



# The Economics of Food Pricing

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Wingspread Meeting  
March 2007



# Our Focus Today

## **Food Pricing and Fiscal Policy:**

- Responsiveness of food demand to price changes
- Burden of food taxation
- Subsidies and impact on food prices and demand
- Unintended consequences



# Price Elasticity is Key Information in Food Pricing Analysis

## **Price Elasticity of Demand:**

- Measures demand responsiveness to changes in prices:  
cut-point for elasticity is -1
- Determines the burden of tax incidence and market power



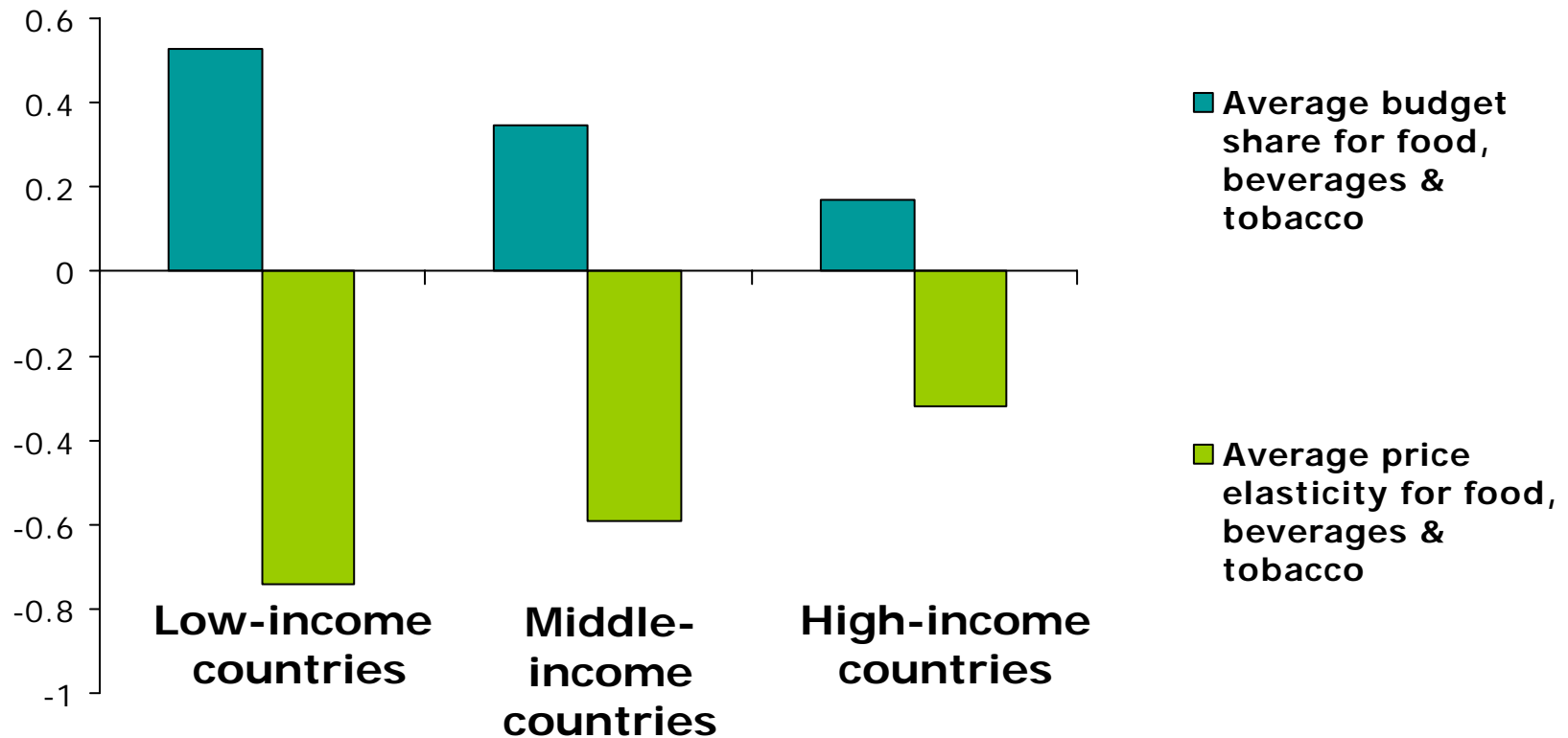
# Price Elasticity of Demand for Foods is Multi-factorial

## **Determinants of Demand Elasticity:**

- Availability of substitutes
- Share of product cost in total income
- Changes over time
- Luxuries vs. necessities



# Low-Income People Are More Sensitive to Price Changes



Source: International Evidence on Food Consumption Patterns (data for 1996), USDA



# Marketing Strategies Differ for Healthy and Unhealthy Foods

## **Branding and Differentiation of Processed Foods:**

- Create consumers' perception of few/no substitutes for promoted products
  - Lower demand elasticity
  - Greater market power
  - Higher profits
- Less opportunity for branding and differentiation for healthier foods (fruits and vegetables)



# Commodity Demand is Key for Macroeconomic Analysts

## **Commodity Demand Analysis:**

- Composite food categories
- No brand or corporate level
- Complete food demand systems
- Household budget surveys and/or time series of national statistics



# Brand-Level Demand is Key for Food Market Players

## **Differentiated Demand Analysis:**

- Disaggregate data on food products
- Brand level
- Private retail scanner data for food purchases
- Household scanner data on consumers (ACNielsen)



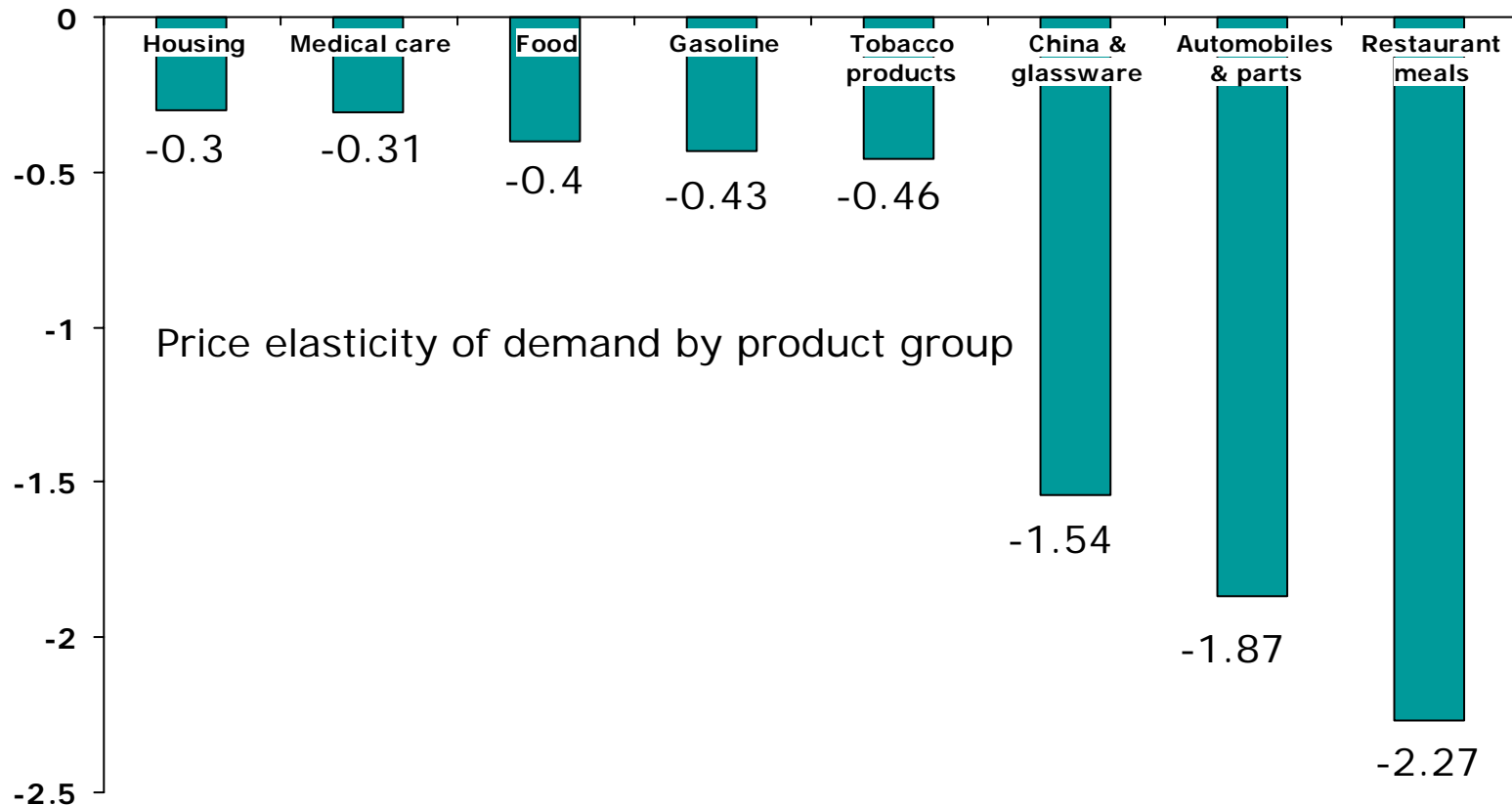
# Inelastic Demand for Food: Necessity, Few Substitutes, Low Budget Share

<i>Food group</i>	<i>Price elasticity</i>
Beef	-0.35
Bread	-0.35
Fat	-0.40
Cereal	-0.55
Poultry	-0.64
Vegetables / fruits	-0.72
Dairy	-0.79
Juice	-1.01
<b>All food in the U.S.</b>	<b>-0.4...-0.5</b>

*Source:* Huang and Lin, 2000. "Estimation of Food Demand and Nutrient Elasticities from Household Survey Data", USDA TB 1887; All food from Tobin J, 1950. "A Statistical Demand Function for Food in the U.S.A.", Journal of the Royal Statistical Society, Series A(II).



# Products with Few Substitutes Are Not Responsive to Price Changes



Source: Houthaker and Taylor, 1970. *Consumer Demand in the United States*. Cambridge, Harvard University Press.



# Elastic Demand for Brand Food Products Due to Many Substitutes

<i>Breakfast cereal</i>	<i>Price elasticity</i>
All adult	-1.17
All kid	-1.34
Quaker Oat Squares	-1.49
Cheerios	-1.70
Natural Bran Flakes	-1.77
Kellogg's Corn Flakes	-2.03
General Mills Total	-2.09
Kellogg's Rice Krispies	-2.21
Quaker 100% Natural	-3.04

*Source:* Ronald Cotterill, Lawrence Haller 1994. "An Econometric Analysis of the Demand for RTE Cereal: Product Market Definition and Unilateral Market Power Effects." University of Connecticut, Food Marketing Policy Research Report No 35.



# Consumers Bear Most of Tax Burden for Products With Inelastic Demand

## **Taxing food groups, not brands - low demand elasticity:**

- Suppliers pass most (or all) burden of tax onto consumers
- Likely to have modest impact on consumption due to inelastic demand for foods



# Diet and Weight Effects in Simulations of Tax on Salty Snack Foods

<u>Scenario 1</u> : Unitary elastic demand (-1.0) <i>% price increase = % demand reduction</i>			
<i>Tax rate, %</i>	<i>Annual reduction in per capita Consumption(oz) Weight(lb)</i>		<i>Annual tax revenue (million USD)</i>
<b>1</b>	<b>2.32</b>	<b>0.10</b>	<b>101.1</b>
<b>10</b>	<b>23.15</b>	<b>0.99</b>	<b>918.9</b>
<b>30</b>	<b>69.45</b>	<b>2.98</b>	<b>2,144.2</b>

Source: Kuchler, Tegene, Harris, 2004. "Taxing Snack Foods: What to Expect for Diet and Revenues", USDA, Current Issues in Economics of Food Markets.



# Average Effects of Tax Policy Obscure Differences by Income Group

## **Tax Policy Likely to Be Regressive:**

- Higher share of food spending in total income for low-income people
- Greater consumption of unhealthy foods by low-income groups
- Reduction in monetary well-being of the poor if not compensated by income transfers



# Low Farm Share of the Consumer Food Dollar May Limit Policy Effects

- Farm value of food expenditures decreased largely over last 5 decades (from 40% to 20%)
- Changes in commodity prices (through changes in subsidies) likely to have modest effects on retail prices

	Farm value share, %
Dairy products	34
Meat products	31
Fresh fruit	20
Fresh vegetables	19
Fats & oils	13
Bakery & cereals	5

Source: ERS, USDA.



# Fiscal Food Policy Isn't Immune to Unintended Consequences

## Potential Negative Effects of Food Policy:

### Tax policy

- Substitution of other unhealthy foods/ behaviors for taxed foods
  - Least wealthy groups at biggest risk
- Reduction in tax revenues with lower demand
  - Funding of earmarked public health initiatives at risk when demand drops

### Subsidies

- Effects on trade



# Price Changes Needed for Desirable Shifts in Demand

<i>Price changes necessary to generate hypothetical increases in food consumption, %</i>				
	<b>Desirable increase in consumption, %</b>			
	<b>2</b>	<b>5</b>	<b>10</b>	<b>20</b>
Vegetables & fruits	-2.8	<b>-6.9</b>	-13.9	-27.8
Bread	-5.7	-14.3	-28.6	-57.1
Juice	-2.0	-5.0	-9.9	-19.8

*Source:* Authors' simulations based on elasticity estimates of food demand in Huang and Lin, 2000. "Estimation of Food Demand and Nutrient Elasticities from Household Survey Data", USDA TB 1887.



# Economics and Public Health Need to Work Together

## Recommendations:

- Economists need public health experts to estimate margins of significant effects on diet, weight and health
- Public health needs economic analysis of demand for unhealthy foods, especially among children



**Thank You!**