Lecture 10: Industry Analysis

Industry analysis is the use of industrial organization economics to assess industry and firm performance.

- We just covered game theory and some basic IO models, so now you have the tools.

Michael Porter’s Five Forces.

- Pioneered the use of IO tools to analyze performance.
- Somewhat incomplete in that it treats one’s related parties (customers, suppliers, competitors, etc.) as universally harming one’s own performance.

Adam Brandenburger and Barry Nalebuff’s Value Net.

- Some related parties might actually enhance profits.
Porter’s Five Forces

Entry

Supplier Power

Internal Rivalry

Buyer Power

Substitutes/Complements

- You have seen this before...what do you think of it?
Internal Rivalry

- How many firms are there in the market? More is usually worse.
  - What is the market? Do firms compete in multiple markets?
  - Is a market geographical, like ready-mix cement or hotels?
  - Include all firms that constrain each other’s strategic decision-making. What is the level of strategic interdependence?

- Is demand expanding or declining?
  - Is ”A” from the Cournot model growing or shrinking?
  - In declining industries, the only way to expand is to grab market share.

- Is there excess capacity?
  - If so, expect price wars.
Internal Rivalry

- Are products close substitutes?
  - How are products differentiated?
  - Is ”c,” from the Hotelling model, large?

- Are there switching costs?
  - Do firms have profitable strategies for locking in customers that are available?

- Is there a history of price leadership or other “facilitating practices?”
  - Is tacit cooperation possible?

- Are there strong barriers to exit?
Entry

- Entry divides up demand among more sellers.
- Entry intensifies internal rivalry.
- This is most evident in the Cournot model. With 2 firms, if \( A = b = 1 \) and \( C = 0 \), the equilibrium price and output per firm is \( \frac{1}{3} \), so profit is \( \frac{1}{9} \).
- With a third firm, if price stayed at \( \frac{1}{3} \) and the 3 firms split the output, each firm would produce \( \frac{2}{9} \) and earn profit \( \frac{2}{27} \). But because they compete more fiercely, price falls to \( \frac{1}{4} \) and each firm earns profit of only \( \frac{1}{16} \).
Are Entry Costs High?

- Are fixed costs of entry high?
- Are scale economies significant?
- Are incumbent firms protected by regulation?
- Do early entrants face less severe fixed costs than later entrants?
- Are there network externalities?
- How have incumbents historically responded to entry?
  - This is very important if there are just 1-2 incumbents.
Substitutes and Complements

- Are products differentiated? How?
  - Differentiation is a good thing.

- Are substitutes priced high?
  - Infant formula? No.
  - High-priced substitutes are less of a threat.

- Are complements priced low?
  - Nintendo NES? Yes.
  - Entry as a game developer looks more promising.
Supplier Power

- How concentrated is the group of suppliers?
  - If supply is competitive, that’s good, though there’s still risk of price fluctuation.
  - If supply is monopolistic, that’s bad. Hold-up problems are an issue.

- Threats of forward integration by suppliers.
  - Recall the NBCU-Comcast discussion.
  - Forward integration could lead to a foreclosed market or higher prices.

- Can suppliers price discriminate?
  - If so, more profitable firms might face higher prices.
Buyer Power

- How concentrated is the group of buyers?
  - If demand is competitive, that’s good, though there’s still risk of price fluctuation.
  - If demand is monopolistic, that’s bad. Hold-up problems are an issue.

- Threats of backward integration by customers.

- Is it possible to price discriminate among consumers?
  - If so, profits may be higher.
This looks somewhat like a Porter analysis, but with the added category of **Complementors**.

It also reveals a certain amount of symmetry in relationships, how competitors compete with both customers and suppliers.
Another firm is a complementor if customers have a higher value for your product when they also have that player’s product.

- Oscar Mayer and Coleman’s.

In contrast, another firm is a competitor if customers have a lower value for your product when they also have that player’s product.

- Coke and Pepsi.

These terms also apply to relationships with suppliers.

- Firms can be both competitors and complementors, to some extent. American and Delta compete for landing slots, but aircraft manufacturers like Boeing and Airbus are more inclined to invest in new plane technology when there’s a second big buyer.
Porter’s Five Forces includes an important weakness. It views all other firms as threats to profitability. This need not be the case.

- Competitors who help set technology standards (3G or 4G mobile broadband) may facilitate overall growth.
- Competitors who advocate for favorable regulatory changes, like lowered trade barriers, may also help growth.
- Complementary efforts to improve product quality, à la Nintendo, stimulates overall demand for games and systems.

The Value Net assesses *opportunity* as opposed to threats.

- My profit from the Value Net is approximately the surplus in the Value Net with me there minus the surplus with me not there.
**DVD hardware in 1997-98: Five Forces**

- **Internal Rivalry:** Fairly homogeneous products, some differentiation by brand.
- **Entry:** Modest technological and capital hurdles. Many consumer electronics producers had the required know-how.
- **Substitutes and Complements:** Satellite TV and streaming internet video are emerging threats.
- **Supplier Power:** Movie studios and top producers were quite powerful. Given Circuit City’s alternative DIVX format, these players could demand high prices.
- **Buyer Power:** Best Buy and Circuit City were dominant distributors, could have demanded high margins to promote the DVD format.

Given these threats, does it look promising?
### DVD hardware in 1997-98: Five Forces

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The scope for adding value was huge. This was a new, superior technology for video of all kinds.

Manufacturers of DVD players could have set low prices to boost demand. They did not do this at first, and instead focused on profiting from early adopters. They did do this in the second year.

Best Buy set rock-bottom prices to promote the technology.

With lower hardware prices, movie studios cut prices on classic films and accelerated the release of new films.

The size of the pie grew fast, even as some firms such as Best Buy took short-term losses.
Aspartame

- Aspartame ("Equal," "NutraSweet") was a breakthrough sweetener in the early 1980s.
- It is 180 times sweeter than sugar and did not carry the public health fear associated with saccharine.
- It was pioneered by G.D. Searle and Co. in the 1960s, and got FDA approval in 1981 (packets) and 1983 (in soft drinks).
- Monsanto bought Searle in 1985 and had a monopoly position, secured by patents through 1987 in Europe and through 1992 in the US.
In 1986, Holland Sweetener began constructing a plant in The Netherlands, to compete with Monsanto.

Making aspartame is complicated, so there are severe learning-curve effects and barriers to entry.

When Monsanto’s European patent expired in 1987, Holland entered. A price war followed. The price of aspartame fell from $70 per pound to $22-30 per pound.

Holland operated at higher costs (due to the learning curve) and, to survive had to appeal to European courts to impose “antidumping” duties on Monsanto.
Holland Sweetener in the US

Here, the value net illustrates how Coke and Pepsi might be able to play Nutrasweet vs. Holland Sweetener.

How is Holland Sweetener adding value?
Holland Sweetener in the US

- In 1992, Holland Sweetener could enter the US market.
- Just prior to this, Coke and Pepsi both signed new long-term contracts with Monsanto.
- The new contracts yielded Coke and Pepsi a combined savings of $200 million per year.
- Holland Sweetener was shut out. Why?
Holland Sweetener and added value

- Holland Sweetener didn’t really add any value when it came to selling aspartame.
- They did add value for Coke and Pepsi, however.
- They did this by reducing the added value of Nutrasweet.
Holland Sweetener’s US entry post-mortem

- Neither Coke nor Pepsi wanted to use generic aspartame.
  - The disastrous 1985 New Coke launch was a recent event...why risk something like that by removing the Nutrasweet logo from the can?
  - If the other firm switched, would you use that against them?
- Monsanto invested heavily in the Nutrasweet brand.
  - They lowered prices to manufacturers using 100 percent Nutrasweet and using the logo.
- Monsanto had reduced costs by 70 percent since it first launched Nutrasweet.
- “Monsanto appears to have followed the biblical lesson: use the seven years of plenty to prepare for the seven years of famine,” -Brandenburger and Nalebuff, Coopetition, p. 75