

MARKET RESPONSE: P&F

Market Response

- The relationship between sales and the tactical marketing mix variables is called market response.
- Mathematical models of this relationship are called market response or marketing mix models.
- New approach is called **Model-Based Planning and Forecasting**

Planning and Forecasting

- Theory
 - Plan marketing mix
 - Forecast company sales
- Practice
 - Forecast company sales
 - Plan marketing mix
 - Result: Planning and forecasting are done in the wrong order

Sales Forecasting in Practice

- Forecast using trends
- Forecast using economic variables
- Problem: Both ignore the basic premise of marketing, i.e., that a company can take actions that affect its own sales.

Marketing Mix Decisions in Practice

- Advertising:
percent of expected sales
- Pricing:
markup on cost
- Problems:
 - Causality – sales is an *effect*
 - Optimal ratio – what is it?

Model-Based Planning and Forecasting

- Define a profit equation
- Measure market response
- Solve for optimal marketing decisions
- Compare optimal decision rules with actual decision rules

Profit

$$Z = [(P - k) - c]q - F - M$$

where

Z = total profit

P = list price

k = allowance per unit

c = variable cost per unit

q = unit sales

F = fixed costs

M = discretionary marketing costs

Determining q

- Obviously q depends on the product itself and its positioning strategy (This is the first “P”)
- But q is also a function of all of the other marketing mix variables (the 3 P’s)
- So $q = f(\text{price, place, promotion})$

Marketing Mix Variables

- Price
- Place (Distribution)
- Promotion
 - Advertising
 - Promotion
 - Sales force effort
- Other (catalogs, direct mail, etc.)

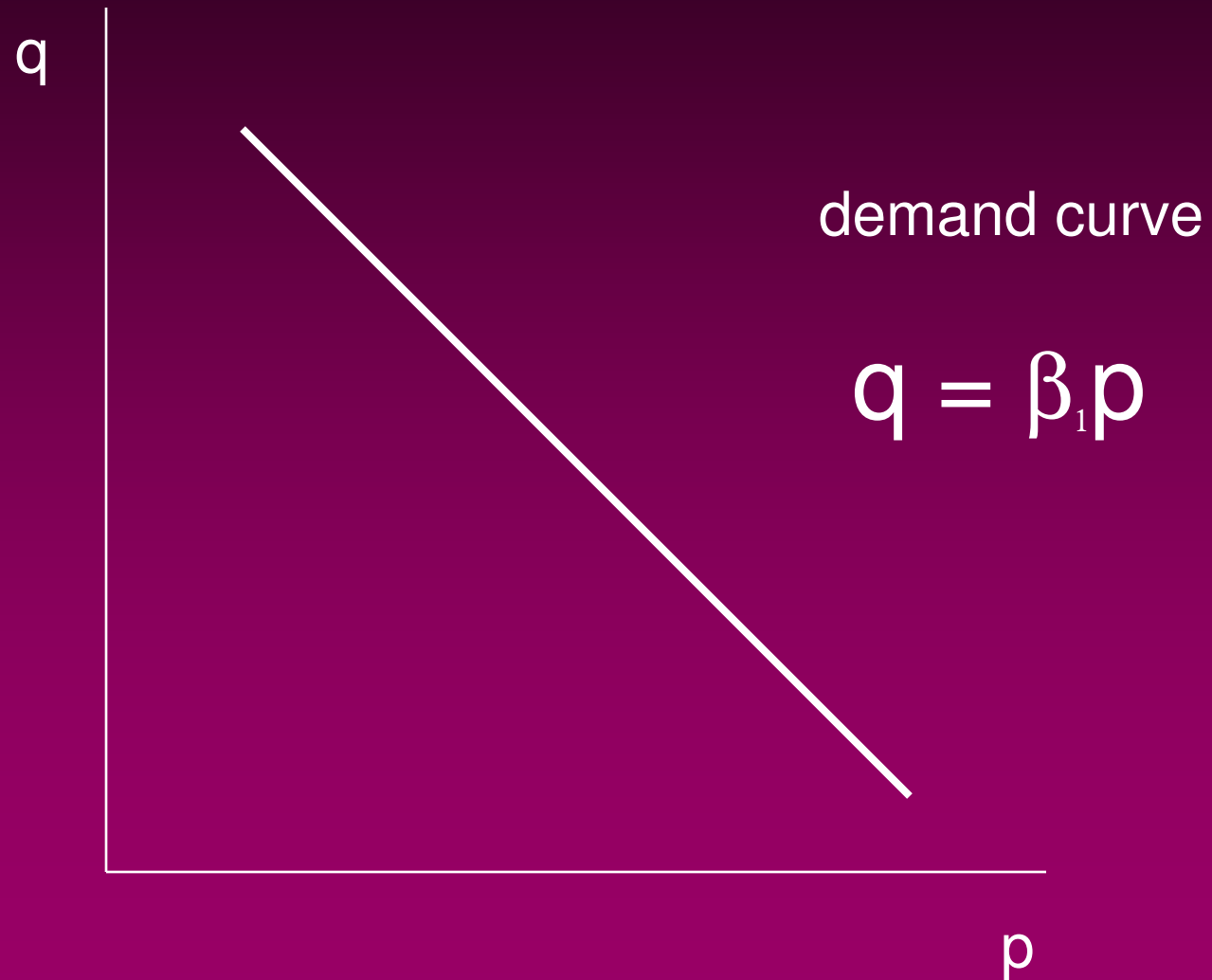
Shape of Market Response Models

q (unit sales)

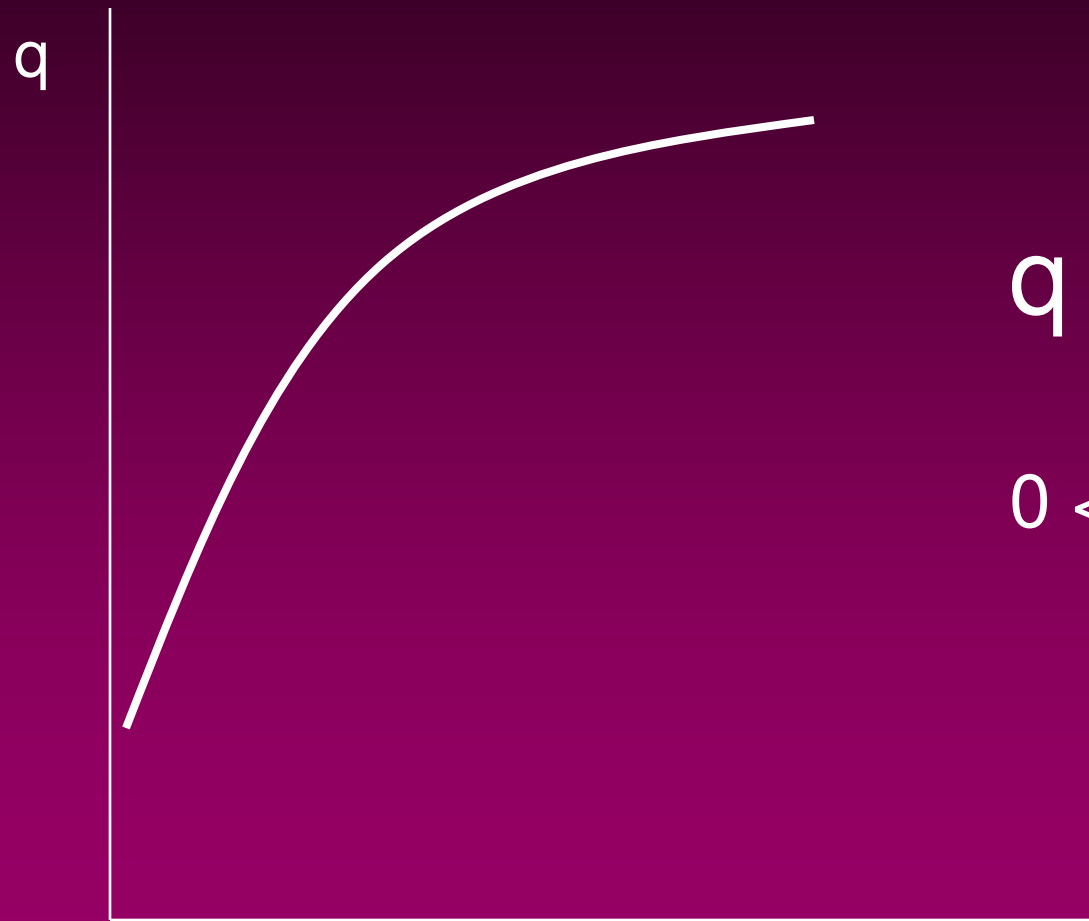


x (marketing mix variable)

Price



Advertising

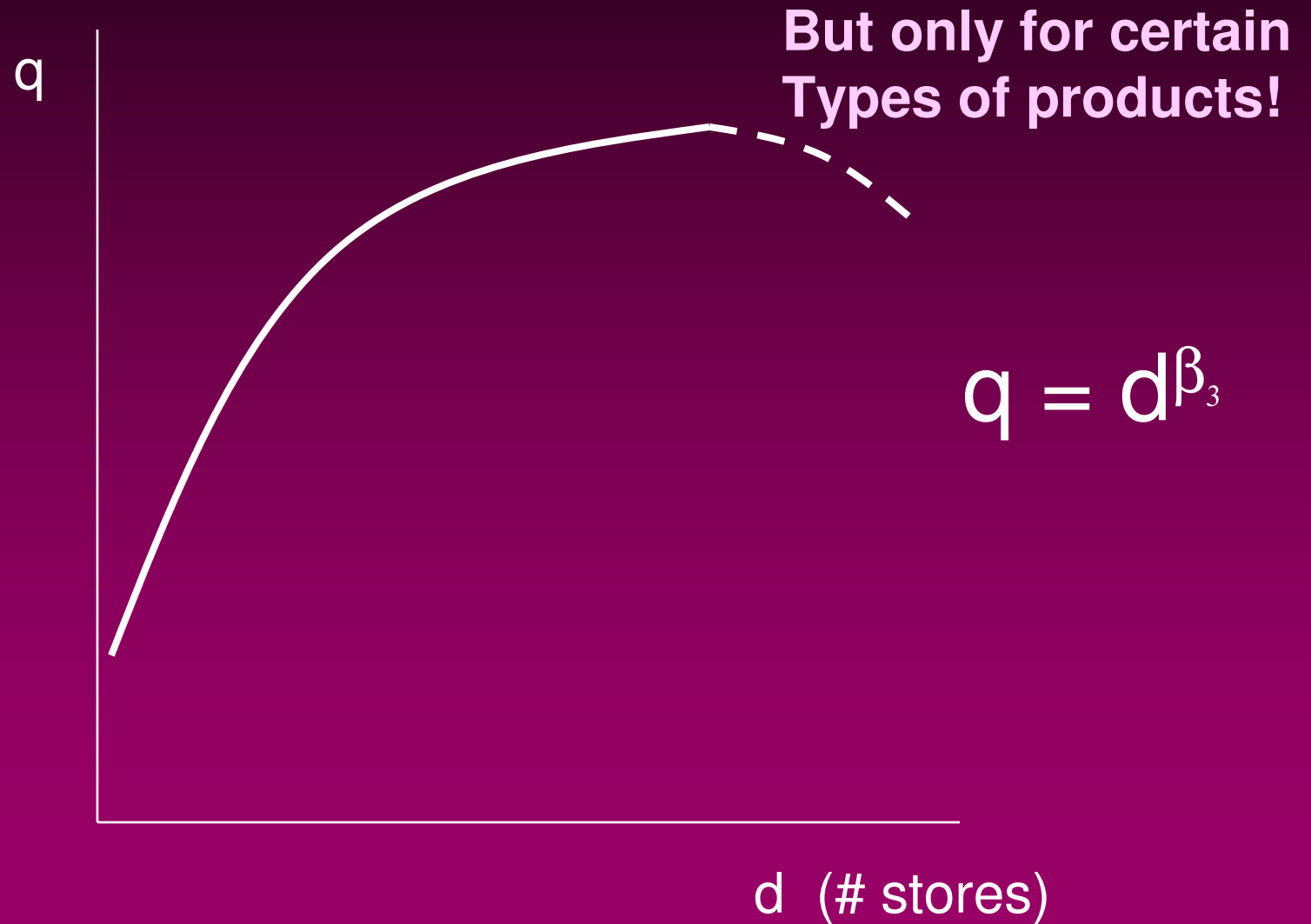


$$q = a^{\beta_2},$$

$$0 < \beta_2 < 1$$

a (\$ of advertising)

Distribution



Market Response Model with Three Decision Variables

$$q = p^{\beta_1} a^{\beta_2} d^{\beta_3}$$

For example:

$$q = p^{-1.5} a^{.10} d^{.45}$$

Optimal Decisions

You can solve the profit equation if it has the embedded *empirical* market response model.

$$a^* / p^*q = \beta_2 / \beta_1$$

This proves that there is an optimal advertising/sales ratio.

Result

- Forecasts based on plans
- Decisions based on market response and profit maximization
- Strategy dominating tactics

Companies Using Market Response Models

- Mary Kay Cosmetics
- Dell Computer
- Glaxo Wellcome
- Stouffer's
- Procter & Gamble
- Coca-Cola
- Wells Fargo Bank
- Hewlett-Packard
- Frito-Lay
- Polaroid
- Kraft Foods
- Miller Brewing

Modeling Approaches

- Mary Kay – forecast company sales
- Mostek – forecast industry sales
- United Airlines – forecast market share

Mary Kay Cosmetics

$$q = \beta_0 + \beta_1 RP + \beta_2 Rec + \beta_3 Prom + \beta_4 New + \beta_5 Prod + \beta_6 Disc$$

where RP = relative price

Rec = recruits

Prom = promotions

New = new products

Prod = producers

Disc = discounts

MARY KAY®

United Technologies Mostek

$$Q = -76.31 - 1.49 P + 12.27 \text{ GNP} \\ - .77 \text{ Prime}$$

where P = price

GNP = gross national product

Prime = prime rate

MOSTEK

United Airlines

$$MS = FS^{.95} AS^{.12}$$

where MS = market share

FS = frequency share

AS = advertising share



Internalize !

- Marketing mix effectiveness depends on positioning
- Marketing plans should come before sales forecasts
- Market response models are a way of implementing both of these ideas

