

Supplemental Materials for James M. MacDonald, "Demand, Information, and Competition: Why Do Food Prices Fall At Seasonal Demand Peaks?" *The Journal of Industrial Economics* 48 (1), March 2000, pp. 27-45

A. Data Sources for Commodity Price Series (Table II).

Cocoa: Monthly U.S. spot prices for cocoa cake, ex-dock, U.S. eastern seaboard, as provided by Cocoa Merchants Association and reported by Foreign Agricultural Service, U.S. Department of Agriculture.

Corn Starch: Net cost of corn starch to U.S. wet millers, quarterly, as reported in "Grain and Feed Market News", Agricultural Marketing Service, U.S. Department of Agriculture.

Contract Tomatoes: Contract prices for California tomatoes, as reported by John Welty, executive vice president, California Tomato Growers Association.

Contract Vegetables: Information provided by Gary Lucier, Economic Research Service, U.S. Department of Agriculture.

High Fructose Corn Syrup: Monthly wholesale delivered prices for HFCS-55, as reported in Milling and Baking News.

Milk: Prices Received for Milk Sold to Plants, Manufacturing Grade, Monthly, as reported by Agricultural Statistics Board, National Agricultural Statistics Service, U.S. Department of Agriculture.

Oats: Prices Received, Monthly, as reported by Agricultural Statistics Board, National Agricultural Statistics Service, U.S. Department of Agriculture.

Contract Strawberries: Information provided by Diane Bertelson, Economic Research Service, U.S. Department of Agriculture.

Sugar: U.S. raw sugar prices, duty fee paid, New York, as reported by the New York Coffee, Sugar, & Cocoa Exchange.

Tea: Average monthly London auction prices, as reported by Foreign Agricultural Service, U.S. Department of Agriculture.

Wheat: Monthly cash price per bushel, Kansas City, soft red winter, as reported by National Agricultural Statistics Service, U.S. Department of Agriculture.

B. ANOVA Results for Seasonality in the CPI for Food at Home

Variable	Coefficient	t-statistic
Constant	.074	0.35
1986	.135	0.66
1987	.117	0.57
1988	.285	1.38
1989	.334	1.62
1990	.299	1.45
1991	-.063	0.31
1992	-.046	0.22
1993	.118	0.57
1994	.120	0.58
January	1.279	5.67
February	-.099	0.44
March	-.085	0.38
April	.011	0.05
May	-.115	0.51
June	-.134	0.59
July	.043	0.19
August	.078	0.34
October	-.143	0.64
November	-.049	0.22
December	.344	1.53

Notes: Dependent variable: monthly log change in the food at home CPI. $R^2=0.44$. Number of observations=120 (10 years of monthly data). CPI shows seasonal increases in December/January, when two thirds of sample seasonal product hit quantity peaks and price troughs.

C. Private Label Price Effects

<u>Product Class</u>	PL Price Change (%)	t statistic on PL Price Change	Brand/PL Price Change (%)	t statistic on Brand/PL Price Change
1. Baking Chips	-14.1	7.11	7.9	3.88
2. Baking Chocolate	.	.	.	.
3. Baking Powder	.	.	.	.
4. Barbecue Sauce	-6.5	4.84	-13.6	5.88
5. Bratwurst	-3.3	1.91	-10.1	2.98
6. Brown Sugar	-9.2	10.13	-2.1	2.58
7. Butter	-7.1	7.00	-1.8	1.33
8. Chili Sauce	-4.3	4.69	-0.9	0.74
9. Chocolate Syrup	-0.9	2.14	-1.8	3.59
10. Cider, Apple	-19.8	9.62	5.4	3.31
11. Cocoa	-1.2	2.02	-1.3	2.03
12. Coconut	-12.3	9.50	-9.8	9.62
13. Confectionary Paste	.	.	.	.
14. Cookie Mixes, ref.	-19.5	9.15	14.4	8.01
15. Corn Starch	.	.	.	.
16. Cream Cheese	-8.2	7.80	1.3	1.52
17. Dairy Dip	-6.1	6.54	-1.1	0.95
18. Dates	0.8	0.63	-2.8	2.19
19. Dinner Rolls, ref.	-12.3	6.63	6.0	3.42
20. Dry Yeast	.	.	.	.
21. Fish, breaded, fzn.	-0.6	0.27	-7.4	2.86
22. Flour, all-purpose	-5.8	4.16	-13.9	5.25
23. Frankfurters	-1.3	1.28	-18.6	8.99
24. Fruit Drinks, fzn.	-22.1	8.08	13.6	6.67
25. Gingerbread Mix	0.2	0.17	-5.2	3.27
26. Gravy, canned	-0.2	0.11	-7.0	4.47
27. Hot cereal	-2.4	3.40	-4.3	3.68

<u>Product Class</u>	PL Price Change (%)	t statistic on PL Price Change	PL/Brand Price Change (%)	t statistic on PL/Brand Price Change
28. Ice cream bars	-5.8	3.49	-1.7	0.87
29. Ice cream cones	-2.6	3.38	-4.3	2.30
30. Jam	1.9	0.60	-13.9	3.29
31. Ketchup	-4.3	3.95	-4.8	2.73
32. Liquid ice pops	2.1	0.80	-8.0	2.90
33. Matzo meal/mixes	.	.	.	.
34. Milk/water additives	-6.0	2.47	-8.3	2.18
35. Molasses	.	.	.	.
36. Muffin mixes	2.8	3.45	-3.6	3.45
37. Pie shells, ref.	-3.5	4.24	-2.3	2.79
38. Pies, fzn.	-5.6	1.90	-5.0	1.75
39. Powdered soft drinks	-4.1	5.42	-2.6	2.06
40. Pudding Mix	-0.2	0.17	-2.9	2.16
41. Salmon, canned	-3.6	1.15	-2.8	0.87
42. Shortening	-0.5	0.42	-1.4	1.08
43. Soup, canned	0.8	0.51	0.5	0.33
44. Sour Cream	-4.7	8.43	-3.4	2.06
45. Sweet Pickles	-6.9	5.35	-11.8	4.76
46. Tea mixes	-2.8	2.57	-11.3	4.00
47. Tomatoes, canned	-1.1	1.34	0.3	0.46
48. Yams, canned	-12.8	7.00	-12.3	4.86

Notes: Data underlying table III summary--selected results from regression estimates on QPEAK in equation (3), first with log of private label price as dependent variable, and then with log of ratio of private label to branded price as dependent variable. Missing values represent categories with no private label products.

D. Measures of Market Structure

<u>Product Class</u>	CR3	PL Share	1994 Sales (\$m)
1. Baking Chips	79	13	29
2. Baking Chocolate	80	0	39
3. Baking Powder	88	0	29
4. Barbecue Sauce	70	4	343
5. Bratwurst	50	1	50
6. Brown Sugar	55	34	112
7. Butter	52	40	566
8. Chili Sauce	53	7	29
9. Chocolate Syrup	82	15	111
10. Cider, Apple	32	29	80
11. Cocoa	89	6	31
12. Coconut	66	29	38
13. Confectionary Paste	66	0	4
14. Cookie Mixes, ref.	95	3	174
15. Corn Starch	92	0	26
16. Cream Cheese	72	21	588
17. Dairy Dip	35	17	204
18. Dates	70	2	29
19. Dinner Rolls, ref.	83	17	103
20. Dry Yeast	100	0	69
21. Fish, breaded, fzn.	82	7	399
22. Flour, all-purpose	54	19	285
23. Frankfurters	32	7	1,409
24. Fruit Drinks, fzn.	47	18	377
25. Gingerbread Mix	94	2	7
26. Gravy, canned	89	1	150
27. Hot cereal	82	18	659
28. Ice cream bars	15	13	1,422
29. Ice cream cones	59	18	77

Product Class	CR3	PL Share	1994 Sales
30. Jam	76	6	120
31. Ketchup	84	14	440
32. Liquid ice pops	62	4	32
33. Matzo meal/mixes	96	0	5
34. Milk/water additives	67	10	364
35. Molasses	92	0	20
36. Muffin mixes	64	2	173
37. Pie shells, ref.	87	3	69
38. Pies, fzn.	82	12	287
39. Powdered soft drinks	75	6	564
40. Pudding Mix	93	7	167
41. Salmon, canned	50	11	168
42. Shortening	78	16	214
43. Soup, canned	86	6	2,492
44. Sour Cream	29	27	425
45. Sweet Pickles	48	23	181
46. Tea mixes	67	22	279
47. Tomatoes, canned	32	37	168
48. Yams, canned	55	17	64

Note: Estimated share of supermarket sales held by largest three brands (CR3), and by all private label products (PL Share), 1994. Data used in support of table IV. Sales are 1994 projected nationwide supermarket sales for product class, in millions of dollars.

E1. Peak vs. Offpeak Promotion: Instore Displays and Coupons

<u>Product Class</u>	% of market with displays		% of market with coupon ads	
	Offpeak	Peak	Offpeak	Peak
1. Baking Chips	1.83	30.56	2.77	21.19
2. Baking Chocolate	1.89	31.77	1.39	17.80
3. Baking Powder	0.64	16.29	0.00	4.89
4. Barbecue Sauce	21.80	62.19	17.80	54.23
5. Bratwurst	6.68	10.96	31.05	41.87
6. Brown Sugar	4.74	8.35	11.14	51.39
7. Butter	2.67	7.57	23.65	56.56
8. Chili Sauce	1.10	8.42	0.55	6.30
9. Chocolate Syrup	13.24	24.96	8.84	32.49
10. Cider, Apple	0.00	4.05	4.89	36.38
11. Cocoa	1.60	23.23	0.00	11.84
12. Coconut	2.16	47.13	1.69	35.73
13. Confectionary Paste	0.12	4.90	0.00	0.00
14. Cookie Mixes, ref.	2.67	11.62	17.11	55.09
15. Corn Starch	1.61	20.05	0.91	7.83
16. Cream Cheese	7.32	17.10	42.40	55.99
17. Dairy Dip	0.27	1.47	9.67	26.55
18. Dates	0.62	19.54	2.65	18.33
19. Dinner Rolls, ref.	2.77	7.76	17.30	33.17
20. Dry Yeast	7.93	38.12	4.02	14.55
21. Fish, breaded, fzn.	7.52	23.12	31.65	63.11
22. Flour, all-purpose	9.23	43.09	17.10	56.81
23. Frankfurters	8.47	13.04	49.26	59.80
24. Fruit Drinks, fzn.	3.31	12.54	19.63	42.58
25. Gingerbread Mix	1.71	11.12	1.10	9.90
26. Gravy, canned	6.81	47.95	6.70	31.99
27. Hot cereal	20.18	32.05	11.42	33.81
28. Ice cream bars	1.71	5.93	16.50	29.58

Product Class	Offpeak Displays	Peak Displays	Offpeak Coupons	Peak Coupons
29. Ice cream cones	17.23	41.03	3.63	6.59
30. Jam	8.79	14.22	10.44	14.66
31. Ketchup	39.38	61.22	33.77	59.74
32. Liquid ice pops	11.27	38.72	3.36	17.31
33. Matzo meal/mixes	3.31	42.28	3.43	23.31
34. Milk/water additives	12.58	39.49	9.41	30.12
35. Molasses	0.64	14.82	0.63	5.01
36. Muffin mixes	11.53	21.12	0.30	0.47
37. Pie shells, ref.	16.32	57.33	8.91	27.13
38. Pies, fzn.	9.32	48.28	31.34	70.04
39. Powdered soft drinks	8.03	16.51	6.84	16.11
40. Pudding Mix	4.75	9.64	5.36	15.87
41. Salmon, canned	3.69	9.05	12.04	25.61
42. Shortening	4.23	23.87	8.77	9.89
43. Soup, canned	46.59	66.75	53.76	67.11
44. Sour Cream	5.11	6.81	30.80	37.49
45. Sweet Pickles	7.25	13.52	13.78	22.47
46. Tea mixes	8.36	28.45	7.20	20.76
47. Tomatoes, canned	4.45	6.58	4.43	6.38
48. Yams, canned	6.16	63.29	2.47	46.40

Notes: Data underlying Table V of paper. See text and footnote 13 for derivation.

E2. Peak vs. Offpeak Promotion: Major Ads and Line Ads

<u>Product Class</u>	% of market with major ads		% of market with line ads	
	Offpeak	Peak	Offpeak	Peak
1. Baking Chips	1.42	8.34	0.11	4.15
2. Baking Chocolate	0.11	1.33	0.00	5.79
3. Baking Powder	0.00	0.00	0.00	1.86
4. Barbecue Sauce	2.38	9.01	0.52	5.33
5. Bratwurst	0.52	8.03	1.64	4.08
6. Brown Sugar	0.57	5.86	0.84	8.14
7. Butter	2.38	5.40	2.99	7.78
8. Chili Sauce	0.00	0.00	0.00	1.38
9. Chocolate Syrup	0.05	0.46	1.56	6.60
10. Cider, Apple	0.00	2.58	0.00	19.02
11. Cocoa	0.12	0.55	0.00	4.50
12. Coconut	3.16	17.71	0.00	7.48
13. Confectionary Paste	0.00	0.00	0.00	0.47
14. Cookie Mixes, ref.	0.31	1.18	1.35	12.15
15. Corn Starch	0.00	0.00	0.51	5.27
16. Cream Cheese	5.39	8.65	4.24	7.51
17. Dairy Dip	0.41	1.77	3.48	10.76
18. Dates	0.00	0.54	0.00	6.19
19. Dinner Rolls, ref.	0.42	0.00	1.29	6.96
20. Dry Yeast	0.75	1.78	0.34	4.64
21. Fish, breaded, fzn.	5.86	9.14	4.71	8.81
22. Flour, all-purpose	3.65	14.06	0.78	2.69
23. Frankfurters	6.19	8.81	5.83	6.49
24. Fruit Drinks, fzn.	2.06	2.96	1.99	4.48
25. Gingerbread Mix	0.52	2.95	0.09	1.92
26. Gravy, canned	5.05	10.70	0.76	6.88
27. Hot cereal	20.39	31.76	0.19	2.70
28. Ice cream bars	1.85	3.45	2.60	3.24

Product Class	Offpeak Major Ads	Peak Major Ads	Offpeak Line Ads	Peak Line Ads
29. Ice cream cones	0.10	0.42	0.00	1.12
30. Jam	1.09	5.47	2.35	2.51
31. Ketchup	21.16	24.61	3.42	6.39
32. Liquid ice pops	2.34	6.10	0.31	6.13
33. Matzo meal/mixes	0.65	1.96	0.90	7.92
34. Milk/water additives	1.72	4.77	0.46	4.66
35. Molasses	0.04	0.53	0.03	4.82
36. Muffin mixes	11.19	13.97	1.17	1.95
37. Pie shells, ref.	2.70	6.01	1.84	8.20
38. Pies, fzn.	6.26	17.89	5.13	14.33
39. Powdered soft drinks	9.01	20.89	0.65	1.25
40. Pudding Mix	7.33	16.45	0.41	1.69
41. Salmon, canned	0.47	1.28	3.08	5.66
42. Shortening	0.32	1.86	2.38	5.54
43. Soup, canned	11.59	15.26	8.76	13.13
44. Sour Cream	3.92	4.44	4.52	7.55
45. Sweet Pickles	1.66	3.57	2.25	6.05
46. Tea mixes	4.94	13.87	0.75	3.73
47. Tomatoes, canned	0.49	0.16	1.34	1.55
48. Yams, canned	0.06	1.32	0.00	13.48

Notes: Data underlying Table V of paper. See text and footnote 13 for derivation.