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# Lecture 15

Proliferation, rebranding & quality



Industrial  
Economics

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## Proliferation

- ★ In several industries firms enter with **more than one** brands / models / varieties
- ★ Toothpaste
  - Colgate whitening – total – fresh breath – tartar control – sensitive
- ★ Beverages
  - Coke – Sprite – Fanta – Zero – Diet coke
- ★ Candy
  - Mars – Bounty – Snickers – M&M's – Maltesers – Twix
- ★ Mobile
  - iPhone SE – 7 – 7 plus – 8 – 8 plus – X

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## Entrance in a proliferated market

Proliferation

- ★ Releasing an extra brand implies **sunk cost**  $f$
- ★ Once the brand is released, **rebranding** or **withdrawal** imply **prohibiting costs**
- ★ Let  $N$  brands are placed in the market price is  $p(N)$  and profit is  $\Pi(N)$
- ★ What if a new firm is interested in **placing a brand ex-post** in the **already proliferated** market?
- ★ We have **delayed entry**
  - ◆ After Salop's stage 1
  - ◆ Existing brands are **already scattered** along the market

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## Struggle for market space

Proliferation

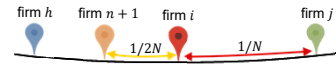
- ★ The new firm will have to **wedge** its brand **between** two existing brands

	Entrant	Neighbors	Others
Market Share	$1/2N$	$3/4N$	$1/N$
Profit	$\Pi(2N)$	$\Pi(2N)/2 + \Pi(N)/2$	$\Pi(N)$

- ★ Recall that in **stage 1**:  $\Pi(N^*) = f$

- ★ The entrant will **abort** iff

$$\Pi(2N) \leq f \Rightarrow \Pi(2N) \leq \Pi(N^*) \Rightarrow 2N \geq N^* \Rightarrow N \geq N^*/2$$



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## Blocking entry

Proliferation

- ★ The entrant will **abort** iff  $N \geq N^*/2$
- ★ If a firm proliferates even at 50% of total market capacity, entry is **blocked**
- ★ **Commitment** in brand placement (location) is required
- ★ Commitment is **credible** because of costs of withdrawal or rebranding
- ★ But, how serious are the **costs of rebranding or withdrawal?**

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## McRib (1981)

Proliferation Withdrawal

- ★ Introduced in 1981 after extensive testing following the successful debut of McNuggets in 1979
- ★ Sales remained **low** even after a persisting ad campaign the company decided to **withdraw it** from the market in 1985
- ★ Fans of the item **reacted vastly** to the withdrawal
- ★ In 1989 the company decided to **bring back** the McRib for unclear reasons
- ★ The product kept **underperforming** in 2005 it was **again removed**
- ★ **Reaction** was so vast that the company was forced to bring the product back as a **seasonal item**

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## Search for new products

- ★ Proliferation can be an attempt for **search** for new products  
companies want to **extend their coverage** on the preference space
- ★ In some cases the new brands may compete with the existing ones and create **internal competition**  
*example:* Fiat Coupé vs Alfa Romeo GTV
- ★ Again **cost** of withdrawal or **rebranding** will be an issue

## The New Coke case

- ★ In the early 80's Coca Cola was **losing ground** to Pepsi
  - ◆ **Share** in supermarkets was **declining** and profits were only due to **contracts** with restaurants and vending operators
  - ◆ **Product testing** was showing that consumers preferred the taste of Pepsi to that of Coke
- ★ Coca Cola prepared a **new formula** based on the extremely popular diet coke formula  
switching the aspartame with high fructose corn syrup
- ★ The "New Coke" **thrived** in product testing  
ranking above Pepsi and old Coke
- ★ Coca Cola decided to make the switch **public** and in 1985, New Coke hit the market replacing the old Coke

## Reaction

- ★ Initially sales **increased** over the previous formula
  - ◆ Most consumers stated that they **preferred** the new taste
  - ◆ However, an **angry vocal minority** started complaining and the **media** picked up the story
  - ◆ The "**Old Cola Drinkers of America Organization**" (!) was founded to **lobby** for the return of the old Coke
  - ◆ The **founder** was given a blind taste test in which picked the New Coke – Still sued CC for the switch
- ★ The public reaction made the company **release back** the old formula as "Coca Cola Classic" after just 3 months!
- ★ Soon, Coke Classic **out-saled** Pepsi and New Coke (!)

## Aftermath

- ★ In the next years New Coke **sales dropped** to 3% share and slowly was withdrawn from the market
- ★ No one was **fired** by Coca Cola for the fiasco
- ★ Analysts have come up with several **explanations**
  - ◆ The tests were **flawed** due to small testing portions
  - ◆ Coke was losing ground to Pepsi not because of **taste** but because of **advertisement**
  - ◆ Consumers appreciated the product more after the **fear of losing** it – final product = taste + brand
- ★ In later blind tests the New Coke **again** universally **outperformed** Pepsi and Classic Coke (!)

## Vertical differentiation

- ★ Assume now that products are **differentiated vertically**  
**everyone prefers** a particular product as long as price is not a factor
- ★ Vertical differentiation usually applies to **quality**
- ★ Usual modeling **assumptions**
  - ◆ Market with uniform **density**,  $S$
  - ◆ Consumers buying up to **1 unit** of the good
  - ◆ Consumer **income is uniformly distributed** between a lower and an upper bound
  - ◆ **Consumer utility** is increasing in quality, increasing in income, decreasing in expenditure for the good

## Shaked and Sutton (1982)

- ★ Stages:
  1. Entry decision with an entry fee,  $f$
  2. Choice of quality
  3. Bertrand competition
- ★ Results:
  - I. There exists a **minimum amount** of vertically differentiated brands,  $N_{min}$  that can survive **independently** of  $S$  or  $f$
  - II. Income **diversity** creates the need for differentiation -  $N_{min}$  increases with income spread
  - III. When  $N_{min} > 1$  firms **at equilibrium** adopt different qualities, charge different prices and have positive profits
- ★ Results assume that **MC does not vary** with quality

Vertical differentiation Adverse selection

### Adverse selection

- ★ Trade for one object of **quality**  $s$  between two parties
- ★ Seller
  - ◆ *Knows*  $s$
  - ◆ **Payoff**:  $p$  if trade occurs;  $\beta s$  otherwise
- ★ Buyer
  - ◆ *Knows that*  $s \in [0, \bar{s}]$
  - ◆ **Payoff**:  $\theta s - p$  if trade occurs; 0 otherwise
- ★ Both  $\beta, \theta$  are **common knowledge** and  $\beta \leq \theta$
- ★ The essence of the model is that asking price is taken as a **signal for quality** by the buyer.

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Vertical differentiation Adverse selection

### Market outcome

- ★ If asking price is set to  $p'$  the buyer **ought to assume** that
 
$$p' > \beta s \Rightarrow s < p'/\beta$$
- ★ The signal will make the **buyer perceive**  $E s = p'/2\beta$   
expected quality is **biased downwards** because of  $p'$
- ★ Trade **occurs** iff  $\theta \cdot E s - p' > 0 \Rightarrow \theta > 2\beta$
- ★ The market will fail unless traders' **tastes differ** significantly.

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Vertical differentiation Adverse selection

### Akerlof (1970)

- ★ Assume that **quality** can be
  - ◆  $s_H$  with probability  $\pi$  or
  - ◆  $s_L$  with probability  $1 - \pi$
- ★ If the object is  $s_H$ , trade **occurs** iff
 
$$p \in [\beta \cdot s_H, \theta(\pi \cdot s_H + (1 - \pi)s_L)] \equiv \mathbb{P}$$
- ★ If  $\beta = \theta \Rightarrow \mathbb{P} = \emptyset$   
market will **fail**
- ★ If  $\beta < \theta \Rightarrow \mathbb{P} = \emptyset$  if  $\beta$  is not sufficiently smaller than  $\theta$   
market will **fail unless** tastes are sufficiently different
- ★ In both cases trade would be **efficient** as  $\beta s_H \leq \theta s_H$ .

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Vertical differentiation Adverse selection

### Market of lemons

- ★ If the object is  $s_L$ , trade **occurs** iff
 
$$p \in [\beta \cdot s_L, \theta(\pi \cdot s_H + (1 - \pi)s_L)] \equiv \mathbb{L}$$
- ★  $\mathbb{L}$  is **never** an empty set for  $\beta \leq \theta$   
the market of lemons will **never fail**
- ★ The failure occurs because of the **info asymmetry**
- ★ If both parties are **equally uninformed**, trade occurs iff
 
$$p \in [\beta(\pi \cdot s_H + (1 - \pi)s_L), \theta(\pi \cdot s_H + (1 - \pi)s_L)]$$
 which is never an empty set for  $\beta \leq \theta$ .

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Vertical differentiation

### Moral hazard

- ★ Seller
  - ◆ **Sets quality** at a **cost**,  $c$ :  $c_L$  for  $s_L$ ;  $c_H$  for  $s_H$  ( $0 \leq c_L < c_H$ )
  - ◆ **Payoff**:  $p - c$  if trade occurs; 0 otherwise
- ★ Buyer
  - ◆ *Ignores*  $s$  prior to the transaction
  - ◆ **Payoff**:  $\theta s - p$  if trade occurs; 0 otherwise
- ★ Trade is **efficient**  $\forall s \in \{s_L, s_H\} : \theta s_L > c_L$  and  $\theta s_H > c_H$
- ★ The seller always wants to **cut costs** to  $c_L$  by setting  $s_L$   
this does **not decrease** the ignorant buyer's **demand**
- ★ **Failure**: possible to increase total surplus by setting  $s_H$ .

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Vertical differentiation Moral hazard

### Experience goods

- ★ Assume now that a **fraction**  $\alpha$  of buyers **know**  $s$   
perhaps because they **have used** the product before
- ★ Informed consumers **buy only** if  $s = s_H$
- ★ Seller's **payoff** is:  $(1 - \alpha)(p - c_L)$  for  $s_L$ ;  $p - c_H$  for  $s_H$
- ★ Seller will **select**  $s_H$  iff
 
$$p - c_H \geq (1 - \alpha)(p - c_L) \Rightarrow p \geq [c_H - (1 - \alpha)c_L] \cdot \alpha^{-1}$$
  - ◆ What if the above condition **does not hold**?
  - ◆ High price **signals** high quality
  - ◆  $\alpha$  constitutes the product an **experience good** – higher  $\alpha$  increases the likelihood for the seller to select  $s_H$
  - ◆ No case of **strategic pricing** – ignorant buyers buy anyway.

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Thank you!



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