

Drug Price Dispersion and DTC Advertising

Bill Encinosa, Chad Meyerhoefer,
Sam Zuvekas

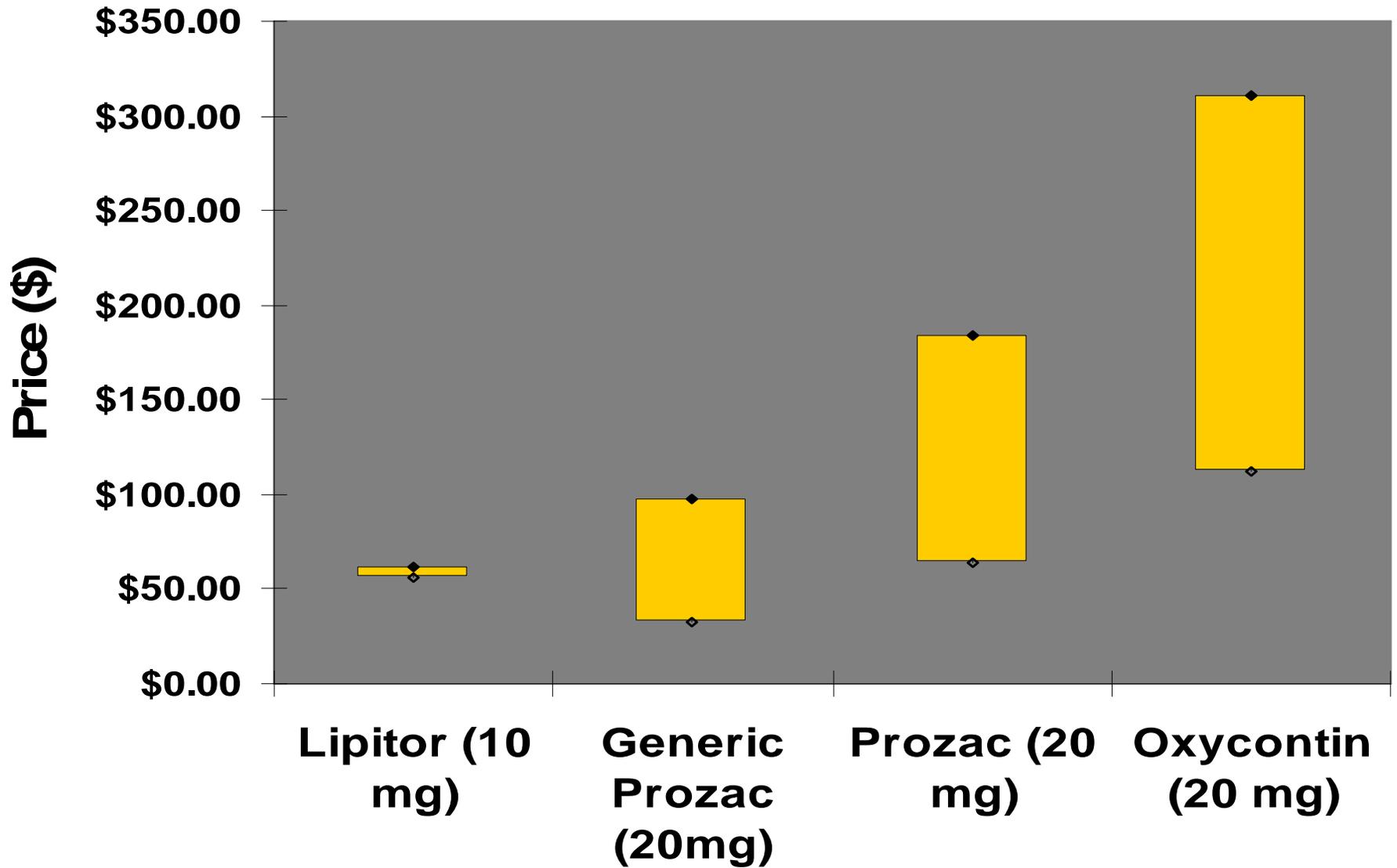
(AHRQ)

Dongyi Du
(Univ of Maryland School of Pharmacy)

Current Research on DTCA

- DTCA → patient compliance
- DTCA → doctor visits
- DTCA → demand for drugs
- DTCA → drug price dispersion
 - No Research

Within-Market Price Dispersion



Price Data

- 5.6 million covered lives in 2001-02 from 45 employers (MarketScan)
- 20 therapeutic classes
- 17 million drug claims for 177 drugs
- 212 Metropolitan areas (MSAs)

Price Data

- Drug prices are transacted prices—total reimbursement to the pharmacy by consumers and insurers
- Market-level price dispersion given at level of:
 - product, strength, 30/90 day, year-quarter, MSA
- 127,570 observations

Advertising Data

- TNS local and national DTC advertising data
- 100 Nielsen media markets (DMAs), 212 MSA's
- 38 of the 177 drugs from the price data were advertised
- Their DTCA expenditures per 100,000 capita increased 16% from \$5,350 to \$6,193 between 2001 and 2002.

Hypothesis: DTCA follows a Search Model of consumer behavior

- (1) Search model: consumer/employer shopping decreases price dispersion.
 - DTCA, higher cost-sharing, lower income, and chronic diseases stimulate consumers to price shop
 - Employers respond to greater DTCA-induced demand by contracting with PBMs negotiating lower prices on heavily advertised drugs
- (2) Search model: consumer/employer shopping decreases pharmacy profit margins.
 - DTCA lowers profit margin

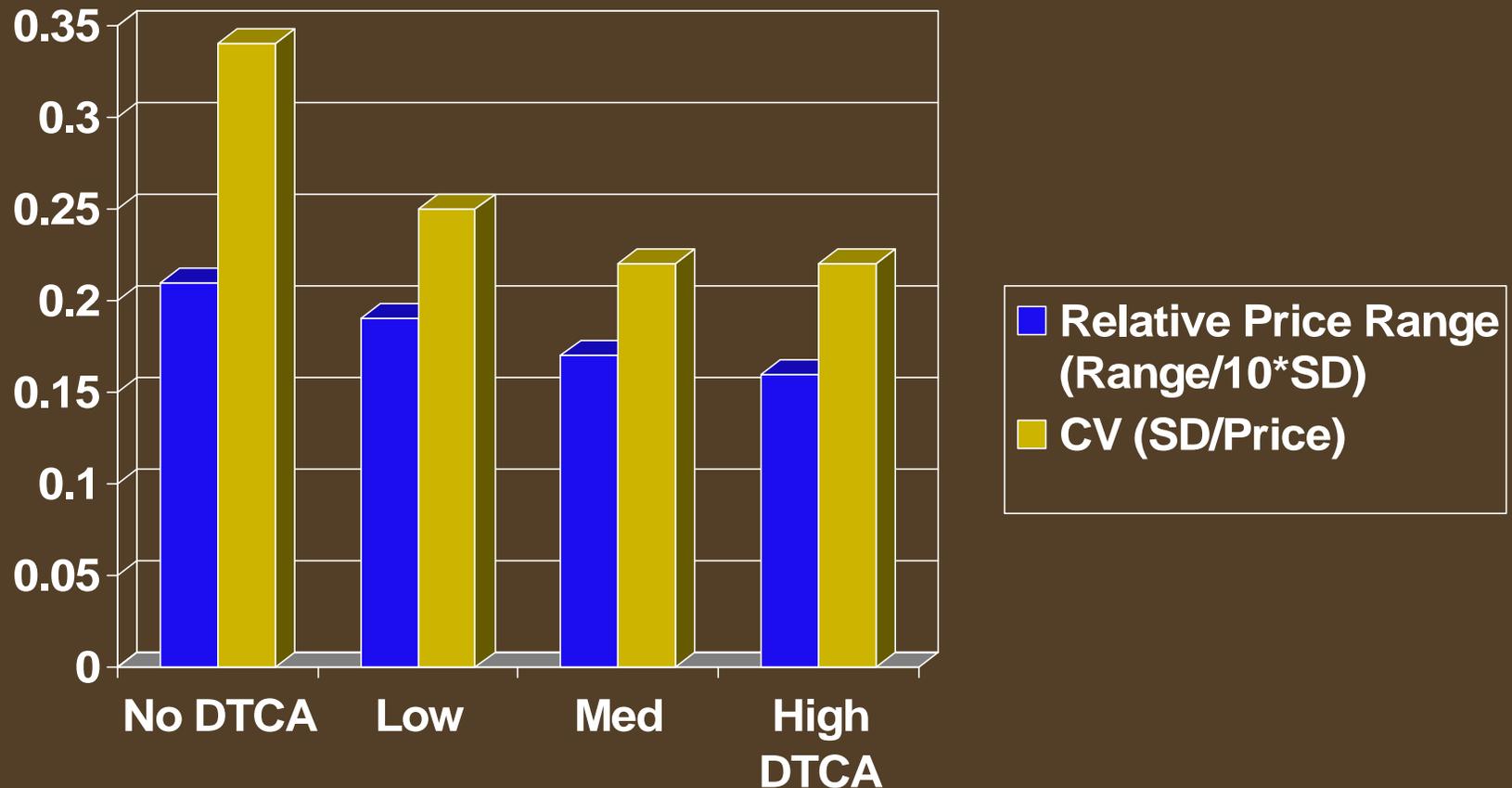
Hypothesis: DTCA reflects relative fixed costs of firms

- Firms selling effective brand name drugs have high fixed costs from R&D
 - Improvements in efficacy are expensive
- Few firms will offer more effective drugs, leading to high market share
 - Claims of greater efficacy must be made costly through higher DTCA to deter lower quality market entrants
- Fewer firms implies lower price dispersion
 - Each firm has more market power

Quarterly Within-Market Price Dispersion and Advertising

Advertising (\$ per 100,000 capita)	Price Range (high-low)	Coefficient of Variation (SD/Price)	Average Price
\$0	\$33.93	0.34	\$48.52
\$1 - \$3,700	39.15	0.25	84.35
\$3,701 - \$8,300	32.02	0.22	92.58
\$8,301+	30.93	0.22	89.68

Price Dispersion and DTCA



Dispersion and Advertising

Top 5 and Bottom 5 Advertised Therapeutic Classes	Mean Advertising	Price Coef. of Variation
Antihistamines	\$ 6412.58	0.17
Antihyperlipidemic Drugs	5536.03	0.16
Gastrointestinal Drugs	4506.07	0.27
Adrenals Corticosteroids	3294.25	0.22
NSAIDs	3174.13	0.29
Antiarrhythmic Agents	0.00	0.43
Alpha-Beta Blockers	0.00	0.44
Calcium Channel Blockers	0.00	0.27
Opiates	0.00	0.46
Contraceptives	0.00	0.27

Regression Methods

- Price Dispersion = $\log(\text{DTCA}) + (\text{coinsurance rate}) + (\text{acute/chronic care}) + (\text{single source/brand/generic}) + (\% \text{ hourly wage workers}) + (\text{time trend})$
- MSA and therapeutic class fixed effects
- Pharmacy fixed effects purged from prices in first stage regression on 17 million scripts (Sorensen, *JPE* 2000).

Regression Results: increasing DTCA from \$0 to \$1,760 per 100,000 capita implies:

Model:	MSA fixed effects	MSA FE purged of pharmacy fixed effects
Change in price range	-8.2%	-4.3%
Change in price SD	-5.4%	-4.7%
Change in CV (SD/price)	-1.6%	-0.08%

Estimated change in price range due to:

Model:	MSA fixed effects	MSA FE purged of pharmacy fixed effects
Change in:		
Coinsurance rate from 18% to 46%	-43.5%	-22.9%
Chronic RX to Acute care RX	+121.4%	+62.4%
Salaried to Hourly wage	-28.5%	-10.3%

Estimated change in pharmacy profit margin due to change in:

DTCA from \$0 to \$1,760 per 100,000 capita	+1.6%
Coinsurance rate from 18% to 46%	-15.8%
Chronic RX to Acute care RX	+30.1%
Salaried to Hourly wage	-17.0%

Estimation Bias due to Unobserved Rebates

- (1) Advertising may occur with higher rebates given to **low-priced** pharmacies (Walmart) → under-estimation of magnitude of DTCA effect on dispersion.
- (2) Advertising may occur with higher rebates given to **high-priced** (specialty) pharmacies → over-estimation of DTCA effect on dispersion.
- IV estimates indicate case (1)

Conclusion

- DTCA does follow the search model of consumer behavior
 - DTCA induces more conscientious shopping which lowers price dispersion
- DTCA is consistent with advertising by firms with high fixed costs and more market power
- However, DCTA does not seem to follow the search model in terms of shopping lowering profit margins.
- Thus, net welfare effect of DTCA not clear.