a rural to urban area in the previous two yeas. *DVSI* describes the respondent's preferences for domestic foods over imported foods, and their responses to whether they feel western foods taste better than traditional Chinese foods (*TST*)

and whether or not they feel western foods are as healthy, or healthier than traditional Chinese foods (*HL*).

6. Discussion of Results

Those variables which had a significant influence of French fry consumption included female gender, increased incomes, lower age levels, preferences for imported foods, an opinion that western foods are equally healthy or healthier than traditional Chinese foods, and the opinion that western foods taste just as good as or better than traditional Chinese foods. Younger people tend to be more open to trying new foods, are influenced by the latest fashion or fad, and are often targeted by advertising. In contrast, older people tend to stick with traditional foods and preparation methods. In other words, they have formed habits in which current preferences depend on past consumption patterns (Pollak, 1970).

The probability of mashed potato consumption is significantly influenced by higher income levels, a full or part-time employment status, a single wage earner (unmarried or with unemployed spouse), and the opinion that western foods taste just as good or better than traditional Chinese foods.

The indicator variables which significantly influence potato chip consumption include female gender, higher income levels, younger age levels, existence of children in the household, married, and the opinion that western foods taste just as good as or better than traditional Chinese foods. The existence of children in the household may influence food preferences for two primary reasons. First, as French fries and potato chips are often popular foods for children, who also like to eat at restaurants such as McDonalds, children are likely to encourage their parents to purchase these products and eat at such restaurants. Second, parents with children

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who are involved in after school activities, such as music and sports, often have little or no time to prepare meals and thus, need to eat meals on the go at quick service restaurants or have pre-packaged meals available at home.

It is worth noting from the above discussion, that higher income levels and positive opinions concerning the taste of western foods have a significant influence on increased consumption of all three processed potato products. These two variables provide a backbone for relevant factors in convenience food and more specifically to processed food consumption. Obviously, Chinese consumers who are indeed realizing real income increases can afford to take advantage of the new products and restaurant options available. Perhaps, future research might consider analyzing the income elasticities of processed foods. Additionally, those consumers who have familiarity with western convenience foods and/or who have previously consumed these products are more likely to continue doing so. Hence, these consumers may be more open to trying new products and less engrained into the idea that traditional foods taste better and/or are healthier.

Interestingly, the level of the respondents' education was not found to be a significant indicator of processed potato consumption. This may or may not be surprising, depending on how consumers view processed food products health wise. A study by Bhandari and Smith found there was a definite link between female education and consumption of nutritious foods. However, male education contributed to increases in consumption of nutritious foods only when coupled with increased income levels. Also, education tends to reduce people's dependence on the continuation of the status quo, which increases the elasticity of substitution between goods (von Weizsacher).

Two additional variables which were found to be insignificant indicators of processed potato consumption include awareness of product advertising and rural to urban movement. Such results would indicate that advertising has little or no effect on consumption patterns, at least for this cross section of the Beijing population. Also, the literature has shown that rural to urban movement is likely to change food consumption patterns. Its insignificance in this study may be due to the rather low (8.5%) appearance of such movement in our data sample.

7. Conclusions

In this study we have shown through the use of a multinomial ordered logit model that higher income levels, favorable opinions of the taste characteristics of western foods, and younger adults primarily of the female gender are the most significant factors attributed to processed potato consumption. Obviously, younger people, who are open to trying new products and have the disposable income to do so and in many cases have young children, are the primary demographic for convenience foods.

Although rural to urban movement was not significant in this study, as population growth expands in urban areas where convenience foods are more readily available, consumers will become more familiar with these foods and possibly add them to their consumption history, which will likely lead to dramatic increases in aggregate Chinese consumption.

An understanding of the trend in Chinese towards convenience foods and the consumer attributes favoring these foods will undoubtedly provide assistance to both Chinese domestic and international food suppliers. Interestingly enough, mass advertising has little or no effect on increasing consumption of convenience foods, at least for this case study in processed potatoes.

Store displays, which familiarize consumers with new products, would likely be more effective

based on the results of this study and previous studies concerning Pringles brand potato chips.

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Appendix

Table 1. Demographic Summary Statistics

Variable	Description	Distribution	
Age	Real age		Mean = 38.8
Gender	0 if male 1 if female	36.4% 63.3%	
Education	1. Primary school or illiteracy 2. Junior secondary school 3. Senior secondary school 4. Technical school 5. 2-year college 6. 4-year university 7. Graduate 8. Refused	7.2% 26.2% 38.7% 16.0% 9.2% 1.7% 0.7% 0.3%	Coding for estimation: 0 if primary school, illiteracy, or refuse; 1 if Junior/Senior secondary school, or technical school; 2 if 2-year college, 4-year university or graduate;
Household Income	1. <10,000 yuan 2. 10,000-25,000 yuan 3. 25,000-40,000 yuan 4. 40,000-55,000 yuan 5. 55,000-70,000 yuan 6. >70,000 yuan 7. Refused	12.2% 38.2% 24.9% 12.7% 4.7% 3.2% 16.3%	
Children	1 if yes 0 if otherwise	61.1% 38.9%	
Employment Status	1. Full time employed 2. Part time employed 3. Unemployed 4. Housemaker 5. Retired 6. Refused 7. Student	49.7% 15.7% 5.2% 2.8% 18.2% 2.0% 6.3%	Coding for estimation: 1 if full or part-time employed; 0 if otherwise;
Martial Status	1 if married 0 if single	76.1% 23.7%	
Spouse's Employment Status	1. Full time employed 2. Part time employed 3. Unemployed 4. Housemaker 5. Retired 6. Refused 7. Student	44.2% 7.5% 5.8% 3.0% 14.7% .8% .2%	Coding for estimation: 1 if full or part-time employed; 0 if otherwise;
Spouse's Education	1. Primary school or illiteracy 2. Junior secondary school 3. Senior secondary/secondary 4. Technical school 5. 2-year college 6. 4-year university 7. Graduate 8. Refused	5.0% 21.4% 27.9% 12.5% 7.5% 1.0% .7% .4%	Coding for estimation: 0 if primary school, illiteracy, or refuse; 1 if Junior/Senior secondary school, or technical school; 2 if 2-year college, 4-year university or graduate;
Two Working Spouse HH	1 if yes 0 if otherwise		
Rural to Urban	Moved in last two years 1 if rural to urban 0 if otherwise	31.7% 8.5% 22.8%	

Table 2. Food Shopping and Preference Summary Statistics

Variable	*Description*	*Distribution*	
Shopper	1 if main shopper	68.8%	
	0 if otherwise	31.2%	
Food Shopping Frequency	1. Daily	37.2%	Coding for estimation: 0 if seldom (4,5); 1 if once a week; 2 if 2-5 times per week; 3 if daily;
	2. 2-5 times per week	36.6%	
	3. Once a week	16.4%	
	4. Once every two weeks	2 3%	
	5. Less than once a month	7.0%	
Safety	Importance of food safety vs. food price Scale from 1 to 10 where 1 food safety all important 10 food price all important	Mean = 3.47 Std. dev. =2.20	Coding for estimation: 0 if food safety very important; 1 if food safety slightly important; 2 if food price slightly important; 3 if food price very important;
Consumption Levels	Fries		Coding for estimation: 0 if never or seldom; 1 if monthly; 2 if weekly; 3 if daily;
	1. Never	21.2%	
	2. Seldom	37.6%	
	3. Monthly	12.5%	
	4. Weekly	26.7%	
	5. Daily	1.8%	
	Mashed potatoes		
	1. Never	43.9%	
	2. Seldom	32.6%	
	3. Monthly	8.7%	
	4. Weekly	13.4%	
	5. Daily	1.3%	
	Potato Chips		
	1. Never	20.4%	
	2. Seldom	30.9%	
	3. Monthly	13.2%	
	4. Weekly	29.7%	
	5. Daily	5.5%	
Purchase Area	1. Grocery store	51.4%	Coding for estimation: 0 if never; 1if other; 2 if grocery store; 3 if restaurant;4 if both grocery store and restaurant;
	2. Restaurant	8.3%	
	3. Other	2.5%	
	4. Both grocery and restaurant	31.7%	
	5. Never buy	6.1%	
Advertising	1 if seen advertising	64.6%	
	0 if otherwise	35.4%	
Taste	0 if western foods taste worse than traditional Chinese foods	68.8%	
	1 if western foods taste the same or better than traditional Chinese foods	31.2%	
Health	0 if western foods are less healthy than traditional Chinese foods	55.9%	
	1 if western foods are equally healthy or healthier than traditional Chinese foods	44.1%	
Domestic vs. Imported Food	0 if prefers domestic to imported foods	84.5%	
	1 if prefers imported to domestic foods	15.5%	

Table 3. Coefficient Values

Explanatory Variables	French Fries	Mashed Potatoes	Potato Chips
Gender	.7309 (3.78)	-.1731 (-.788)	.6813 (3.59)
Income	.2214 (3.08)	.1465 (1.76)	.0928 (1.34)
Age	-.0285 (-3.24)	.0020 (.240)	-.0320 (-3.85)
Employment	.0668 (.317)	.4792 (1.47)	-.2285 (-.840)
Two Worker HH	-.1637 (-.6157)	-.5911 (-2.05)	-.1984 (-.691)
Children	.1765 (.946)	.2121 (.982)	.2531 (1.40)
Rural to Urban	-.3671 (-1.09)	.3981 (1.16)	-.1976 (-.635)
Education	-.0365 (-.167)	-.1670 (-.618)	-.0650 (-.249)
Advertising	.1368 (.733)	.2754 (1.23)	.2185 (1.09)
Domestic vs. Imported	.3285 (1.33)	.0360 (.082)	.1956 (.816)
Marital Status	.2488 (.807)	.0164 (.108)	.4134 (1.35)
Taste	.3907 (1.98)	.5942 (2.57)	.5396 (2.81)
Health	.2368 (1.28)	0.1604 (-.741)	.0214 (.109)

(.): Z-stat

Survey questions concerning food shopping habits and attitudes.

1. Are you the person who buys most of the groceries for your household?
   1. Yes
   2. No

2. How often do you shop for food?
   1. Daily
   2. 2-5 times per week
   3. Once a week
   4. Once every two weeks
   5. Less than once a month

3. For how many people do you usually buy groceries, including yourself? _____

4. When you are purchasing food, how important is lower **food safety** risks versus **lower cost food** on a scale of 1 to 10, where **1 means lower food safety risk is all important** and **10 means lower food prices are all important**?

   1   2   3   4   5   6   7   8   9   10

5. Do you prefer domestic to imported food products?
   1. Yes
   2. No

Survey questions concerning consumption of processed potato products and attitudes toward processed foods.

6. How often do you eat processed potato products such as, French fries, mashed potatoes, and potato chips?

	Never	Seldom	Daily	Weekly	Monthly
Fries	_____	_____	_____	_____	_____
Mashed	_____	_____	_____	_____	_____
Chips	_____	_____	_____	_____	_____

7. Where do you normally purchase processed potato products?
   1. Grocery store
   2. Restaurant
   3. Other _____
   4. Both 1 and 2
   5. Never buy

8. Has your consumption of processed potato products changed in the last two years?
   1. Increased
   2. Decreased
   3. Stayed the same

9. Have you seen advertising on TV or on Billboards for processed food products?
    1. Yes
    2. No

10. Have you eaten at a McDonalds or Kentucky Fried Chicken in the last year?
    1. Yes, how many times?_____
    2. No

11. Do you feel western foods, like processed potatoes, taste better, the same, or worse than traditional Chinese products, such as rice and soy?
    1. Taste better
    2. Taste same
    3. Taste worse
    4. Don't know

12. Do you feel western foods, like processed potatoes, are less healthy, equally healthy, or healthier than traditional Chinese products, such as rice and soy?
    1. Less healthy
    2. Equally healthy
    3. Healthier
    4. Don't know