Strategies to Fight Ad-sponsored Rivals

Ramon Casadesus-Masanell
Feng Zhu
Plan for the talk

• Motivation & fit in broader agenda

• Model
  ➔ Monopoly benchmark
  ➔ Duopoly

• Discussion
  ➔ Strategy vs. business model vs. tactics
  ➔ Managerial implications
  ➔ Extensions
Motivation
The phenomenon

- Ad-sponsored business models increasingly widespread
Bush: this was horrible
President accepts mistakes but offers no apology for prisoner abuse

WASHINGTON — A day after firing Secretary of Defense Donald Rumsfeld, President Bush said on Thursday that he was not surprised by the fallout from his decision to fire the veteran defense chief, but he would accept no responsibility for the controversy.

Bush said he was consummating a decision he had been considering for weeks. The White House insisted that Bush was not surprised by the controversy surrounding Rumsfeld, who was dismissed on Wednesday after a string of high-profile security lapses.

The decision to fire Rumsfeld came days after the U.S. military was caught off guard by a truck bomb at a base in Ramadi, Iraq, killing at least 16 American soldiers.

Bush said the abuses were "unprecedented," but added that he had not received any information that would lead him to believe that the White House was aware of the Abu Ghraib prison abuse.

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Free paper cups for office coffee drinkers
THE ALL BY STUDENTS NOTEBOOK
### TRAVEL MAY-JUNE!

**BOOK UNTIL MIDNIGHT 07.05.09!**

Click here for more departing airports

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Motivation
The phenomenon

- Incumbents have taken a variety of approaches to fight the free ad-sponsored entrants

  - In October 2005, **Edipresse** launched a free daily newspaper (*Le Matin Bleu*) in Switzerland. **Boston Globe** bought 49% stake in Metro Boston in 2006 (product line extension)

  - **British Airways** and **Aer Lingus** lowered their fares to compete against Ryanair (tactical price changes)

  - **BA** launched *Go* to compete against Ryanair. **Continental** launched *Continental Light* to compete against Southwest (product line extension)

  - **Apple iTunes** has not reacted to the entry of Imeem, Grooveshark, Deezer... (no change in strategy nor tactics)

  - **Metro Spain** did not change business model after the entry of other free newspapers (such as *Que!*) but there were some tactical changes
Motivation
The phenomenon

- Some responses have been successful, while others have failed

  - **Apple iTunes** has been clearly successful

  - **Edipresse**’s *Le Matin Bleu* and *20 Minutes* have announced a merger

  - The intense competition amongst free newspapers killed **Metro Spain**

  - **Ryanair** attempted to take over Aer Lingus in 2008

  - **Go** was a disaster. BA’s CEO was ousted partly due to the debacle

- Not easy to see what the best response is. We may make some progress through the analysis of a formal model
Motivation

The question

How should incumbents react to the entry of ad-sponsored rivals?
The Model

A framework
The model
Setup

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta q_h \]

\( q_h \): Exogenous quality
\( \theta \): Individual
The model
Business models

• We consider four different business models

1. **Subscription-based**: sell product at positive price

2. **Ad-sponsored**: give product away but show ads

3. **Mixed**: sell product at positive price and show ads

4. **Dual**: sell a high-quality version of the product with a few ads and a low-quality version that is ad-sponsored
The model
Business models

• We consider four different business models

1. **Subscription-based**: most “traditional” products, HBO, iTunes, Dell...

2. **Ad-sponsored**: Metro, Free-pc, Imeem, FreePaperCups, Blyk...

3. **Mixed**: Traditional newspapers, Ryanair, Magazines...

4. **Dual**: last.fm, Recoletos, Flickr, Match.com
The model
Subscription-based model

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta q_h \]

$q_h$ : Exogenous quality
$\theta$ : Individual

0 $\rightarrow$ $\theta$
0 $\rightarrow$ $q_h$

$\rightarrow$ $\uparrow$

$\rightarrow$ $\uparrow$
The model
Subscription-based model

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta q_h - p_h \]

\( q_h \): Exogenous quality
\( \theta \): Individual
The model
Subscription-based model

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta q_h - p_h \]

\[ \pi^s = (1 - \theta^*) p_h \]

$q_h$: Exogenous quality

$\theta$: Individual
The model
Ad-sponsored model

- There is a distribution of willingnesses to pay for the product:

$q_h$: Exogenous quality
$\theta$: Individual

$U(\theta) = \theta q_h$
The model
Ad-sponsored model

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) \]

\( q_h \): Exogenous quality
\( \theta \): Individual
\( A_h \): Number of ads
\( \beta \): Irritation factor
There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) \]

- \( q_h \): Exogenous quality
- \( \theta \): Individual
- \( A_h \): Number of ads
- \( \beta \): Irritation factor
- \( \alpha \): Advertising rate

\[ \pi^A = \alpha A_h \]
The model
Mixed

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta q_h \]

\( q_h \): Exogenous quality
\( \theta \): Individual
The model
Mixed

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) - p_h \]

\( q_h \): Exogenous quality
\( \theta \): Individual
\( A_h \): Number of ads
\( \beta \): Irritation factor

Diagram:
- Axes: \$ on the vertical axis and \( \theta \) on the horizontal axis.
- Line from \( 0 \) to \( \theta \) with the equation \( U(\theta) = \theta(q_h - \beta A_h^2) - p_h \).
The model
Mixed

- There is a distribution of willingnesses to pay for the product:

$$U(\theta) = \theta(q_h - \beta A_h^2) - p_h$$

$q_h$: Exogenous quality
$\theta$: Individual
$A_h$: Number of ads
$\beta$: Irritation factor
The model
Mixed

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) - p_h \]

\[ \pi^{MS} = (1 - \theta^*)\left(p_h + \alpha A_h\right) - f \]

\( q_h \): Exogenous quality
\( \theta \): Individual
\( A_h \): Number of ads
\( \beta \): Irritation factor
\( f \): Extra fixed cost from mixed model
The model
Dual

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta q_h \]

- \( q_h \): Exogenous quality
- \( \theta \): Individual
The model
Dual

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h'^2) \]

\( q_h \) : Exogenous quality
\( \theta \) : Individual
\( A_h' \) : Number of ads
The model

Dual

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) \]

$q_h$: Exogenous quality
$\theta$: Individual
$A_h'$: Number of ads

\[ q_h - \beta A_h^2 - p_h \]
The model
Dual

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) \]

\( q_h \): Exogenous quality
\( \theta \): Individual
\( A'_h \): Number of ads
\( A_h \): Number of ads
\( \beta \): Irritation factor
The model
Dual

- There is a distribution of willingnesses to pay for the product:

\[ U(\theta) = \theta(q_h - \beta A_h^2) \]

\[ \pi^{ME} = (1 - \theta^*)(p_h + \alpha A_h) + \theta^* \alpha A_h' - f \]

$q_h$: Exogenous quality
$\theta$: Individual
$A_h'$: Number of ads
$A_h$: Number of ads
$\beta$: Irritation factor
$\alpha$: Advertising rate
$f$: Extra fixed cost from mixed model
Solving the model

- **Monopoly**: Benchmark with one single firm that we compare to the duopoly
  - The firm first chooses business model through which to compete
  - Once the business model is in place, tactical choices are made

- **Duopoly**: An ad-sponsored rival enters. What business model should be used by the incumbent?
  - The incumbent firm chooses business model through which to compete
  - Once the business model is in place, tactical choices are made by *both* firms
Monopoly

The benchmark
Solving the model
Monopoly tactics

\[ q_h - p_h = \theta^* = \frac{1}{2} \]

Subscription-based
Solving the model
Monopoly tactics

\[ \theta^* = \frac{1}{2} \]

Subscription-based

\[ q_h - p_h \]

Ad-sponsored

\[ q_h - \beta A_h^2 \]
Solving the model
Monopoly tactics

\[ q_h - p_h = \theta^* = \frac{1}{2} \]

Subscription-based

\[ q_h - \beta A_h^2 \]

Ad-sponsored

\[ q_h - \beta A_h^2 - p_h \]

Mixed
Solving the model
Monopoly tactics

\[ q_h - p_h = \frac{1}{2} \theta^* \]

Subscription-based

\[ q_h - \beta A_h^2 = \frac{1}{2} \theta^* \]

Ad-sponsored

\[ q_h - \beta A_h^2 - p_h = \frac{1}{2} \theta^* \]

Mixed

\[ q_h - \beta A_h^2 - p_h = \frac{1}{2} \theta^* \]

Dual
Solving the model
Monopoly strategy

• Which business model is best?
Solving the model
Monopoly strategy

• Which business model is best?

Subscription-based

\[ q_h - p_h \]

\[ \theta^* = \frac{1}{2} \]

Ad-sponsored

\[ q_h - \beta A_h^2 \]

\[ \theta^* \]

Mixed

\[ q_h - \beta A_h^2 - p_h \]

\[ \theta^* < \frac{1}{2} \]

Dual

\[ q_h - \beta A_h^2 - p_h \]

\[ \theta^* < \frac{1}{2} \]
Solving the model
Monopoly strategy

• Which business model is best?

Extra cost of running a mixed business model
OBAMA
RACIAL BARRIER FALLS IN DECISIVE VICTORY

Democrats in Congress Strengthen Grip

Senator Barack Obama presides over a meeting in Washington, D.C., on November 5, 2008.

Duopoly
Competing through business models
Solving the model
Duopoly tactics

Diagram:
- Axes: $x$-axis for $q_h - p_h$, $y$-axis for $\theta$
- Points: 0, $\theta^*$, $\theta$
- Line: $q_h - p_h$
- Labels: Subscription-based
Solving the model
Duopoly tactics

\[ q_h - p_h \]

\[ q_l - \beta A_i^2 \]
Solving the model
Duopoly tactics

\[ q_h - p_h \]

\[ q_l - \beta A_l^2 \]

Subscription-based
Solving the model
Duopoly tactics

\[ \theta^* - q_h - p_h \]
\[ q_l - \beta A_i^2 \]

Subscription-based
Solving the model
Duopoly tactics

Subscription-based

Ad-sponsored

$q_h - p_h$

$q_l - \beta A^2$

$0$

$\theta^*$

$\theta$

$0$

$q_h - \beta A^2$

$\theta$
Solving the model
Duopoly tactics

Subscription-based

\[ q_h - p_h \]
\[ q_l - \beta A_i^2 \]

\[ \theta^* \]

\[ \theta \]

Ad-sponsored

\[ q_l - \beta A_i^2 \]
\[ q_h - \beta A_h^2 \]
Solving the model
Duopoly tactics

\[ q_h - p_h \]
\[ q_l - \beta A^2_i \]

Subscription-based

\[ q_l - \beta A^2_i \quad q_h - \beta A^2_h \]

Ad-sponsored
Solving the model
Duopoly tactics

$\theta^*$

Subscription-based

$\theta$

Ad-sponsored
Solving the model
Duopoly tactics

Subscription-based

Ad-sponsored
Solving the model
Duopoly tactics

Subscription-based

Ad-sponsored

\[
q_h - p_h = \theta\]

\[
q_l - \beta A_l^2 = \theta
\]

\[
q_l - \beta \times 0 q_h - \beta A_h^2
\]
Solving the model
Duopoly tactics

\[ \begin{align*}
\theta & = q_h - p_h \\
q_l & = q_h - \beta A_h^2
\end{align*} \]

Subscription-based

Ad-sponsored
Solving the model
Duopoly tactics

$\theta^*$

Subscription-based

$\theta^*$

Mixed

$\theta^*$

Ad-sponsored
Solving the model
Duopoly tactics

\[ q_h - p_h \]
\[ q_l - \beta A_i^2 \]

Subscription-based

\[ q_l = q_h - \beta A_h^2 \]

Ad-sponsored

Mixed
Solving the model
Duopoly tactics

$0$

$\theta^*$

$q_h - p_h$

$q_l - \beta A_h^2$

Subscription-based

$0$

$q_l = q_h - \beta A_h^2$

Ad-sponsored

$0$

$q_h - \beta A_h^2 - p_h$

$q_l - \beta A_l^2$

Mixed
Solving the model
Duopoly tactics

Subscription-based

\[ q_h - p_h = q_l - \beta A_h^2 \]

Ad-sponsored

\[ q_l = q_h - \beta A_h^2 \]

Mixed

\[ q_h - \beta A_h^2 - p_h = q_l - \beta A_l^2 \]
Solving the model
Duopoly tactics

Subscription-based

\[ q_h - p_h \]

\[ q_l - \beta A_h^2 \]

Mixed

\[ q_h - \beta A_h^2 - p_h \]

\[ q_l - \beta A_l^2 \]
Solving the model
Duopoly tactics

\[ q_h - p_h \]

Subscription-based

\[ q_l - \beta A_h^2 \]

Ad-sponsored

\[ q_h - \beta A_h^2 - p_h \]

Mixed

\[ q_l - \beta A_i^2 \]

Dual

\[ q_l = q_h - \beta A_h^2 \]
Solving the model
Duopoly tactics

$\theta^*$

Subscription-based

$\theta$

$q_h - p_h$

$q_l - \beta A_h^2$

Mixed

$\theta^*$

$q_h - \beta A_h^2 - p_h$

$q_l - \beta A_i^2$

Ad-sponsored

$\theta$

$q_l = q_h - \beta A_h^2$

Dual

$\theta^*$

$q_h - \beta A_h^2 - p_h$

$q_l - \beta A_i^2$

$q_h - \beta A_h^2$
Solving the model
Duopoly tactics

\[ q_h - p_h = q_h - \beta A_h^2 \]

Subscription-based

\[ q_l - \beta A_i^2 \]

\[ q_l = q_h - \beta A_h^2 \]

Ad-sponsored

\[ q_h - \beta A_h^2 - p_h \]

Mixed

\[ q_l = q_h - \beta A_h^2 \]

Dual
Solving the model
Duopoly tactics

Subscription-based

Ad-sponsored

Mixed

Dual
Solving the model
Duopoly strategy when entrant’s quality is “reasonable”

- Which business model is best when \( q_h < 2 q_l \)?
Solving the model
Duopoly strategy when entrant’s quality is “poor”

• Which business model is best when $q_h >> 2 q_l$?
Solving the model
Duopoly strategy

• Putting both plots together, we see the following \( (case \, q_h \gg 2 \, q_i) \)
Solving the model
Duopoly strategy

• Putting both plots together, we see the following (case $q_h >> 2 q_i$)
Managerial implications

A two-by-two framework
Strategy implications: A simple two-by-two

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Strategy implications: A simple two-by-two
Monopoly

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- **Low**
  - Dual
  - Subdivision
- **High**
  - Ad-sponsored
  - Dual
Strategy implications: A simple two-by-two Duopoly strategy when entrant’s quality is “reasonable”

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Strategy implications: A simple two-by-two Duopoly strategy when entrant’s quality is “poor”

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Advertising rate/Irritation
Strategy implications: A simple two-by-two Monopoly-duopoly comparison

- Advertising rate/Irritation:
  - Low
  - High

- Extra cost of running mixed model:
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  - Low

- Models:
  - Subscription-based
  - Ad-sponsored
  - Dual
  - Mixed

- Extra cost of running mixed model:
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Strategy implications: A simple two-by-two

Some examples

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- **High**
  - iPod
  - Metro

- **Low**
  - British Airways
  - Pandora
Strategy implications: A simple two-by-two

Some examples

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Optimal tactics - Incumbent’s viewpoint

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Tactical implications: A simple two-by-two
From the entrant’s viewpoint

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Likelihood of success
Tactical implications: A simple two-by-two
From the entrant’s viewpoint

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Attractive market
Extensions

What else could we do?
Extensions

• Higher quality ad-sponsored rivals

• Richer advertiser side

• Multiple entrants

• Fondness for advertising

• Reputation effects

• Multi-homing

• Horizontal differentiation
Parting thoughts

Conclusion
Concluding thoughts

• An interesting instance of competition through business models. Our general approach to modeling business model competition can be applied to many other competitive situations

• Formal model helps us provide transparent definitions for strategy, business model, and tactics. Can bring together Porterian view to competitive dynamics view (game theory)

• While theoretic in nature, our work has clear empirical implications

• Our approach is one possible way (of many available) to provide foundations to managerial frameworks
Thank you!