Are Beverage Categories Separable?

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Introduction

The nonalcoholic beverage market is highly competitive, as evidence by numerous new products introduced on an annual basis. In 2004, the nonalcoholic beverage market was estimated to be worth $79 billion; however, this market has experienced minimal real growth in recent years. This stagnation is partly attributed to the segments of the markets such as carbonated soft drinks, fruit juices, and milk, which are mature markets. Within the beverage industry, orange juice is the most popular juice, but orange crop shortages in recent years have led to increased juice prices making substitutable products more attractive. With more brands competing for consumers' dollars, retailers and brand manufacturers implement various promotional strategies with the intention of increasing sales and altering consumption patterns.

As consumer encounter more variety in their beverage choices, retailers and juice manufacturers experience intense pressure from competitors. For example, ready to drink (RTD) fruit drinks, sports drinks, energy drinks, and teas are categories within the nonalcoholic beverage industry battling for a percentage of consumers' beverage expenditures (Table 1). Thus, is important for brand managers, retailers, and other industry officials to understand demand interrelationships among the various beverages.

Table 1. United State Juice Market Value: $ billion, 2001-2005

Year	Market Value (in $ billions)	% Growth
2001	18.1	
2002	18.2	0.90%
2003	18.7	2.70%
2004	19.1	1.70%
2005	19.4	1.80%
Constant Average Growth Rate, 2001-2005 1.8%		

(Source: Datamonitor, 2006)

As the number of types of beverages in supermarkets increased, U.S. beverage consumption patterns and trends have changed. While overall market growth has been minimal, some beverage segments within the market have experienced dramatic growth. According to the Beverage Marketing Corporation, consumption (in gallons) of carbonated soft drinks (CSDs) and fruit beverages declined during 2004 through 2006; whereas, consumptions of energy drinks, sport drinks, and RTD coffee and teas has substantially increased. Similarly, changes in beverages sales from 2004 to 2005 indicate energy and sport drinks experienced significant increases (65.9 % and 20.6 % respectively). Refrigerated juice sales increased a mere 2.2 %, shelved non-fruit drinks decreased 0.9 %, bottled juices and cocktails both decreased 1.5 % and frozen juice sales decreased by 12.8 % (Food Industry Review, 2006).

Due to the changes in consumption, the beverage industry has undergone many transformations. All other things being equal, consumer theory states that a shift in demand for one good will be compensated by shifts in the opposite direction in the demand for other good. Brand manufacturers and retailers must continue to monitor the ever-changing beverage retailing landscape to ensure profitability. Thus, in an effort to better understand how consumers make beverage purchase decisions, this study will examine the competitiveness and structure of the beverage industry. To accomplish this goal separability tests are conducted among nonalcoholic beverage categories. This study will contribute to the existing body of literature by providing information on consumers' behavior regarding beverage purchases, the structure of the beverage industry and implications for the industry in the future.

Numerous studies have examined the orange juice industry to identify competitors, but studies few studies have tested for separability within the fruit juice market. Brown, Lee, and Seale (1994) tested for strong separability between fresh fruits, fruit juices, and tomato juices and failed to reject the hypothesis of strong separability. Suggesting that the marginal utility of fruit juices is not affected by an increase marginal expenditures of fresh fruit or tomato juice. Brown and Lee (2000, 2007), Brown, Lee and Seale (1992,1994), and Lee, Jong-Ying (1984) successfully identified juice beverage that are substitutes for orange juice, but the studies do not consider the impact of sport drinks on this demand. Several studies have tested for separability within the meat market (Nayga and Capps 1994; Eales and Unnevehr 1988; Hayes, Wahl and Williams 1990), however, a this type of disaggregate model has not been used to evaluate the manner in which consumers allocate their beverage expenditure. This study will contribute to the existing body of literature by providing information on consumers' behavior towards their beverage purchases and the structure of this beverage industry, which is the second largest component of the food and beverage manufacturing industry (ERS, 2005).

Model and Estimation Methods

Rotterdam Model

The Rotterdam model developed by Barten (1964) and Theil (1965, 1980) is derived from the maximization of a general utility function or total differentiation of a general demand function, using economic theory to describe the demand for goods given income and prices faced by the written as consumer. This model is most often used in agricultural economics to test consumption theory (Lee 1984; Brown, Lee and Seale 1994; Lee, Brown and Seale 1992. The absolute version of the Rotterdam model developed by Theil (1975) used to empirically test for separability among nonalcoholic beverages is

(1) $$w_i d(\log q_i) = \theta_i d(\log Q) + \sum_j \pi_{ij}(d \log p_j) \quad i = 1,\ldots\ldots,n$$

where $w_i = \left(w_{it} + w_{i,t}\right)/2$ represents the average expenditure share for good brand *i* with subscript t standing for time; $d\log q_i = \frac{q_{it}}{q_{i,t-1}}$ is the log change in the consumption level for brand *i*; $\theta_i = p_i \frac{\partial q_i}{\partial m}$ is the marginal propensity to consume; $d(\log Q) = \sum_i w_i d\log q_i$ is the Divisia volume index; $\pi_{ij} = \left(\frac{p_i p_j}{m}\right) s_{ij}$ is the compensated price effect and s_{ij} is the Slutsky coefficient, with $s_{ij} = \frac{\partial q_i}{\partial p_j} + \frac{\partial q_i}{\partial m} q_j$, and $d\log p_i = \frac{p_{it}}{p_{i,t-1}}$ represents the log change in the price of brand *i*.

The general restrictions of demand theory can be directly applied to the parameters of the Rotterdam model, specifically,

(2) Adding up: $\sum_i \theta_i = 1, \quad \pi_{ij} = 1$;

(3) Homogeneity: $\sum_j \pi_{ij} = 0$; and

(4) Symmetry: $\pi_{ij} = \pi_{ji}$.

The demand elasticities can be calculated using the parameters of the Rotterdam model in equation (1) as:

(5) compensated price: $\varepsilon_{ij} = \left(\pi_{ij} / w_i\right)$

(6) income: $\eta_i = \left(\theta_i / w_i\right)$.

When empirically estimating demand systems, one equation must be omitted to prevent singularity of the variance-covariance matrix of the disturbance terms. The demand parameters of the omitted equation are ultimately recovered.

Separability

Separability is a concept commonly used in empirical studies to limit the number of estimable parameters by imposing restrictions on preferences. This approach conveys important information regarding the appropriate conditions partitioning commodities into groups or aggregates and details on how consumers allocate expenditures within in each group. The objective is to use conditions established by separability theory and partition goods into subsets that include commodities that are closer substitutes or complements to each other than to members of subsets. Separability of preferences is required to guarantee that the utility realized in terms of individual commodities is identical to the utility achieved when some commodities are aggregated. The theoretical basis for separability has been documented in Barten (1977) Deaton and Muellbauer (1980), Pudney (1981) and Phlips (1983).

Block dependence is a special case of weak separability. Under the condition of weak separability, the change of marginal utility of a dollar spent on the i^{th} good $\left(i \in S_I\right)$caused by an extra dollar spent on the j^{th} good which belongs to a different groups equals $\phi_{GH}\theta_i\theta_k$. This effect is independent of goods *i* and *j*, which implies the result is the same for all pairs of commodities in the selected groups. Thus if orange juice and water are weakly separable groups, an extra dollar spent on either dry good has the same effect on the marginal utility as a dollar spent on any type of product in the dairy category. Therefore, utility interaction of two products in different groups is dependent of groups rather than individuals goods (Theil, 1980).

To test for weak separability, exisiting studies (Brown, 1993; Lee et al., 1992; Nagaya and Capps, 1994) elect to utilize the technique proposed by Goldman and Uzawa (1964). Goldman and Uzawa (1964) suggests that the necessary and sufficient condition for weak separability is that the off-diagonal terms of the Slutsky substitution matrix are proportional to the income derivatives of the two separable goods. As a consequence of separable preferences, cross-substitution terms become

(7) $$s_{ij} = \phi_{GH}\left(\frac{\partial x_i}{\partial m}\right)\left(\frac{\partial x_j}{\partial m}\right) \qquad i \in G,\ j \in H, \text{ and } G \neq H.$$

all $i \in G$ and all $i \in H$ where s_{ij} is the appropriate element in the Slutsky substitution matrix and ϕ_{GH} is the factor of proportionality between groups g and h. Multiplying both sides of (7) $p_i p_j / m$ one obtains

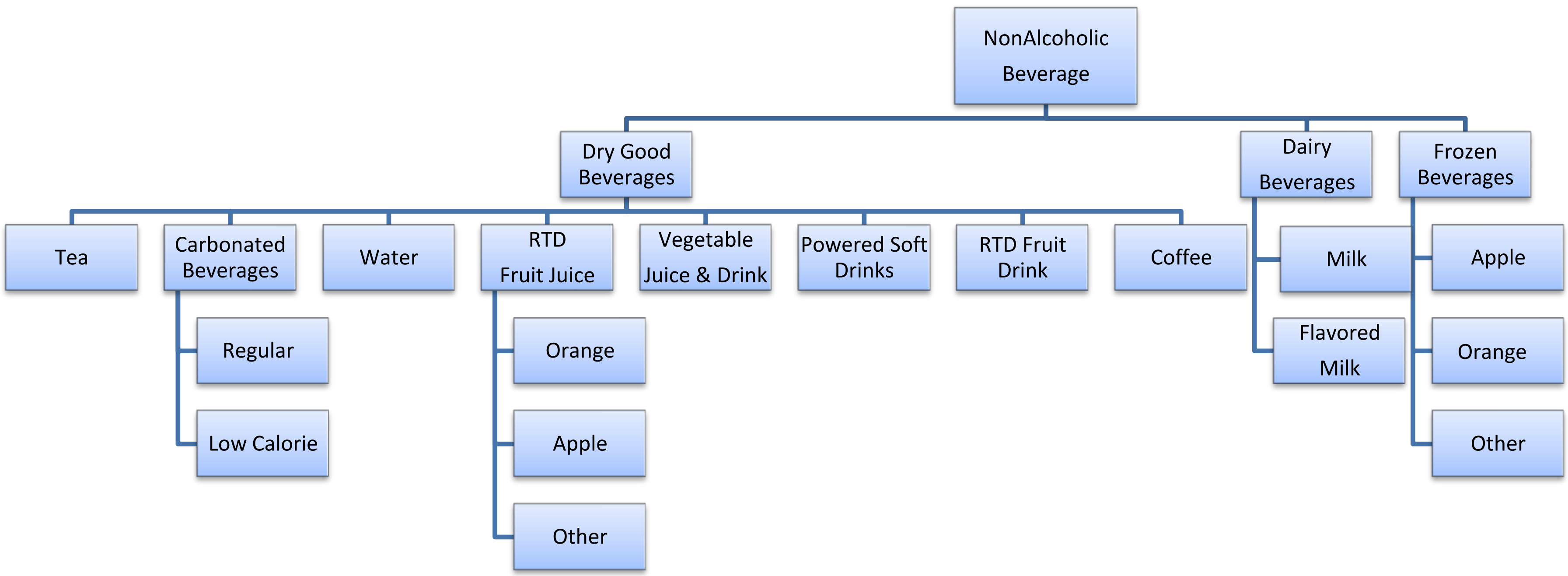
(8) $$\boldsymbol{\pi_{ij} = \phi_{GH}\theta_i\theta_j} .$$

The utility tree proposed in this study is shown in Figure 1. The utility tree is partitioned based upon the form of the juice (i.e. dry goods, dairy, and frozen) and then by the type of beverage.

Aggregation Issues

Data available for empirical analysis is usually aggregated over households or individuals, but consumer demand theory is formulated for individual households. The transition from the microeconomics of consumer behavior to the analysis of market demand is frequently referred to as the aggregation over individual problem. Aggregation prevents a straightforward application of the theory to the data; therefore, aggregation theory provides necessary conditions under which it is possible to treat aggregate consumer behavior as if it were the outcome of the decisions of a single maximizing consumer; this case we shall refer to as that of exact aggregation. Some economists possess the view that microeconomic theory has greater relevance for aggregate data, arguing that the variations households average out to negligible proportions in aggregate, leaving only the systemic effects of variations in prices and budgets (Hicks, 1956).

Figure 1. Proposed Utility Tree



Data

ACNielsen weekly scanner data containing unit sales and sales dollars information for all brands of nonalcoholic beverage sold in stores earning $2 million or more in annual sales were analyzed to aid in the understanding of demand relationship among beverages. The period starting June 16, 2003 through the week ending in June 3, 2006 (153 weeks) was studied. Data were 52nd differenced to account for seasonality (for the 52 weeks in the year). For simplification purposes, beverages were aggregated into the ACNielsen Homescan Data Beverage Categories (Capps et al., 1997). Thus, the dry beverage goods includes eight categories: bottled water, tea, vegetable juice and drinks, RTD fruit drinks, carbonated beverages (regular and low calorie), coffee RTD fruit juices (orange, apple, and other); two types of dairy beverages: flavored milk and milk; and one types of frozen beverage: fruit juices (orange, apple, and other) are utilized to empirically test for separability between nonalcoholic beverage categories.

In this study, nearly 26 percent of consumers' beverage expenditure was spent on flavored milk and 22.5 percent of consumers' beverage expenditure was spent on soft drinks. The smallest expenditure share was spent on bottled water which accounted for less than 1 percent. The average price for the beverages varied from $6.02 per unit for low calorie soft drinks to $0.40 per unit for milk (Table 1).

Table 2. Average Expenditure Share (w), Average Price (p), and Quantity Sold (q)

		w	p	q (units)
Dry good beverages	Apple Juice	0.016	0.46	2,654,100,000
	Coffee	0.004	2.21	143,630,000
	Other Fruit Juice	0.041	0.82	3,770,800,000
	Orange juice	0.072	0.58	9,101,200,000
	RTD fruit drinks	0.114	0.45	19,374,000,000
	Soft drink	0.225	5.90	2,852,500,000
	Low calorie soft drink	0.117	6.02	1,471,800,000
	Powered soft drinks	0.021	0.45	3,688,500,000
	Tea	0.014	0.86	1,234,600,000
	Vegetable juice	0.079	0.20	30,968,000,000
	Water	0.001	1.60	33,805,872
Frozen beverages	Apple juice	0.007	1.78	274,760,000
	Fruit juice	0.005	1.71	220,080,000
	Orange juice	0.013	0.60	1,632,200,000
Dairy	Flavored milk	0.258	0.41	46,471,000,000
	Milk	0.013	0.04	9,871,300,000

Empirical Results

In econometric analyses, time series data usually violates the assumption of independence of errors. In this model 1, the Durbin-Watson statistic did indicate the presence of positive autocorrelation. Autocorrelation causes ordinary least squared estimates to no longer be efficient because the variance is not minimized, the R-squared values are overestimated, and the confidence intervals derived for hypothesis testing are wider, increasing the probability of a Type I error (Bence 1995; Gujarati 2003). The Cochran-Orcutt iterative procedure was used to correct for first order autocorrelation. The first order autoregressive (AR(1)) model is the procedure most widely used to correct for autocorrelation and calculate the value of the coefficient of autocovariance, ρ, because higher order autocorrelation models are exceedingly complex and provide no gains in the efficiency of the estimates (Gujarati 20032003),

(9)

$$w_i d(\log q_i) = \rho w_i d(\log q_{i,t-1}) + \theta_i \left(d(\log Q) - \rho\left(d(\log Q_{t-1}\right)\right) + \sum_j \pi_{ij}\left(d \log p_j - \rho\left(d \log p_{j,t-1}\right)\right)$$

where ρ is known as the coefficient of autocovariance. This model also imposes the homogeneity and symmetry restrictions. Parameter estimates are found in Table 3.

In an effort to understand the structure of the beverage industry, tests were run to see if block-wise dependence amongst beverage categories exists. The Wald Test was used to test for separability within the beverage category and results from the separability tests are exhibited in Table 4. The hypothesis of block-wise dependence suggests that the specific cross price effect between any two products in two different product groups is identical for all pairs of products in the two groups. The hypothesis of block dependence is rejected (Table 4), which implies that equation (9) does not hold. The factor of proportionality, ϕ_{GH} , is not identical for all beverage types combinations within the three categories in question, hence, one can conclude that products belonging to different product categories are competitors; hence, dry good beverages is not only competing with beverages in this category, but with other nonalcoholic beverages as well Since block dependence is rejected, it is not plausible to believe that block independence, a stronger hypothesis will hold and test for block independence were not run.

Block-wise dependence directly impacts specific effect of the Slutsky equation which is partly determined by the marginal relationship between goods *i* and *j*. Block-wise dependence suggests the specific effect is identical for all products in groups *i* and *j*. Rejecting the block-wise dependence hypothesis suggests that the change in marginal utility of a dollar spent on a product caused by an extra dollar spent on another product is not the same for all pairs of products within the same category. Thus, consumers do not perceive brands within a category as the same and brands to influence consumers' purchases. This result also suggests that a change in the marginal utility of a dollar spent on a brand in one product group caused by an extra dollar spent on another brand in a different product category varies for each combination of brands within the two categories. Thus, an extra dollar spent on any dry good beverage affects the marginal utility of another dollar spent on any product in the dairy category. In conclusion when analyzing the demand for beverages, brand managers must focus on all nonalcoholic beverage simultaneously.

The most of the own price elasticities for the significant brands are in the elastic range, however, the own price elasticity for flavored milk was significant by inelasitic (Table 5). The income elasticities vary from to -10.688 (milk)) to 1.2464 (water), suggesting consumers perceive some beverages as inferior goods and others as necessities or luxury goods. The majority of the cross price elasticities were positive suggesting that these products are substitutes.

Concluding Remarks

The Rotterdam model developed by Theil and Barten was used to estimate the demand interrelationships among nonalcoholic beverages. The disaggregated model also provides a more detailed understanding of the demand for beverages. Block dependence is rejected, it is not plausible to believe that block independence, a stronger hypothesis will hold. Compensated price elasticities indicate that various nonalcoholic beverages are substitutes.

Table 3. Parameter Estimates for the Rotterdam Model

			Dry good beverages											Frozen beverages			Dairy beverages	
	Product	MES	Apple Juice	Coffee	Other fruit juice	Orange Juice	RTD fruit juices	Soft drink	Low calorie soft drink	Powdered soft drinks	Tea	Vegetable juice	Water	Apple Juice	Fruit juice	Orange Juice	Flavored milk	Milk
Dry good beverages	Apple Juice	0.0130* (0.0011)	-0.0293* (0.0008)	0.0011* (0.0003)	0.0033* (0.0012)	-0.0020 (0.0017)	0.0083* (0.0025)	0.0070*** (0.0041)	0.0051 (0.0034)	-0.0007 (0.0010)	0.0021* (0.0008)	0.0016 (0.0020)	0.00004 (0.00005)	0.00004 (0.0004)	0.0002 (0.0004)	-0.0008 (0.0004)	0.0027 (0.0018)	0.0016 (0.0007)
	Coffee	0.0033* (0.0003)		-0.0089* (0.0007)	0.0007 (0.0006)	0.0002 (0.0006)	0.0004 (0.0010)	0.0018 (0.0016)	0.0011 (0.0014)	0.0009*** (0.0004)	0.0007*** (0.0004)	0.0006 (0.0007)	-0.0001 (0.0001)	-0.00001 (0.0006)	0.0011* (0.0004)	0.0005** (0.0003)	-0.0002 (0.0007)	0.0001*** (0.0070)
	Other fruit juice	0.0320* (0.0023)			-0.0714* (0.0032)	0.0090 (0.0037)	0.0058 (0.0033)	0.0292* (0.0080)	-0.0033 (0.0065)	0.0031*** (0.0020)	0.0005 (0.0015)	0.0182* (0.0039)	0.0001 (0.0001)	0.0015*** (0.0009)	0.0021* (0.0008)	0.0011 (0.0009)	-0.0007 (0.0037)	0.0009 (0.0014)
	Orange Juice	0.0860 (0.0285)				-0.0784** (0.0442)	-0.0314** (0.0131)	0.0902** (0.0366)	0.0020 (0.0016)	-0.0071 (0.0049)	0.0070 (0.0018)	0.0306** (0.0166)	0.0001 (0.0001)	0.0016*** (0.0001)	0.0027** (0.0008)	0.0021*** (0.0012)	0.0494** (0.0205)	-0.0085* (0.0028)
	RTD fruit juices	0.1277 (0.0080)					-0.1405* (0.0079)	0.0086 (0.0064)	0.0952* (0.0114)	0.0028 (0.0045)	0.0057** (0.0030)	0.0603* (0.0124)	0.0002 (0.0002)	0.0002 (0.0015)	-0.0024 (0.0014)	0.0015 (0.0064)	-0.0250*** (0.0129)	0.0102* (0.0036)
	Soft drink	0.2804 (0.0278)						-0.5241* (0.0321)	0.2194* (0.0321)	0.0094 (0.0085)	0.0086*** (0.0048)	0.04381*** (0.0226)	-0.0008 (0.0009)	-0.0011 (0.0039)	0.0050* (0.0021)	-0.0062* *(0.0021)	0.0092* (0.0019)	0.0115 (0.0073)
	Low calorie soft drink	0.1360 (0.0075)							-0.1360* (0.02805)	-0.0157** (0.0061)	0.0039 (0.0040)	0.0315** (0.0129)	0.0004 (0.0003)	0.0018 (0.0021)	0.0034*** (0.0019)	0.0034*** (0.0020)	0.0103 (0.0116)	0.0009 (0.0043)
	Powdered soft drinks	0.0246 (0.0032)								-0.0011* (0.0030)	-0.0000 (0.0011)	0.0034 (0.0051)	-0.0008 (0.00006)	0.0008 (0.0005)	0.0007 (0.0005)	- 0.0010*** (0.0006)	0.0059 (0.0047)	-0.0014 (0.0025)
	Tea	0.0120 (0.0011)									-0.2837* (0.0014)	0.0056* (0.0021)	0.0001*** (0.0007)	-0.0004 (0.0007)	0.0004 (0.0006)	0.0002 (0.0006)	0.0024 (0.0020)	-0.0022* (0.0008)
	Vegetable juice	0.0958 (0.0108)										-0.1501* (0.0198)	0.0002 (0.0001)	0.0029** (0.0011)	0.0010 (0.0010)	0.0018 (0.0013)	-0.0006 (0.0160)	0.0103 (0.0029)
	Water	0.0006 (0.00007)											-0.0013* (0.00008)	-0.00006 (0.0001)	0.0005 (0.00008)	-0.00001 (0.00005)	0.0002*** (0.0001)	0.0001 (0.0001)
Frozen beverages	Apple Juice	0.0068 (0.0006)												-0.0070* (0.0010)	-0.4633 (0.0006)	-0.0001 (0.0004)	-0.0012 (0.0010)	0.00002 (0.0001)
	Fruit juice	0.0047 (0.0005)													-0.0104* (0.0006)	-0.0001 (0.0003)	0.0008 (0.0010)	0.0002 (0.0004)
	Orange Juice	0.0098 (0.0008)														-0.0210* (0.0005)	0.0056* (0.0013)	0.0008*** (0.0040)
Dairy beverages	Flavored milk	0.1509 (0.0144)															-0.140* (0.0236)	-0.0051* (0.0027)
	Milk	-0.1362 (0.0312																-0.0152* (0.0012)

Rho 0.9573* (0.0079); *,(**),*** indicates significance at 1%., 5%, and 10%.

Table 4. Results from Separability Test

Categories	Chi-Squared	df	P-value
Dry goods and Frozen	55.39	33	0.009
Frozen and Dairy	203.11	5	0.000
Dry goods and Dairy	421.10	15	0.000

Table 5. Income and Compensated Price Elasticities

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			Dry good											Frozen			Dairy	
		η_i	Apple Juice	Coffee	Other fruit juice	Orange Juice	RTD fruit juices	Soft drink	Low calorie soft drink	Powdered soft drinks	Tea	Vegetable juice	Water	Apple Juice	Fruit juice	Orange Juice	Flavored Milk	Milk
Dry goods	Apple Juice	0.7935*	-1.7939*	0.2798	0.0803*	-0.0264	0.0731*	0.0311***	0.0441	0.0323	0.109	0.0201	0.0476	0.0051	0.0314	-0.0579***	0.0105	0.0908***
	Coffee	.8265*	0.0675*	-2.2558	0.016	0.0230	0.0034	0.0079	0.009	0.04253**	0.111	0.0080	0.1464	-0.0022	0.2043*	0.0412**	-0.0007	0.0113
	Other fruit juice	.7806*	0.2019*	0.1666	-1.7400*	0.1241**	0.0509	0.1230*	-0.0284	0.1485***	0.027	0.2297	0.14733	0.2140***	0.3862*	0.0869	-0.0027	0.0687
	Orange Juice	0.621	0.1172	0.0433	0.2192**	-1.0826***	-0.2755	0.4008**	0.017	-0.3447	0.641	0.3868	0.1437	0.2310***	0.4952*	0.1628***	0.1915**	0.6668
	RTD fruit juices	1.1866*	0.5106*	0.0978	0.1414**	-0.4331**	-1.2335*	0.0382	0.0817*	0.1375	0.404	0.7628	0.2769	0.0248	-0.4467	0.1212	-0.0968***	0.7977
	Soft drink	1.1210*	0.4290***	0.4503	0.7122*	1.2439**	0.0754	-2.3304*	1.8059*	0.4571	0.402	0.5543	0.1269	0.0814	0.1604	0.5290**	0.3690*	0.9022
	Low calorie soft drink	1.1676*	0.3147	0.2682	-0.0806	0.0273	0.8356***	0.9354*	-2.9961*	-0.7586	0.076	0.3991	0.4603	0.2544	0.6177***	0.2969***	0.0401	-0.0737
	Powdered soft drinks	1.1928*	-0.0408	0.2230**	0.0746	-0.0981	0.0249	0.0419	-0.1343*	-0.0541	-0.101	0.0435	0.0011	0.1172	0.1305	-0.0787***	0.0227	-0.1140
	Tea	0.8470*	0.1260*	0.1893***	0.0120	0.0096	0.0505**	0.0383***	-0.0338	-0.0001	-1.969	0.0703	0.1660***	-0.0619	0.0671	0.0186	0.0094	-0.1732**
	Vegetable juice	1.2115*	0.0974	-0.0289	0.4424*	-0.0422***	0.5292*	0.1948***	0.2707	0.1664	1.083	-1.8990	0.2133	0.4225*	0.1906	0.1380	-0.0024	0.8100*
	Water	0.7928*	0.0974	-0.0038	0.0028	0.0015	0.0019	0.0004	0.0031	0.0004	-0.486	0.0021	-1.7054*	-0.0082	0.0085	-0.0078	0.0009	0.0008
Frozen	Apple Juice	0.9799*	0.0023	0.2840	0.0360***	0.0220***	0.0015	0.0025	0.0151	0.0393	-0.016	0.0340*	-0.0731	-1.0141*	-0.0847	-0.0111	-0.0048	0.0022
	Fruit juice	0.8575*	0.0022	0.0038**	0.0515*	0.0373*	-0.0215**	0.0039	0.0290***	0.0346	0.088	0.0132	0.0601	-0.0670	-1.9036*	-0.0104	0.0031*	0.0092
	Orange Juice	0.7530*	0.0105***	0.2840**	0.0277	0.0294***	0.0139	0.0301*	0.0333***	-0.0499***	0.13	0.0223	0.0130	-0.0210	-0.0249	-1.6058*	0.0217*	-0.0604***
Dairy	Flavored milk	0.5849*	0.1655	-0.0473	0.0168	0.6816**	-0.2192***	0.4233*	0.0888	0.2841	0.058	-0.0078	0.2832***	0.1800	0.1466	0.4281*	-0.5417***	-0.3987***
	Milk	10.688*	0.0709	0.0366	0.0213	0.1173*	0.0892*	0.05122	-0.0081	-0.0704	-0.004	0.1306*	0.0138	0.0041	0.0213	-0.0589*	-0.0197	-1.2061

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