

Potato Demand in an Increasingly Organic World

UW Extension & WPVGA Grower Conference

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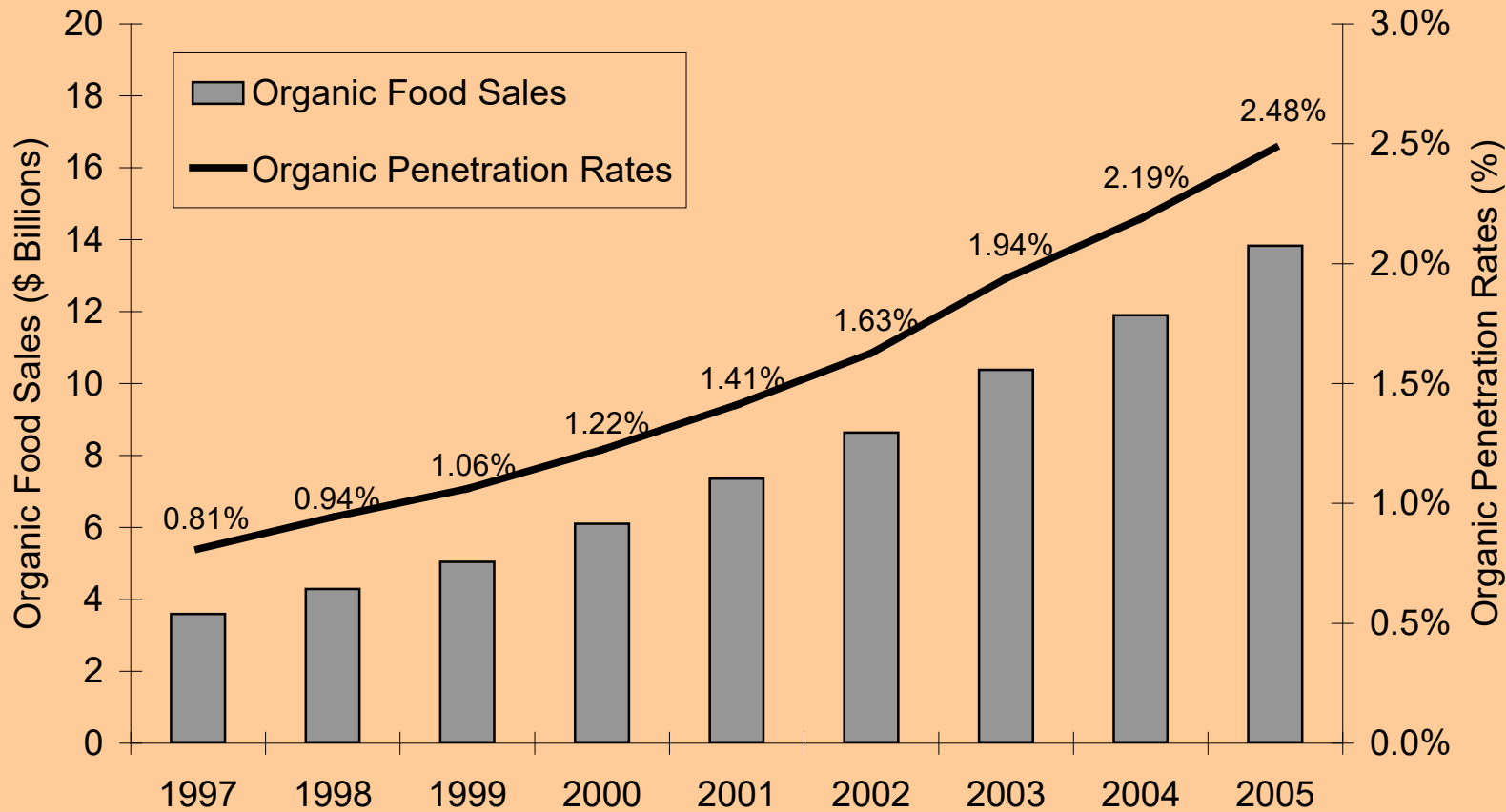
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The Increasingly Organic Marketplace

- Annual growth rate in organic food sales has been about 20% since 2000
- \$13.8 billion in 2005, 2.5% of food sales
- Wal-mart and Target have made major moves into selling organic foods
- Over half of organic food sales now are through conventional retailers
- Farm Bill has increased funding for organics
 - Increased certification/transition cost share
 - Expanded research, market data, export help



Where do potatoes fit in?

- Fresh fruits and vegetables the most commonly purchased organic food
 - 39% of organic food sales in 2005
 - Top vegetables: lettuce, tomato, broccoli, onion, potato
- Retail price premiums for organic potatoes are larger than for other fresh vegetables
 - Potato premium averaged 75% (1999-2003)
 - Other vegetables: 20%-30%

Current Organic Price Premiums

USDA-AMS Wholesale Prices

	Russet (70 ct carton)			Red A (50 lbs)		
	orgnc	conv	prem	orgnc	conv	prem
Boston	34.25	19.00	80%	45.00	25.00	80%
Chicago	22.00	17.00	29%	29.50	14.00	111%
Philadelphia	34.25	17.00	101%	45.00	25.00	80%
San Francisco	27.00	14.50	86%	37.00	21.00	76%
Seattle	27.95	16.50	69%	29.50	20.00	48%

Source: Rodale Institute: www.newfarm.org/opx

The Issue

- What is the effect of this growing organic sector on potato demand?
 - Is it big enough to matter yet?
 - Which potato products are most at risk?
- What is the source of the large price premium for organic potatoes?
 - Is it due to unusually high demand?
 - Is it a supply (cost of production) effect?

Method of Analysis

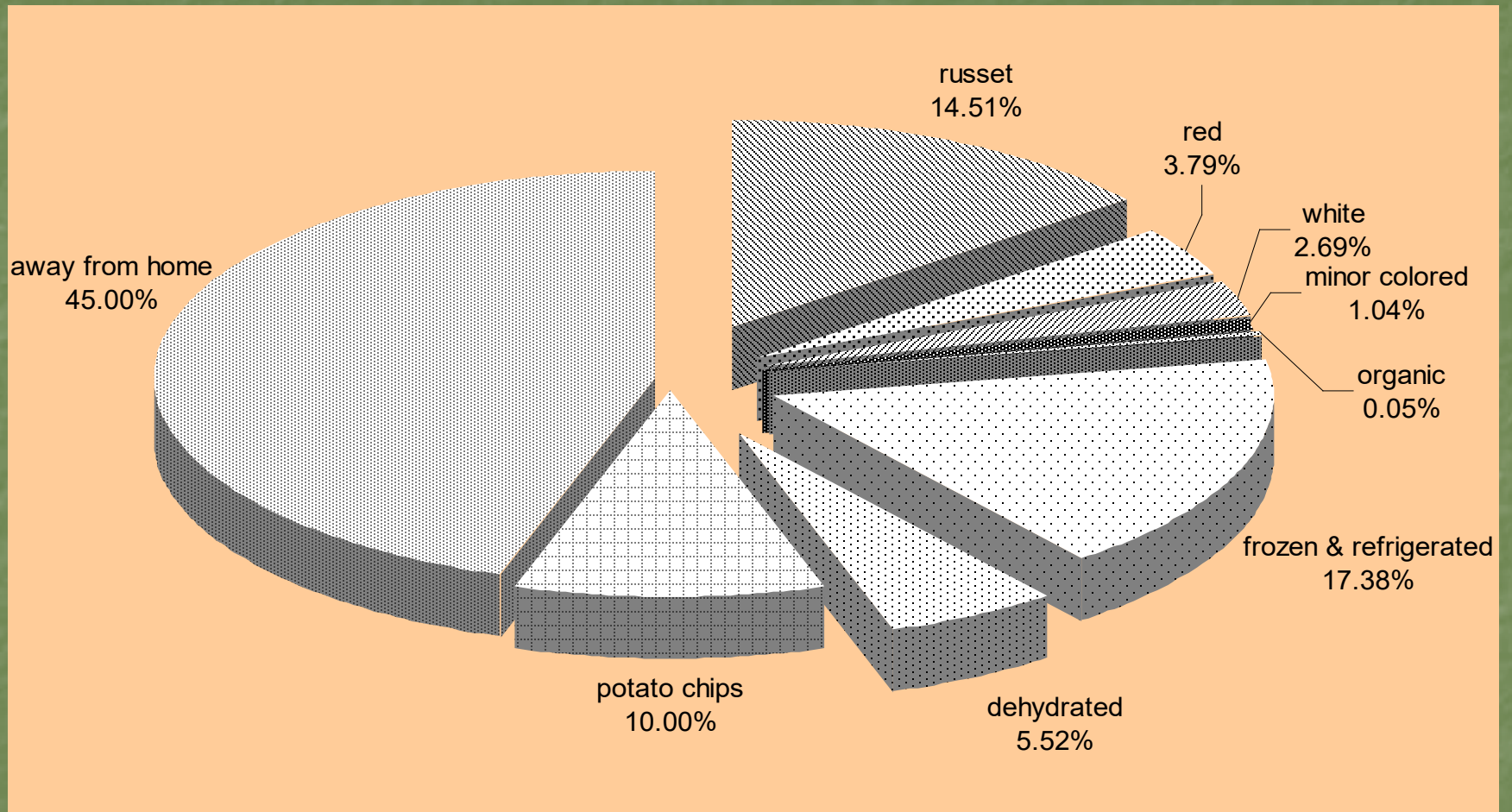
- Econometric model of U.S. potato demand
- Simultaneous equations estimating price and quantity sold in large super markets, using:
 - Prices and quantities of these goods and related goods (pasta, bread, vegetables)
 - Income and demographics (age, race)
 - Supply effects: interest rate, various producer price indexes, potato acreages

Demand System

- Seven different potato products
- Fresh Potato varieties
 - Russet, red, white, minor colored, organic
 - Minor colored: yellow/Yukon, blue, purple, fingerlings, etc.
- Processed potatoes
 - Dehydrated and frozen & refrigerated
 - Missing chips: snack food, not meal
- First demand system by potato variety

Data

- Aggregate quarterly (2000-2005) AC Nielsen large supermarket sales data
 - Total quantity and expenditure
 - Mac Johnson US Potato Board
- 4 regions, 24 quarters = 96 observations for each potato variety/category
- About 45% of domestic consumption
- About 82% of “at-home” consumption



Results

- Report each effect as an “elasticity”
- How responsive quantity demanded is to changes in different factors
 - Unitless: Ratio of % changes
- Example: own price elasticity = -0.5 means a 1% increase in own price decreases quantity demanded by 0.5%

Own and Cross Price Elasticities

	russet	white	red	mnr clr	organic	frzn/rfrg	dehy
russet	-1.38	-0.95	-0.16	-0.76	0.04	0.15	2.90
white	-0.11	-0.55	-0.17	0.93	-3.16	0.40	0.38
red	-0.21	-0.29	-0.86	0.38	2.75	0.06	-0.13
mnr clr	-0.34	0.06	0.02	-1.62	-1.52	-0.46	0.97
organic	-0.01	-0.06	0.05	-0.08	-1.36	0.00	-0.02
frzn/rfrg	-1.69	0.51	-0.39	-7.43	0.05	-0.10	-2.76
dehy	-1.09	-0.78	-1.55	3.86	-3.92	-1.45	-3.99

Interpretation

- Own price elasticities are negative: price goes up, demand goes down
- Cross price elasticities: Positive means substitutes, Negative means complements
- Most are negative (complements) meaning potato varieties move together
- Substitutes: Reds for organics, Russets and minor colored for dehydrated, whites for frozen/refrigerated
- Not much significant for organics

Income & Other Cross Price Elasticities

	potato expnd	income	rice- pasta	bread	fresh veg	procd veg	food
russet	3.06	5.67	-15.8	6.53	-0.52	5.06	-8.30
white	2.13	3.95	-11.0	4.55	-0.36	3.52	-5.78
red	1.40	2.59	-7.19	2.98	-0.24	2.30	-3.79
mnr clr	0.05	0.09	-0.24	0.10	-0.01	0.08	-0.13
organic	1.09	2.02	-5.63	2.33	-0.19	1.80	-2.96
frzn/rfrg	0.16	0.29	-0.81	0.33	-0.03	0.26	-0.42
dehy	-2.46	-4.56	12.70	-5.25	0.42	-4.07	6.68

Interpretation

- If spend more money on potatoes or have more money to spend, buy russets, whites, then reds
 - Organics (and minor colored) not significant
- Potato complements: Rice/Pasta and Food
- Potato substitutes: Bread and Processed Veggies
- Dehydrated opposite all these
- Fresh vegetable prices not affect potato demand

Organic Penetration Elasticity

	east	central	south	west	avg
russet	-0.30	-0.45	-0.26	-0.43	-0.36
white	-0.99	-0.46	-0.49	-0.58	-0.63
red	-1.63	-1.90	-1.79	-2.31	-1.91
mnr clr	5.41	7.67	6.86	7.94	6.97
organic	6.27	8.53	7.67	9.89	8.09
MAD	0.81	0.28	0.18	0.66	

Interpretation

- As proportion of food sales that are for organic foods increases:
 - Organic potato demand increases greatly, as does demand for minor colored
 - Red potato demand decreases
 - Some erosion of demand for white and russet potatoes as well
- Typically smaller effects in south and central, larger in west and east

Source of Organic Price Premiums

Price Premium Explanatory Power: % Variation

	russet	white	red	minor
Regional/Seasonal	16.9%	28.3%	20.6%	23.1%
Demand Factors	19.1%	18.5%	24.1%	23.0%
Supply Factors	11.4%	7.7%	11.9%	10.2%
Joint Dmd/Sup	26.9%	23.9%	14.6%	14.1%
Uncontrolled	25.7%	21.7%	28.8%	29.5%
Ratio Dmd/Sup	1.68	2.40	2.03	2.25

Interpretation

- More of the variation in organic potato price premiums can be explained by demand factors rather than supply factors
- Strong consumer demand and retailer attention more important than production costs and seasonal & regional factors
- Not saying organic insulated from laws of supply and demand

Summary/Conclusion

- What is the effect of this growing organic sector on potato demand?
 - Good for specialty/premium potatoes
 - Cutting into demand for reds, some evidence for whites too; russets most resistant
- What is the source of the large price premium for organic potatoes?
 - Continually strong and growing consumer demand has been the dominate source

Questions?

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