Multi Category Demand and Supermarket Pricing

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Many Categories and Few Stores

- A distinctive feature of supermarket competition is that shoppers use a small number of stores…and buy a large number of grocery categories.

- We will use the term category to refer to a group of similar products: dairy products, alcoholic beverages, meat, bread, fruit, vegetables, etc

Cross-Category Pricing Effects

– We focus on category pricing as we are interested in the complementarities between largely unrelated products that arise in supermarket competition: when a supermarket cuts its price for one category it may increase the demand for another by drawing more consumers into the store.

– We discuss the role of these cross-category effects in

  – competition policy

  – theory literature

– We highlight the lack of empirical literature, and present some early findings from my work with Oyvind Thomassen.

Policy Issues I: Competition

- The UK's Competition Commission has argued that shopping costs are such that most consumers prefer to buy all grocery categories in a single store.

- This implies competition is for the whole basket (and cross-category effects are therefore present).

- A practical implication is that specialised stores have little competitive consequence. Various anti-trust authorities have suggested that full-line stores are constrained only by other full-line stores, and not by stores of other formats.

  - Accordingly, firms operating full-line stores have been prevented from merging with each other, but a more liberal policy has been adopted between full line stores and specialised stores, and between two specialised stores. For example in the US Whole Foods and Wild Oats (2007) merger was allowed, in the UK the ASDA-Netto merger was allowed but further consolidation among the big full line stores has been ruled out.

Policy Issues II: Below Cost Selling

– Multi-category demand in principle allows retailers to engage in below cost selling of individual grocery categories, without making an overall loss.

– The CC found evidence of this. For example CC(2000, paragraph 7.165) "one retailer claimed this was a persistent feature of the market: .. . . in recent years some of our competitors have continually priced certain key lines at or below cost. For example, white bread and cheapest-on-display cans of tomatoes and beans."

Theory of Multi Category Retailers

– One stop shopping models:

  – Prices are set to offer a competitive overall utility (Bliss (1988))

  – Retail organisation has major effect on prices, a supermarket sets lower prices than individual shops in a mall, because it internalises cross-category effects (Beggs (1992))

– Multi-stop shopping models

  – Below cost selling is possible if consumers are better informed about some products prices than others (Lal and Matutes (1994))

  – Firms may offer very similar products to avoid differentiation motives for two stop shopping (Klemperer (1992))

Evidence: Number of Categories per Trip

	#
Mean number of categories per grocery trip	20
Standard Deviation (of # of categories per grocery trip)	13
Median number of categories per grocery trip	18
Proportion of trips with <10 categories	30%
Proportion of trips with 10-30 categories	50%
Proportion of trips with >30 categories	20%

The data is from TNS Homescan, which tracks consumer shopping behaviour
The table suggests a role for multi-category effects in retail pricing.

Extent of Multi-Store Shopping

	Trips	Stores
Mean number per week	2.2	1.7
Median number per week	1.5	1.25
Upper quartile (number per week)	3	2.25

	Sales Share
% of weekly consumer spending in 'top store'	80
% of weekly consumer spending in 'second store'	14
% of weekly spending in 'third store'	4

	Sales Share
Average category sales in the category's 'top store'	93.9%
Average category sales in the category's second store	5.6%

'Top store' is the store the consumer spends most in, in a given week.
The data suggests that multi-stop shopping is common,
....but spending is concentrated in one store, *especially* within categories.

Empirical Modelling

– Using data on consumer choices we estimate a model of consumer store and category choices.

– Consumer selects one or two stores per period and up to 8 categories.

– Consumer chooses store(s) on the basis of firm (a measure of quality), price by category, and distance. Consumers' shopping costs vary.

Cross Elasticities

Negative cross elasticities: independent products become complements
(Note: work in progress, results may change)

	bakery	dairy	drink	dry	Fruit, vegetable	household	meat	milk
Bakery	-0.51	-0.11	-0.27	-0.24	-0.27	-0.19	-0.52	-0.03
Dairy	-0.15	-0.59	-0.26	-0.23	-0.27	-0.20	-0.51	-0.03
Drink	-0.15	-0.11	-0.65	-0.23	-0.25	-0.18	-0.49	-0.03
Dry	-0.16	-0.11	-0.27	-0.78	-0.28	-0.21	-0.51	-0.03
Fruit, Vegetable	-0.15	-0.11	-0.26	-0.24	-0.79	-0.21	-0.51	-0.03
Household	-0.13	-0.10	-0.23	-0.22	-0.26	-0.95	-0.44	-0.03
Meat	-0.16	-0.11	-0.27	-0.24	-0.27	-0.19	-1.14	-0.03
Milk	-0.12	-0.09	-0.20	-0.19	-0.23	-0.21	-0.38	-1.98

The cross elasticities are for one of the major big-four retailers.
Show substantial incentives to cut prices to draw demand for other products
Note that own price elasticities lower than for single-product firm case
—this is because one individual price has a low effect on store choice

Conclusions

– Policy and theory analysis stresses the importance of multi-category shopping.

– Data shows supermarket consumers shop for multiple categories in one or two stores per week

– Empirical model suggests this generates significant cross-category pricing effects.

– Important to distinguish two elasticity concepts: changing all prices at store v changing a single category price

– For further study: role of specialist formats in pricing incentives for specific categories.