



ΠΑΝΕΠΙΣΤΗΜΙΟ
ΠΑΤΡΩΝ
UNIVERSITY OF PATRAS

**LECTURE 11. *BUSINESS STRATEGY-ADVERTISING*
(*ADVERTISING AND PRICE COMPETITION,
ADVERTISING INTENSITY, UNCERTAINTY IN
ADVERTISING*)**

Konstantinos Kounetas

School of Business Administration

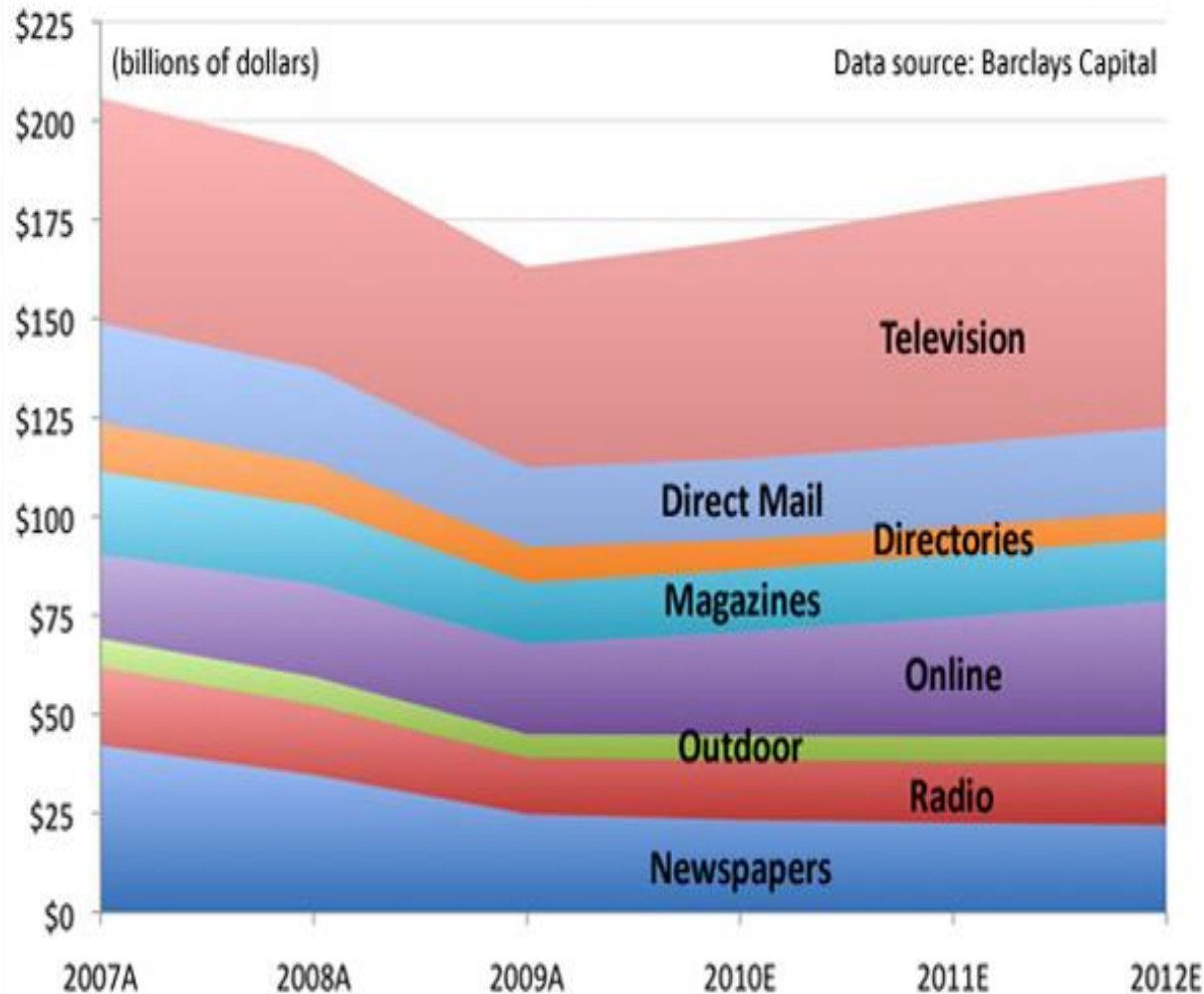
Department of Economics

Master of Science in Applied Economic Analysis

I.O Perspective

- Advertising is a weapon in the competition between firms
- Creating & securing a brand identity can be helpful to consumers
 - Consumers may have a taste for variety; each consumer may like a different version of a particular product
 - Advertising can match consumers with the version they most prefer
 - But advertising can also be an uninformative and wasteful form of competition
- Evaluation of advertising's competitive role requires an understanding or clear model of how advertising works
- Consider a simple model where firms can either spend a little or a lot on advertising
- If advertising by one firm largely cancels the advertising of its rival, then this can result in an “advertising” war with both firms spending excessively on advertising

U.S. Advertising Spending By Medium (2007-2012E)



UK Total Media Ad Spending Share, by Media, 2014-2020

% of total

	2014	2015	2016	2017	2018	2019	2020
Digital	47.5%	50.7%	53.1%	55.2%	57.1%	58.6%	60.0%
—Mobile	14.8%	21.2%	27.0%	32.4%	37.7%	41.6%	44.4%
TV	25.3%	25.2%	24.6%	23.7%	22.8%	22.1%	21.5%
Print	18.2%	15.4%	13.8%	12.9%	12.2%	11.5%	11.0%
—Newspapers*	13.3%	11.1%	10.0%	9.3%	8.8%	8.3%	7.9%
—Magazines*	4.9%	4.3%	3.9%	3.6%	3.4%	3.2%	3.1%
Out-of-home	6.7%	6.6%	6.4%	6.2%	6.0%	5.9%	5.7%
Radio**	2.3%	2.2%	2.1%	2.0%	1.9%	1.9%	1.8%

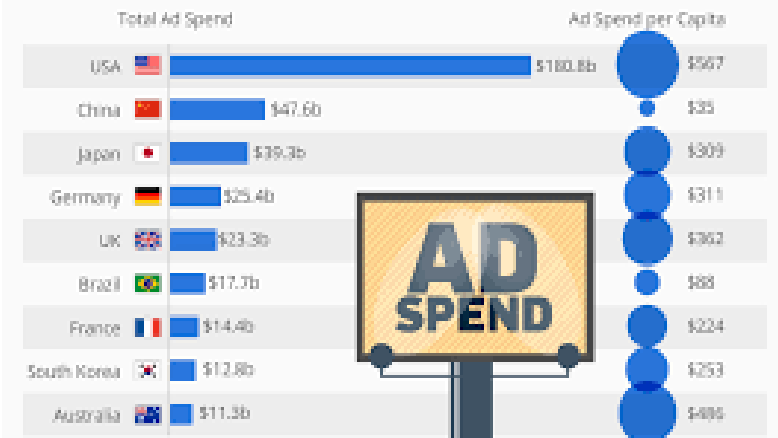
Note: numbers may not add up to 100% due to rounding; *print only; **excludes off-air radio & digital
Source: eMarketer, March 2016

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www.eMarketer.com

The US Ad Market Remains Unchallenged

Advertising expenditure in the world's largest ad markets in 2014



Information and Advertising

- For those interested in behavioral economics, advertising would make a useful application
- Traditional neoclassical approaches are poorly suited for understanding advertising
- In standard microeconomic analysis, the utility function is taken as given – you can inform a consumer about a good but you cannot change his taste for it
- In reality, most advertising is persuasive, not informative: it is designed to change consumer tastes
- We lack a good understanding of how this occurs

A Structural Model of Advertising

- Economists who study advertising typically assume it shifts the consumer demand curve in some fashion, but this is a “reduced form” model
- A structural model would allow a researcher to assess how advertising works at the micro level (in the brain, perhaps)
- Such a model might allow firms to better optimize their advertising strategies, and it would inform policy makers about the potential impacts of alternative advertising policies
- For every price p advertising shifts the demand function upwards.

Search Good

Experience Good

Good

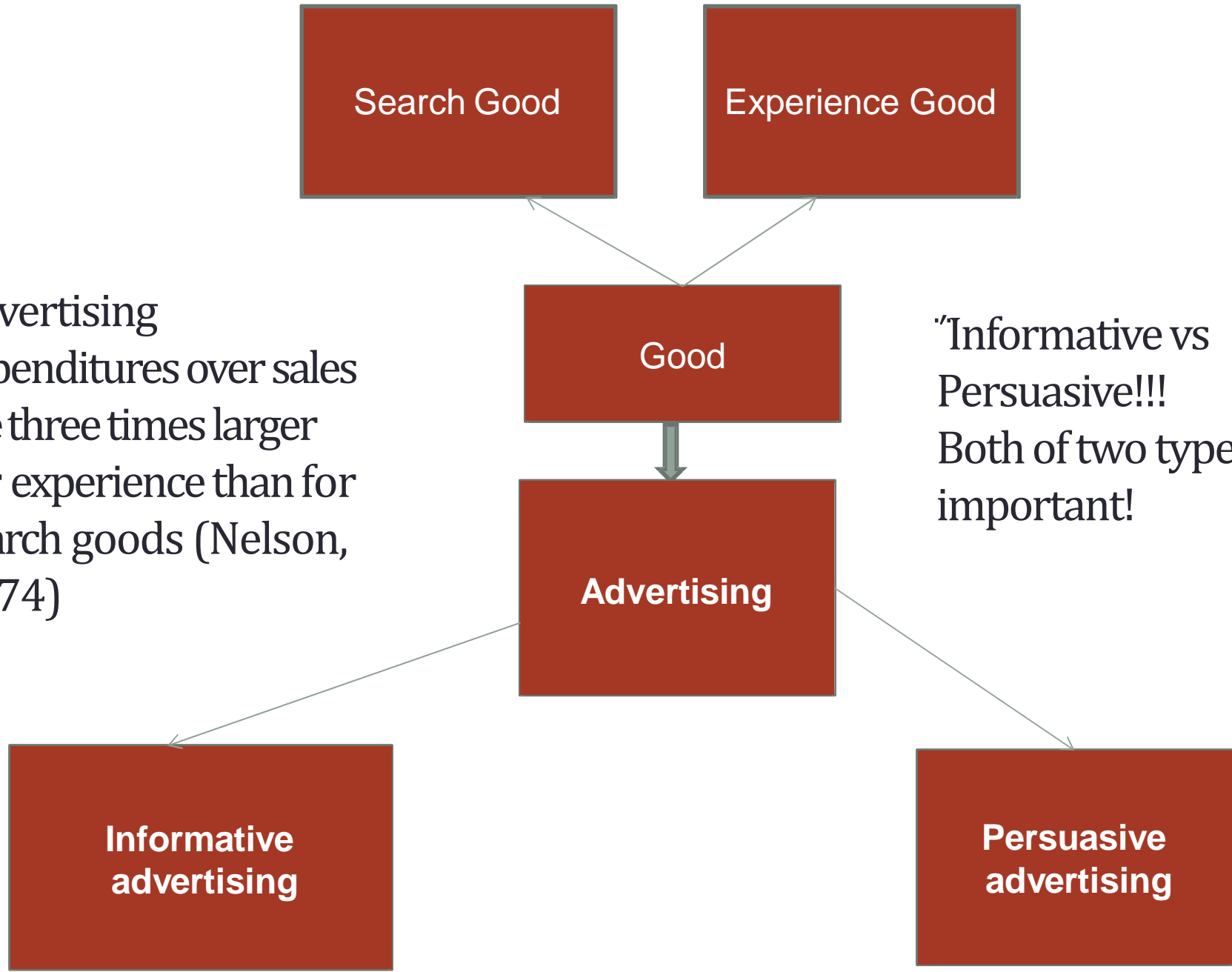
Advertising

Informative
advertising

Persuasive
advertising

Advertising expenditures over sales are three times larger for experience than for search goods (Nelson, 1974)

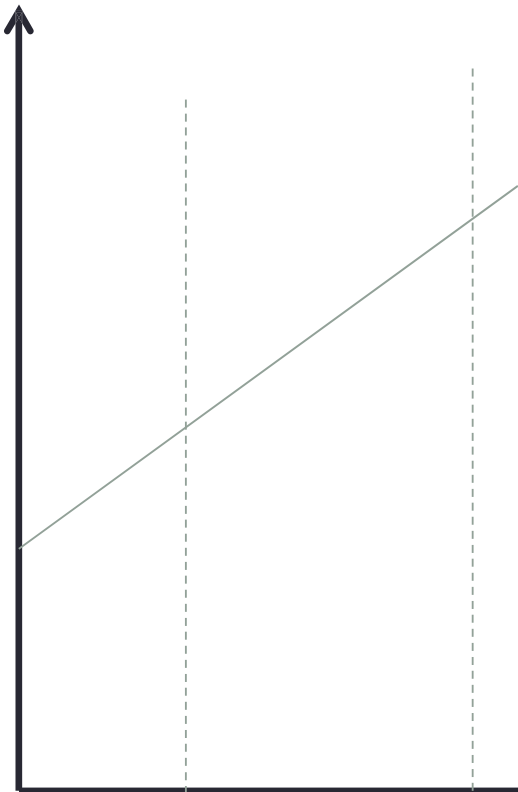
“Informative vs Persuasive!!!
Both of two types are important!”



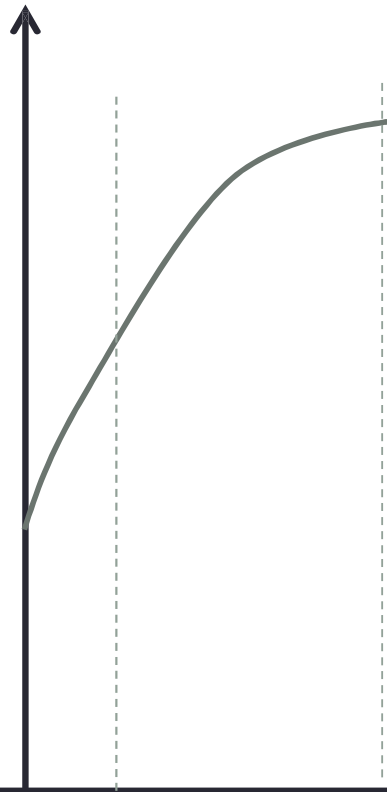
Possible forms for advertising sales relationship

The appropriate functional form is the one that provides the best statistical fit to our dataset.

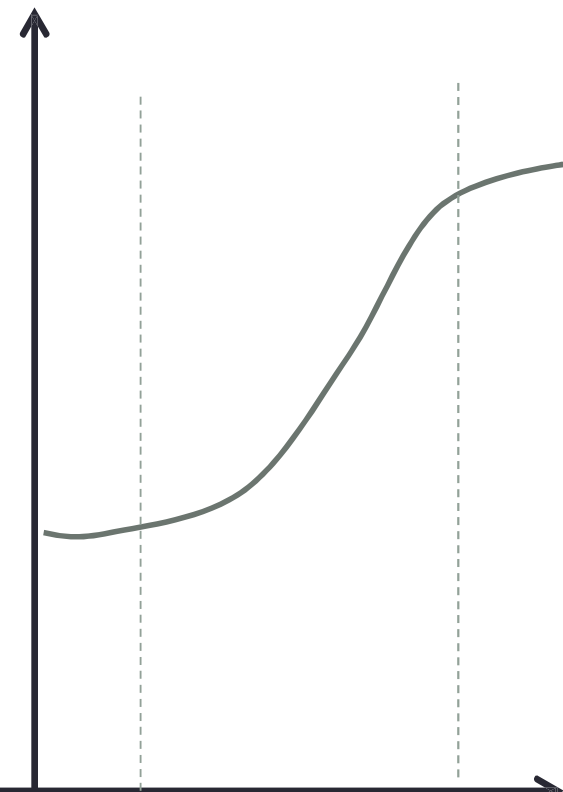
$$Q = b_0 + b_1A$$



$$Q = b_0 + b_1A + b_3A^2$$



$$Q = b_0 + b_1A + b_2A^2 + b_3A^3$$

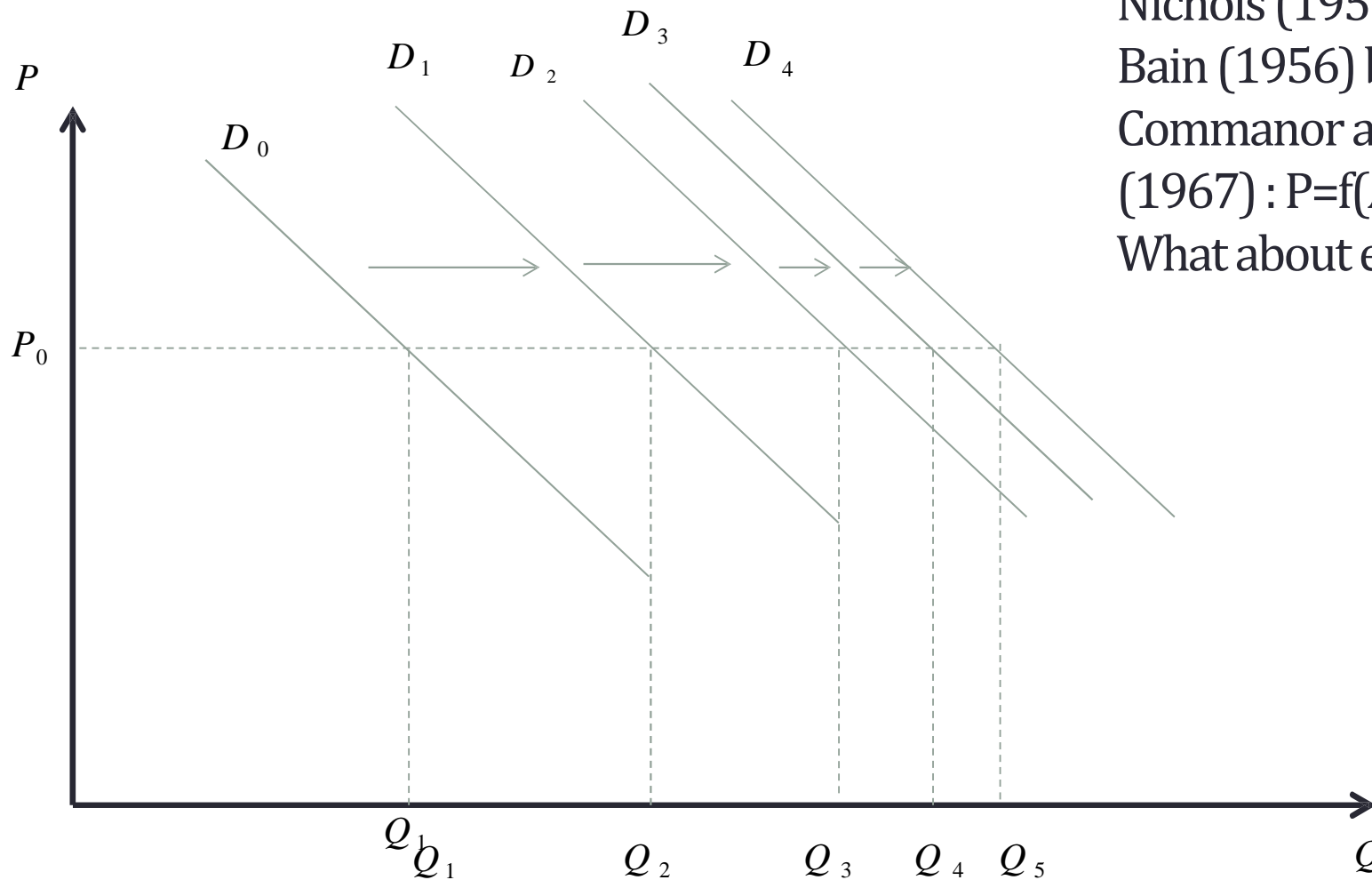


Persuasive advertising (competition)

- **Advertising as a public good:** a firm's advertising campaign benefits all the sellers in the industry.
 - Free-riding effects lead to less advertising than desirable.
 - Solution: cooperative advertising.
 - Advertising falls as industry becomes less concentrated.
- **Advertising as a private good:** a firm's advertising campaign steals demand from other firms.
 - Over-investment in advertising; Prisoner's dilemma type of situation.
- Advertising has typically both roles: which effect is stronger? Too much or too little advertising?
 - Concentrated industries: not so easy to steal business, free-riding effect dominates: too little.
 - In less-concentrated industries, large incentives to steal business dominates free-riding: too much

Impact of Advertising on Demand

The appropriate functional form is the one that provides the best statistical fit to our dataset.

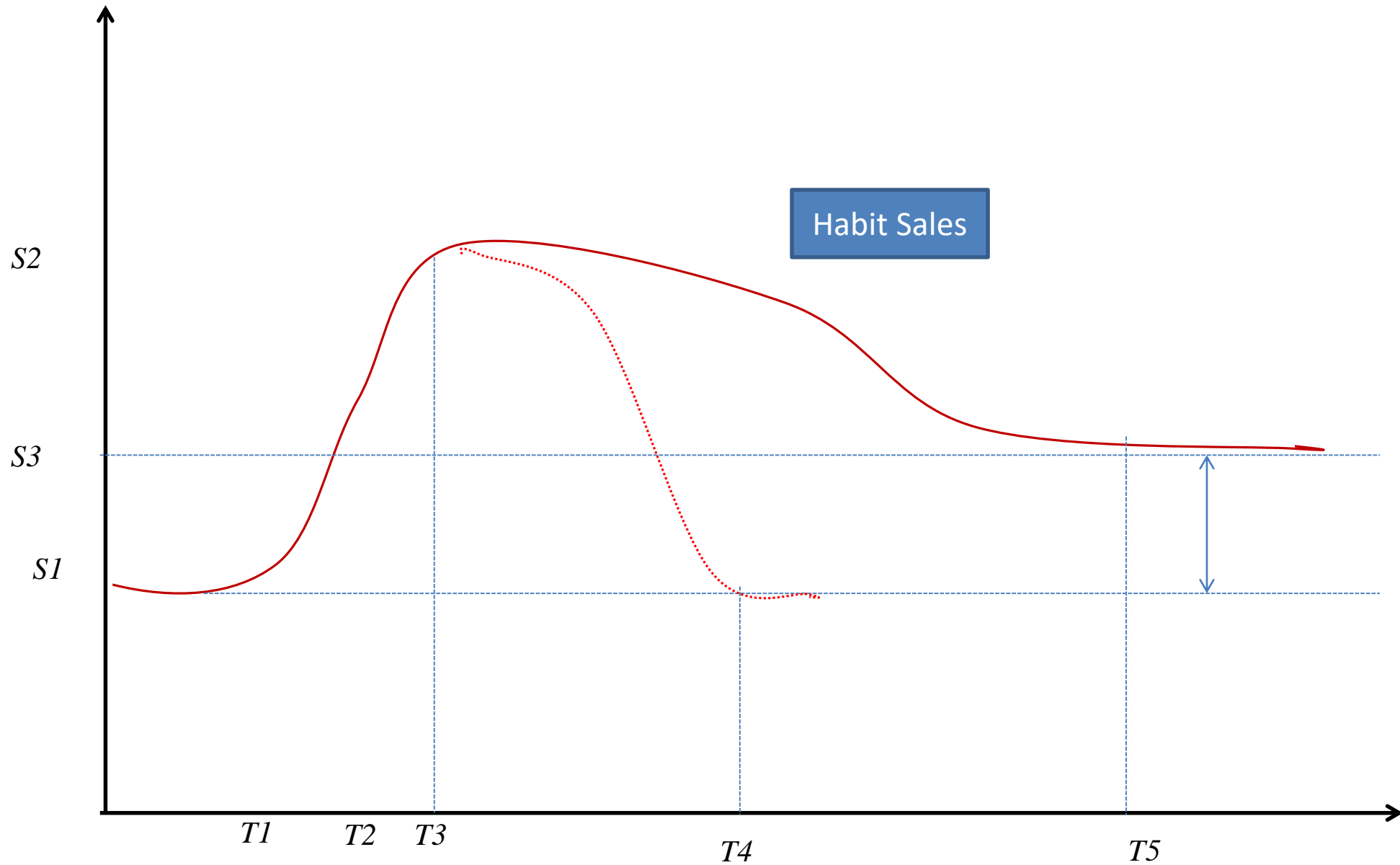


Nichols (1951) cigarettes,
Bain (1956) barriers to entry,
Commanor and Wilson
(1967) : $P=f(A/R)$
What about endogeneity?

Some Definitions

- Advertising is closely related to the existence of branding. Branding means that a firm creates an identity for each self and highlights the way in which it differs from its rivals.
- Markets sometimes respond to the problem of asymmetric information in many ways. One of them is signaling, which refers to actions taken by an informed party for the sole purpose of credibly revealing his private information (high quality products). But obviously is costly.
- When an uninformed party takes action to induce the informed party to reveal private information, the phenomenon is called screening.
- Asymmetric information, Valentine's day and signaling!!

The effect of a advertising campaign

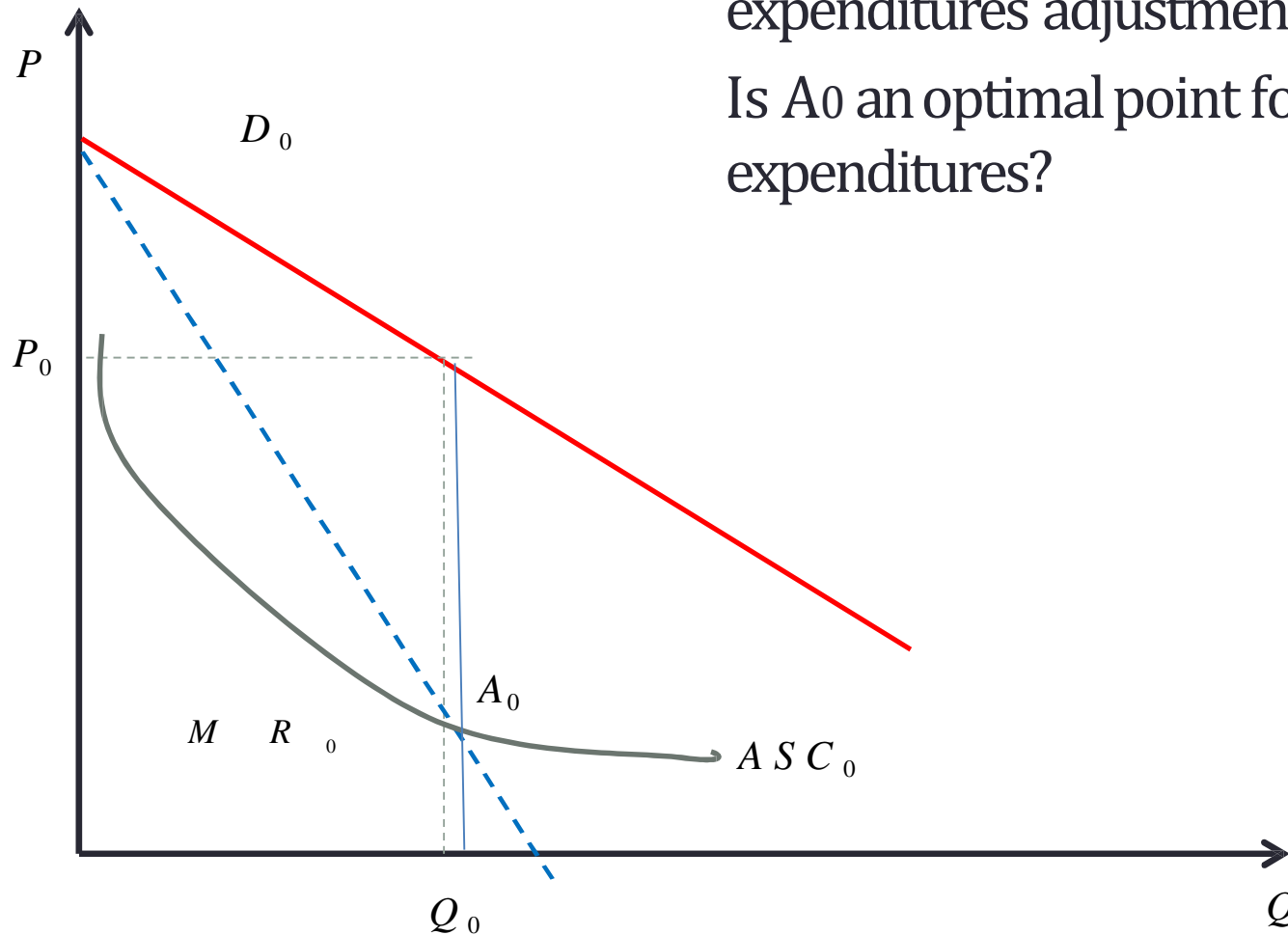


Simultaneous adjustment of Price-Advertising

We assume zero marginal costs.

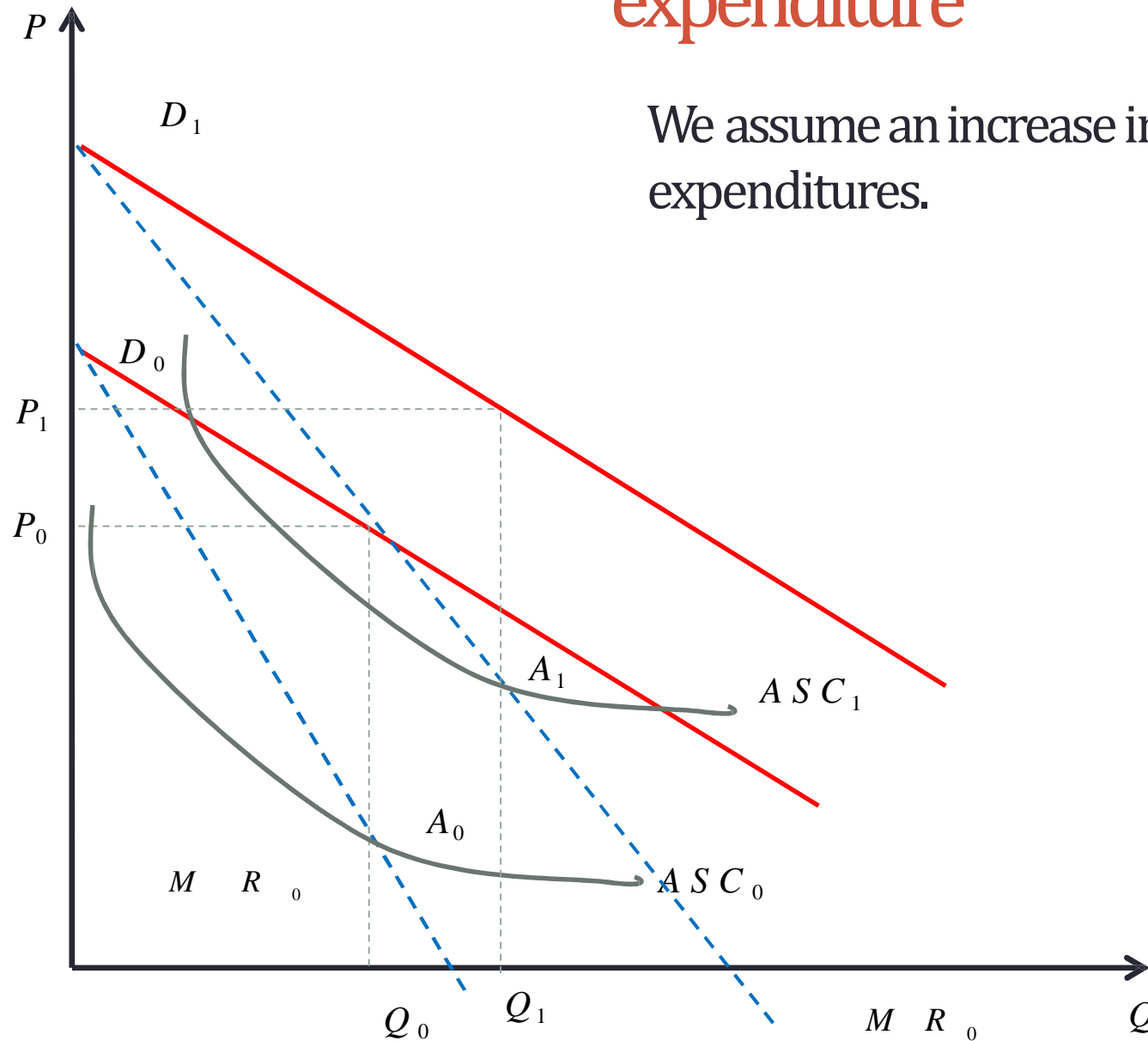
We have a simultaneously price-advertising expenditures adjustment

Is A_0 an optimal point for advertising expenditures?

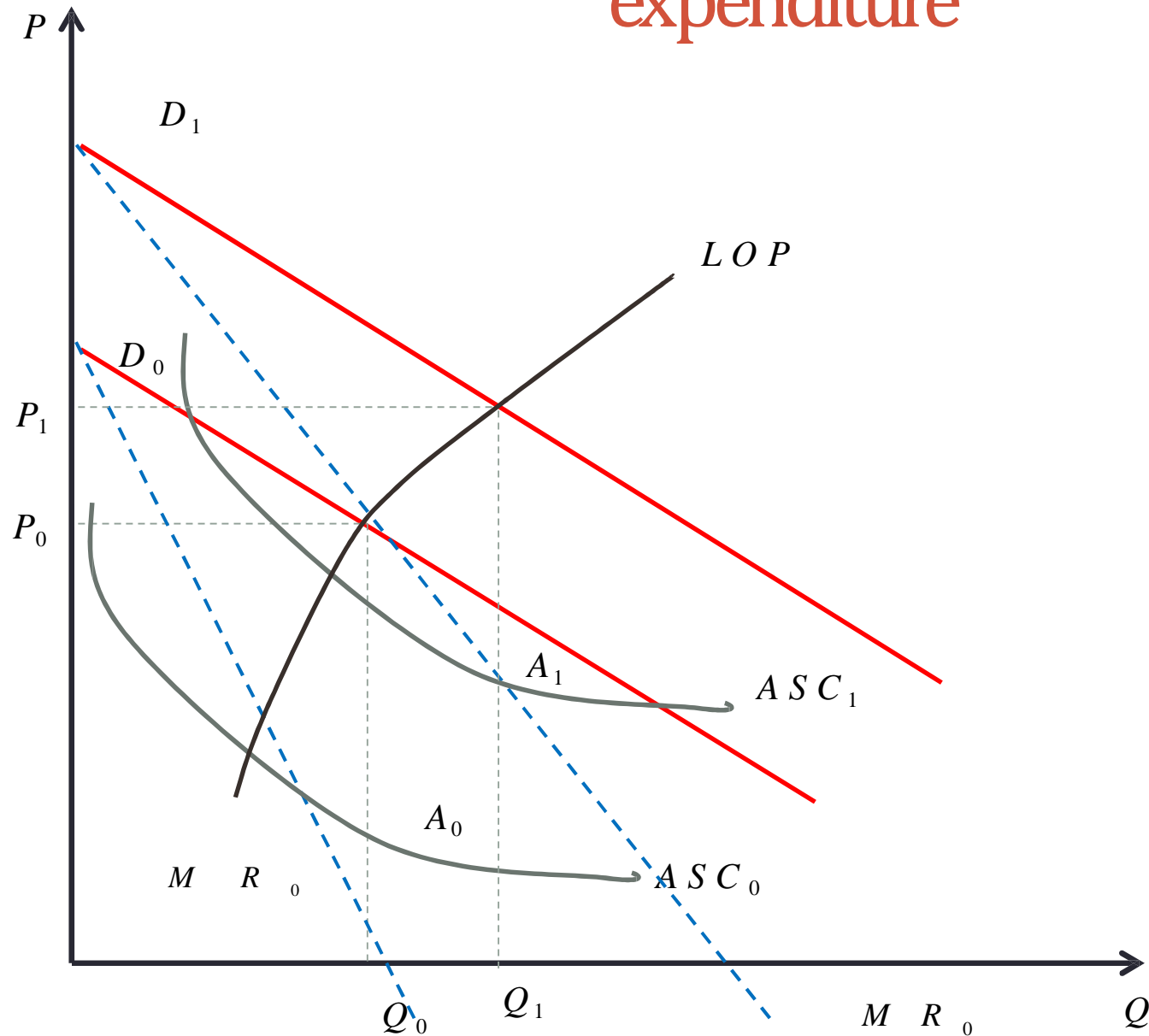


Optimal Prices for successive advertising expenditure

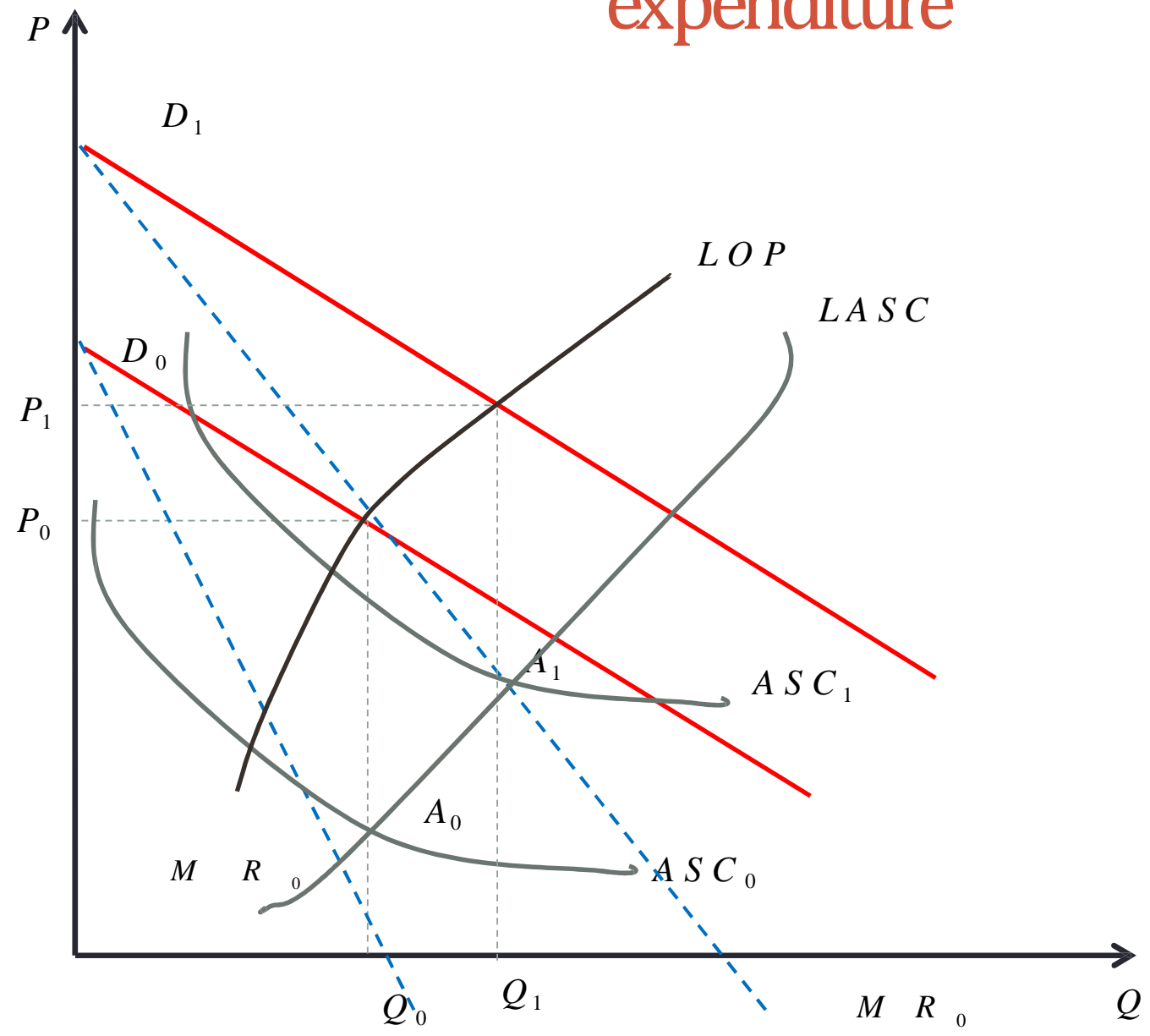
We assume an increase in advertising expenditures.



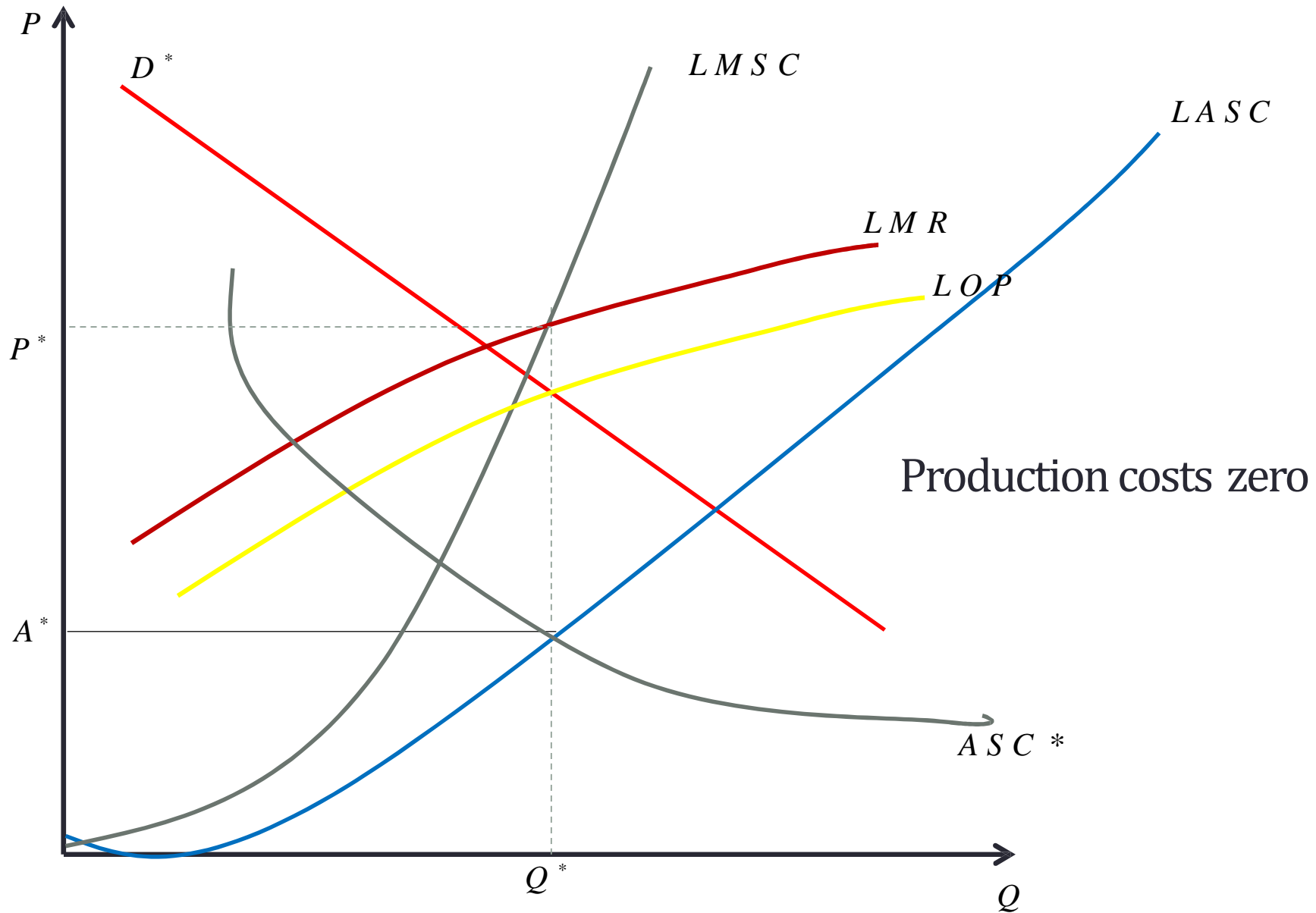
Optimal Prices for successive advertising expenditure



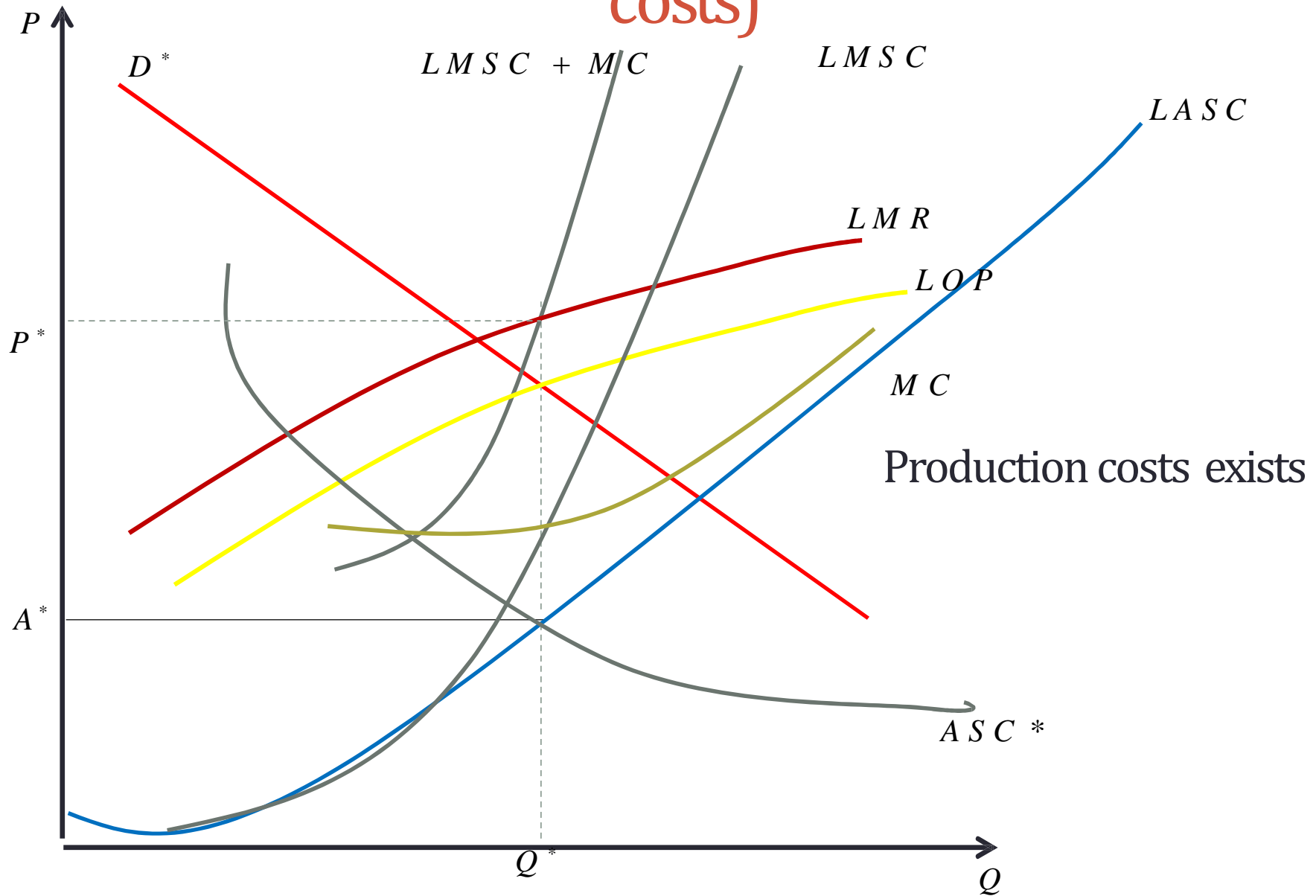
Optimal Prices for successive advertising expenditure



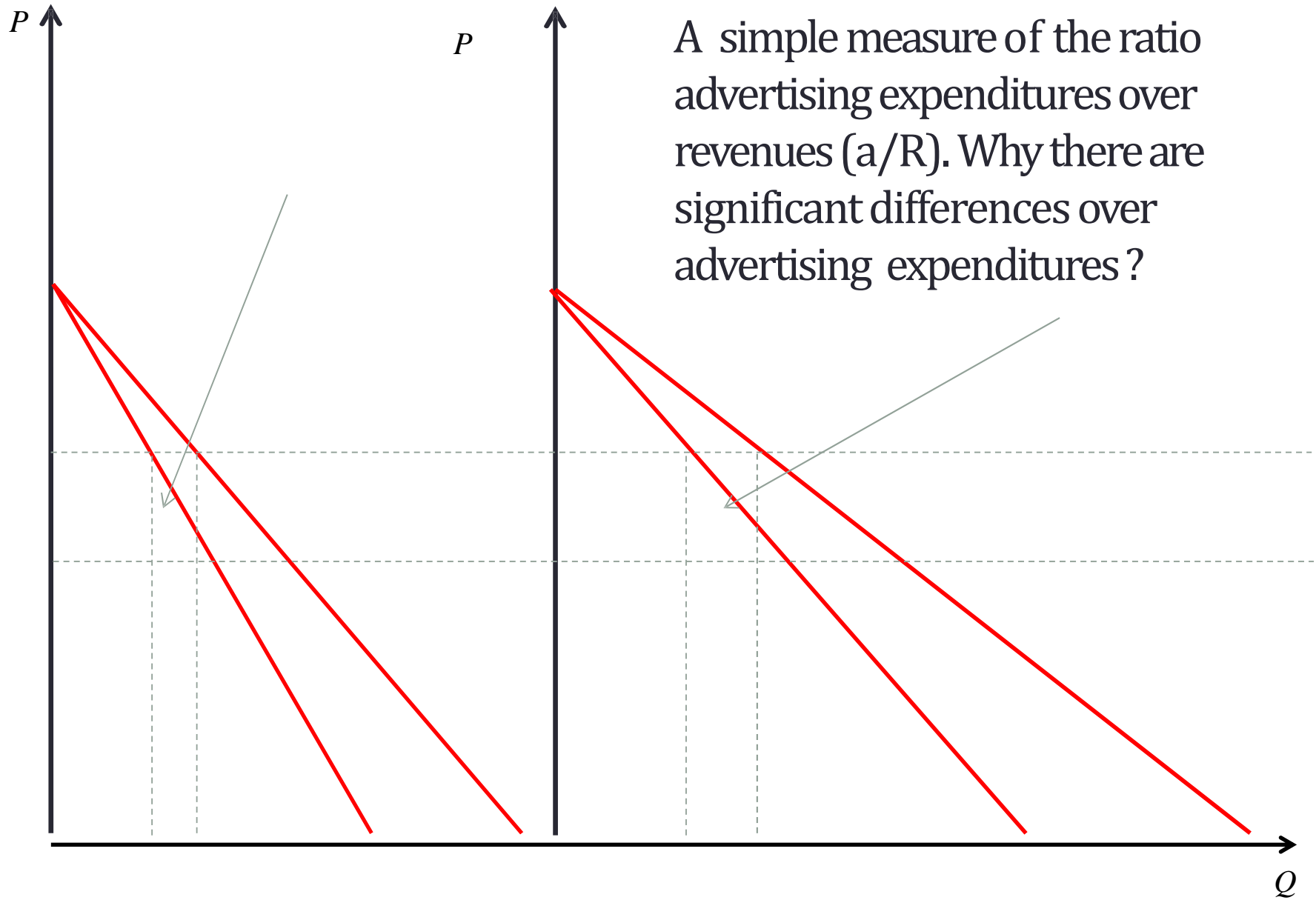
Optimal Prices and Advertising levels



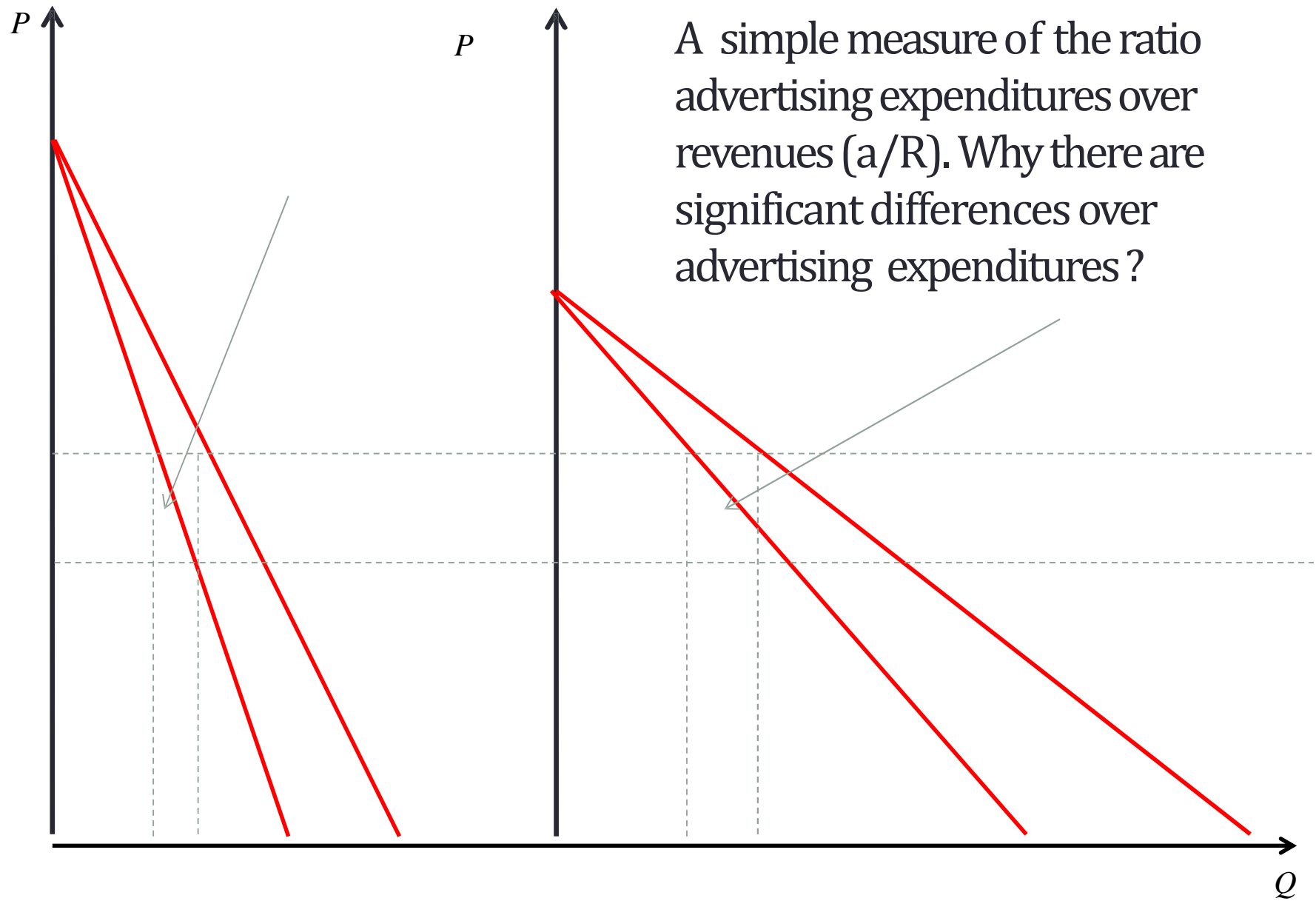
Optimal Prices and Advertising levels (Production costs)



Advertising Intensity I



Advertising Intensity II



Advertising Intensity III

$$\Pi(Q, A) = Q(p, a)p - TC(Q) - a$$

$$\frac{\partial \Pi(Q, A)}{\partial p} = 0 \Leftrightarrow \dots \Leftrightarrow \frac{MC}{p} = \frac{\varepsilon - 1}{\varepsilon}$$

$$\frac{\partial \Pi(Q, A)}{\partial a} = 0 \Leftrightarrow \dots \Leftrightarrow \eta \left(1 - \frac{MC}{p} \right) = \frac{a}{pQ} = \frac{a}{R}$$

$$\frac{a}{R} = \eta \left(\frac{p - MC}{p} \right) = \frac{\eta}{\varepsilon}$$

Dorfman-Steiner (1954)

More advertising the greater the price-to-cost margin

More advertising when demand is more sensitive to advertising expenditures

Relationship

	η/ε	a/R
Coffee	0.019	0.020
Beer	0.008	0.011
Cigarettes	0.019	0.046
Soap	0.013	0.012
Toothpaste	0.024	0.059

Advertising as Wasteful Competition

Example of a Wasteful Advertising War-Increasing advertising is a solution

		<i>Gamma</i>	
		<i>Low Advertising Expenditure</i>	<i>High Advertising Expenditure</i>
<i>ZIP</i>	<i>Low Advertising Expenditure</i>	<i>\$450, \$450</i>	<i>\$375, \$500</i>
	<i>High Advertising Expenditure</i>	<i>\$500, \$375</i>	<i>\$400, \$400</i>

Nash Equilibrium is for both firms to choose the high level of advertising expenditures. This does not maximize their joint profit. Each firm's advertising undoes the promotional efforts of its rival. The result is excessive advertising that largely cancels itself out with little gain to consumers and lower profit for firms

Advertising and market structure

- How the market structure influence advertising and price elasticity?
- The higher the number of firm's participants in the market the higher the price elasticity. More competitive markets lead to less price cost margin and thus lower level of advertising intensity.
- On the other hand examining advertising elasticity , higher concentration in the market leads to lower levels of advertising intensity.

Advertising as a barrier to entry

- It is widely supposed that advertising and promotional efforts operate to raise or maintain barriers to the entry of potential competition (consumers loyalty and reluctant to switch in to their products).
- So the entrants should spend more or decide to not entry because of negative level of expected profits (Comanor and Wilson, 1979).
- Bain (1956): A minimum amount of advertising is required to enter some industries in order to reach a “threshold” level of consumer awareness. The building of brand image (cigarettes, detergents, soft drinks, beer).
- Consider a free-entry Cournot model: Demand is $P=A-bQ$ and total cost is $C(q)=a+f+cq$. The equilibrium number of firms is:

$$n = \frac{A - c}{\sqrt{b(f + a)}} - 1$$

References

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