



Judo Economics

Teaching Note

Synopsis The early 1990s saw a new wave of start-ups in the U.S. airline business. One entrant, Kiwi International Air Lines, took to the skies in September 1992 with a strategy of attracting small-business travelers looking to save money but lacking the flexibility to book in advance. Fares were to be pegged to the lowest restricted fares in the market, but offered on an unrestricted basis. Another setting in which entrants have recently sought to capture market share from large established players is the U.S. credit card industry. In the early 1990s, the industry witnessed an onslaught of new players wooing customers with offers of low interest rates and small or nonexistent fees. This case explores some aspects of the game between small-scale entrants and large-scale incumbents.

Purpose The case can be used to examine how, by targeting only a fraction of the market and charging a low price, an entrant can make money even when it has zero added value. Analysis indicates that the effectiveness of this “judo” strategy depends on the presence of an underlying rule of the marketplace (“one-price-to-all”). Tactics also matter: The entrant needs to create the belief in the incumbent’s mind that it will remain small. Scope also matters: The incumbent may fight today to regain the market tomorrow, or to deter future potential entrants.

Assignment

1. Suppose that: (a) each buyer has a willingness-to-pay of \$200 for one unit of either the incumbent’s or the entrant’s product; and (b) both incumbent and entrant have a \$100 unit cost of serving buyers. Formulate a strategy for the entrant. How much money can the entrant make?

This note was prepared by Professor Adam M. Brandenburger for the sole purpose of aiding classroom instructors in the use of “Judo Economics” (794-103). It provides analysis and questions that are intended to present alternative approaches to deepening students’ comprehension of business issues and energizing classroom discussion.

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2. Now suppose that: (a) each buyer has a willingness-to-pay of \$200 for one unit of the incumbent's product and \$160 for one unit of the entrant's product; and (b) the incumbent has a \$100 unit cost and the entrant a \$120 unit cost. Formulate a new strategy for the entrant. How much money can the entrant now make?

3. Finally, suppose that: (a) each buyer has a willingness-to-pay of \$200 for one unit of either the incumbent's or the entrant's product; and (b) the incumbent has a \$120 unit cost and the entrant an \$80 unit cost. Formulate a new strategy for the entrant. How much money can the entrant make this time?

4. How much value does the entrant add in each of the games described in 1., 2., and 3. above? How does the amount of value that the entrant adds in each game compare with the amount of money it can make in the game? Explain the differences (if any) between the two quantities.

Introduction

The case describes a common game in business. There is an incumbent player that currently owns a certain market. And there is a challenger hoping to capture part of the market for itself.

The case describes two such situations:

- Kiwi's entry into the airline business against the major carriers
- Specialist entry into the U.S. credit card industry against Citicorp, Chase, etc.

There are many other examples, including:

- MCI's entry into the long-distance phone business against AT&T
- Liberty Cable's entry into the Manhattan cable TV market against Time Warner Cable

Analysis

Let's turn to the game laid out in the case. . . .

Question 1

Q: For the situation described in Question 1, what's a good strategy for the entrant?

The entrant must first decide whether or not to enter the market. If it does enter, it must then decide on how many buyers to target and on a price at which to offer its product to the buyers it is targeting. We know that the incumbent will respond with a price of its own.

The answer to the question of whether or not the entrant should enter is found by applying the Game Theory principle, "Look Forward, Reason Backward."

So suppose the entrant has indeed entered, targeted N buyers, and selected a price of $\$p$. Let's put ourselves in the shoes of the incumbent.

The operative choices for the incumbent come down to:

- a. Give up N buyers to the entrant and charge a price of $\$200$ (minus a small amount) to the remaining $(100 - N)$ buyers.
- b. Undercut the entrant by charging a price of $\$p$ minus a small amount and sell to all 100 buyers.

[It is clear that if the incumbent prices above the entrant, it might as well price all the way up to $\$200$. While undercutting the entrant by a small amount gains it the whole market, so there is no point in pricing any lower than this.]

Call the two choices "Accommodate" and "Fight," respectively. The incumbent's contributions from the two choices are, respectively:

$$\text{Accommodate: } \$(200 - 100) \times (100 - N)$$

$$\text{Fight: } \$(p - 100) \times 100$$

From the entrant's perspective, it will only earn contribution towards the fixed cost of entry if the incumbent makes the first choice. So the entrant should consider pairs (N, p) such that:

$$(200 - 100) \times (100 - N) \geq (p - 100) \times 100,$$

or

$$p \leq 200 - N.$$

Algebraically, the entrant's post-entry decision problem is thus to choose N and p to solve:

$$\text{MAX } (p - 100) \times N$$

$$\text{ST } p \leq 200 - N.$$

This is readily seen in a diagram (refer to **Figure 1**). The upshot is that conditional on having entered, the entrant should target 50 buyers and charge a price of $\$150$. This yields the entrant a contribution of $\$(150 - 100) \times 50 = \$2,500$. Since the entrant incurs only a nominal entry cost, it should indeed enter.

[Check: By accommodating, the incumbent earns $\$(200 - 100) \times 50 = \$5,000$. By undercutting, the incumbent earns $\$(150 - 100) \times 100 = \$5,000$.

An alternative calculation is illuminating: What are the incumbent's gains and losses when it lowers prices from $\$200$ to $\$150$ in order to squeeze the entrant out? It gains 50 customers at a margin of $\$(150 - 100) = \50 . And it loses revenue of $\$(200 - 150) = \50 per customer on its existing base of 50 customers.]

So much for the arithmetic of the entrant's decision. Let's now step back and try to understand the game in more fundamental terms.

Q: How much value does the entrant add to the game?

Intuitively, the answer is that the entrant adds no value to the game:

- a. It commands the same willingness-to-pay from buyers as does the incumbent. That is, it doesn't bring a better mousetrap.
- b. It has the same costs of serving buyers as does the incumbent. That is, it doesn't bring any efficiency gains.
- c. The incumbent has sufficient capacity to serve everyone, so the entrant isn't filling in a shortfall.

Indeed, since there is a fixed cost of entry, you might argue that in entering the game, the entrant actually destroys some value.

[A common view is that the entrant does bring something to the game, specifically that it "adds value to the buyers." Ask: How does it do this? The answer is through lower prices. Point out that this is a rearrangement of the pie—not a change in the size of the pie.]

With this in mind . . .

Q: Isn't it a bit odd that the entrant can make money in the game if it adds no value?

Yes it is. The resolution is that in the game there is a specific structure to negotiations between sellers and buyers. It is not quite the free market. There is some sand in the machine, if you like.

Specifically, there is a rule of the marketplace in effect: The incumbent must quote the same price to all buyers ("one-price-to-all").

To see the effect of this rule, suppose instead that the incumbent could quote different prices to different buyers. The incumbent could then undercut any price the entrant offered to a subset of the buyers, without cutting into its revenues from its captive buyers ("selective matching"). And the entrant would then be unable to make any money.

[In the present case, the incumbent would offer buyers #1 through #50 a price of \$150 minus a small amount, yielding it profits of (a little less than):

$$\$[(150 - 100) \times 50 + (200 - 100) \times 50] = \$7,500.$$

Realizing this, the entrant might of course try a lower price in the first place. But this won't help. The incumbent will always undercut the entrant to secure the contested buyers.]

This fits with the fact that the entrant has no added value. The presence of a rule is critical if the entrant is to make money.

Of course, the rule can be very real: In some markets, all contracts are negotiated. If someone tries to take away 50 of your customers, you can go to those 50 customers and get them back without lowering the price to everyone else. But in other cases, prices are posted, not negotiated. In that case, you cannot lower price selectively.

Question 2

Now let's turn to an even more stark situation, as described in Question 2. Here, the entrant's lack of added value is even more pronounced, so to speak. It both commands a lower willingness-to-pay than does the incumbent, and has higher costs.

Q: What's a good strategy for the entrant now?

As before, assume that the entrant has entered, targeted N buyers, and selected a price of $\$p$. This time, the operative choices for the incumbent come down to:

- a. (Accommodate) Give up N buyers to the entrant and charge a price of $\$200$ (minus a small amount) to the remaining $(100 - N)$ buyers.
- b. (Fight) Charge a price of $\$(p + 40)$ minus a small amount and sell to all 100 buyers.

Notice that this time, the incumbent does not need to undercut the entrant to capture the whole market. Since it commands a willingness-to-pay $\$40$ higher than does the entrant, the incumbent need only lower its price to within $\$40$ of the entrant's price to attract all the buyers.

The incumbent's contributions from the two choices are, respectively:

$$\text{Accommodate: } \$(200 - 100) \times (100 - N)$$

$$\text{Fight: } \$(p + 40 - 100) \times 100$$

Following the earlier argument, the entrant should focus on pairs (K, p) such that:

$$(200 - 100) \times (100 - N) \geq (p + 40 - 100) \times 100,$$

or

$$p \leq 160 - N.$$

The entrant's post-entry decision problem is thus to choose N and p to solve:

$$\text{MAX } (p - 120) \times N$$

$$\text{ST } p \leq 160 - N.$$

Again, a diagram is helpful (refer to **Figure 2**). Evidently, conditional on having entered the entrant should target 20 buyers and charge a price of $\$140$. This yields the entrant a contribution of $\$(140 - 120) \times 20 = \400 . (And the entrant should indeed enter.)

The smaller number of buyers targeted and lower price here are very intuitive, given the entrant's greater disadvantage as compared with the situation in Question 1.

Q: How much value does the entrant add to the game this time?

The answer is either zero or a negative amount, depending on how you look at it.

Zero, for the same reason as in Question 1. Namely, the entrant has neither a better product nor lower costs. And the incumbent has sufficient capacity to serve all buyers.

The reason why the entrant nevertheless makes money is the same as in Question 1—the presence of the rule of one-price-to-all.

In fact, the entrant has an inferior product and higher costs. Since some buyers transact with the entrant, the pie ends up being smaller than it would be in the absence of entry. In this sense, the entrant actually subtracts value from the game.

Specifically, without entry the overall value created is $$(200 - 100) \times 100 = \$10,000$. With entry, the entrant captures \$400. The incumbent captures $$(200 - 100) \times 80 = \$8,000$. And buyers #1 through #20 each capture $$(160 - 140) = \20 . The total is \$8,800. (Minus the nominal entry cost.) So, \$1,200 of value has gone missing (refer back to **Figure 2**).

[Optional digression on antitrust:

Let's imagine for a minute that we went to work for the antitrust authorities.

Q: Wearing our antitrust hats, is the answer to ban entry in this game?

Banning entry seems bizarre! The reason this arises as a possibility is that there is already a restriction on the workings of the marketplace. That is, because of the rule of one-price-to-all, we are in a "second-best" world. Otherwise, there would be no reason to intervene.

Prohibitions against price discrimination are one reason for the presence of a one-price-to-all rule. The prohibition is often explained on distributional grounds—the argument being that a seller could otherwise extract all value from buyers. What we see is that regulating the distribution of value leads to either: (a) inefficiency (a reduction in value creation); or (b) yet more regulation (banning entry).

Actually, we already knew that disallowing price discrimination causes inefficiency. Just think of the standard textbook monopoly diagram. Monopolies per se do not necessarily cause inefficiency.]

Question 3

Finally, let's turn to Question 3. . . .

Q: What does the entrant add to the game now?

Certainly it depends on how many buyers the entrant targets. If it targets all 100 buyers, the entrant will add value of $$(120 - 80) \times 100 = \$4,000$. (Minus the nominal entry cost.) For smaller numbers of targeted buyers, the value the entrant adds is correspondingly lower.

In any case, the entrant now has a positive added value. (By virtue of its cost advantage.)

Q: So, does the entrant still have to bother with a small-scale entry strategy?

The answer is that while doing so is no longer necessary to make money, it is still necessary to make the most money.

To see this, assume once more that the entrant has entered, targeted N buyers, and selected a price of $\$p$. The operative choices for the incumbent are:

- a. (Accommodate) Give up N buyers to the entrant and charge a price of $\$200$ (minus a small amount) to the remaining $(100 - N)$ buyers.
- b. (Fight) Charge a price of $\$p$ minus a small amount and sell to all 100 buyers.

The incumbent's contributions from the two choices are, respectively:

Accommodate: $\$(200 - 120) \times (100 - N)$

Fight: $\$(p - 120) \times 100$

So the entrant should focus on pairs (N, p) such that:

$$(200 - 120) \times (100 - N) \geq (p - 120) \times 100,$$

or

$$p \leq 200 - 4/5N.$$

The entrant's post-entry decision problem is thus to choose N and p to solve:

$$\text{MAX } (p - 80) \times N$$

$$\text{ST } p \leq 200 - 4/5N.$$

As always, a diagram is helpful (refer to **Figure 3**). Evidently, conditional on having entered the entrant should target 75 buyers and charge a price of $\$140$. This yields the entrant a contribution of $\$(140 - 80) \times 75 = \$4,500$.

We see that targeting only part of the market is still beneficial for the entrant.

[An easy calculation shows that it is only once the entrant's costs fall to $\$40$ (keeping the incumbent's costs constant), that it becomes optimal for it to target the whole market.]

Discussion

Overall, we've seen how by a judicious choice of small size and low price, an entrant—even one with no added value—can make money. The strategy is called “judo economics.” By staying small, the entrant uses the incumbent's own larger size against it. In alternative language, the entrant induces the incumbent to maintain a price “umbrella,” under which it can prosper.

The strategy is a very clever one. It enables Kiwi to make money out of thin air, so to speak. Still . . .

Q: What can go wrong when a player tries to implement a judo strategy?

a. The entrant has to be able to communicate to the incumbent that it plans to remain small. (And once the entrant is making money, it faces a natural temptation to expand.) In the case, Kiwi CEO Iverson issues a public statement to this effect. Other ways of clearly limiting size include building a deliberately small plant, guaranteeing high and time-consuming service levels to its customers, etc.

b. The incumbent may change the game by finding a way around the rule of one-price-to-all to match selectively. If so, the game is, of course, over for the entrant. Building strategy on rules is fragile in this sense. Players can sometimes rewrite the rules to their benefit.

This was the fate that befell the startups in the first wave of post-deregulation entry (People Express, New York Air, Midway, etc.). They typically used low fares to target leisure travelers. But, led by American, the majors learned how to use restrictions (advance purchase requirements, Saturday night stayovers, etc.) and capacity-controlled low fares to match the new entrants selectively. (Sophisticated yield management systems were needed to implement this idea.)¹

c. Despite the judo arithmetic, the incumbent may still decide to fight the entrant. This is because the “real” game is over time. The incumbent may choose to fight today, hoping to induce the entrant to exit, and thereby regain the market tomorrow.

But here too, staying small can help the entrant by increasing the (opportunity) cost to the incumbent of a price war, and lowering the benefit.

The incumbent may also decide to fight to set a precedent that other potential entrants may heed.

Summary

The case illustrates the power of rules—specifically, the rule of “one-price-to-all.” It is the presence of this rule that enables a zero-added value entrant to make money.

The case also illustrates Tactics: How can the entrant create the belief in the incumbent’s mind that it will remain small? And Scope: If the real game is over time, the incumbent’s response may be different from that suggested by the simple judo arithmetic.

Other Examples of Judo Economics

MCI and AT&T Deregulation of the consumer long-distance phone business went back to the 1970s. At this time, MCI got into the business via niche marketing. With the break-up of AT&T in

¹“I was on the phone with my mother one day and she said she could get a cheap flight on American. I said, What? When I heard my mother was going on American . . . that was a metaphor for the power of American’s information technology” (Donald Burr, founder of People Express, quoted in “The Bully of the Skies Cries Uncle: Why Robert Crandall is Threatening to Pull American Airlines Out of the Airline Business,” *The New York Times Magazine*, September 5, 1993, p. 29).

1983-84, the business was thrown wide open. MCI started offering lower-priced service. AT&T had a choice between matching MCI or staying with a premium/service strategy.

One issue was whether MCI actually had lower costs than AT&T, despite (or because of!) the latter's massive scale.

Liberty Cable and Time Warner Cable In December 1991, Liberty Cable (part of Milstein Properties, a New York City real estate firm) entered the New York City cable TV market against the franchisee, Time Warner Cable. Liberty used a rooftop microwave system rather than underground cable, and targeted (whole) apartment buildings.

Liberty's rates significantly undercut those of Time Warner. The latter initially dismissed Liberty as offering inferior service (smaller array of programs, little by way of customer service, etc.).

Liberty's strategy appeared to have a judo flavor to it. Time Warner was hampered in selectively matching Liberty in the (whole) apartment building market. Cable re-regulation, for example, enforced "uniform pricing" on franchisees, thereby forbidding most special deals.² Politically, too, Time Warner's hands were somewhat tied.

As of June 1993, Liberty had 13,000 subscribers, Time Warner had 460,000.

The issue of relative cost arose in this example, too. Liberty side-stepped certain infrastructure costs, such as digging up the streets. On the other hand, its programming costs were higher than those of Time Warner (which was both backward integrated, and had an advantage in bargaining with other programming suppliers by virtue of its national system).

[Note that advertisers as well as subscribers were customers from Liberty's and Time Warner's perspective. They had a higher willingness-to-pay for access to Time Warner's subscriber base, simply because it was larger.]

²Wall Street Journal, September 28, 1993, p. A17.

Summary of Teaching Plan

Introduction

Question 1 . . . Move towards picture (minimize algebra): entrant's problem + pie/division

Q: How much value does the entrant add to the game?

willingness-to-pay; cost; capacity

Q: Isn't it a bit odd that the entrant can make money in the game if it adds no value?

Rule of one-price-to-all; posted prices vs. negotiated prices

Question 2 . . . Incumbent doesn't have to match . . . do in a picture

Q: How much value does the entrant add to the game this time?]

Zero or negative, depending on how you look at it

[Q: Wearing our antitrust hats, is the answer to ban entry in this game?]

Question 3: What does the entrant add to the game now?

Q: So does the entrant still have to bother with a small-scale entry strategy?

Perhaps just ask for answer

Discussion:

Making money out of thin air

Judo economics

Q: What can go wrong when a player tries to implement a judo strategy?

Need to communicate plan to remain small

Incumbent changes the game by finding a way around the rule (American vs. People)

Fight for tomorrow and precedent

Summary

Other examples:

MCI and AT&T

Liberty Cable and Time Warner Cable

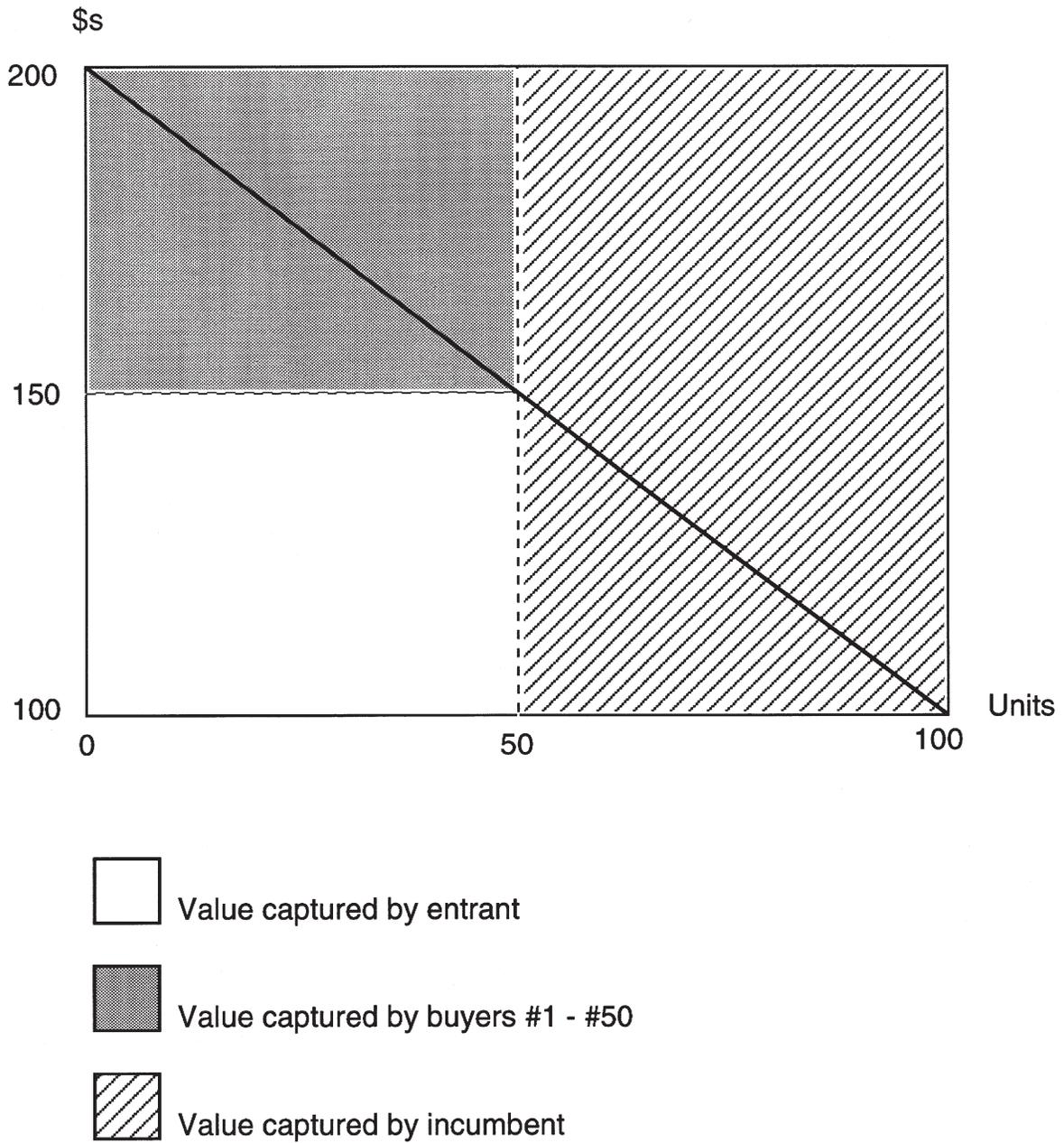


Figure 1

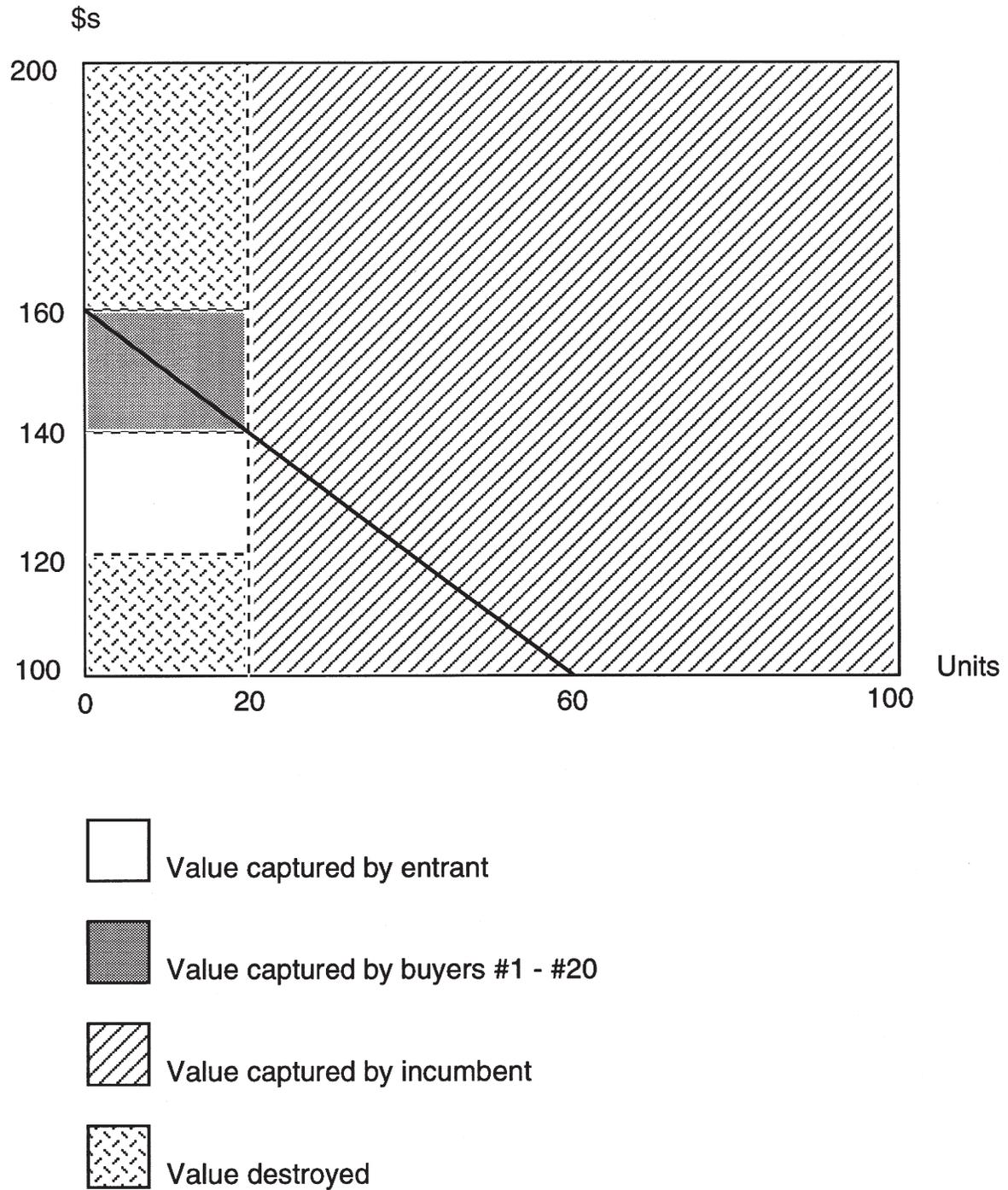


Figure 2

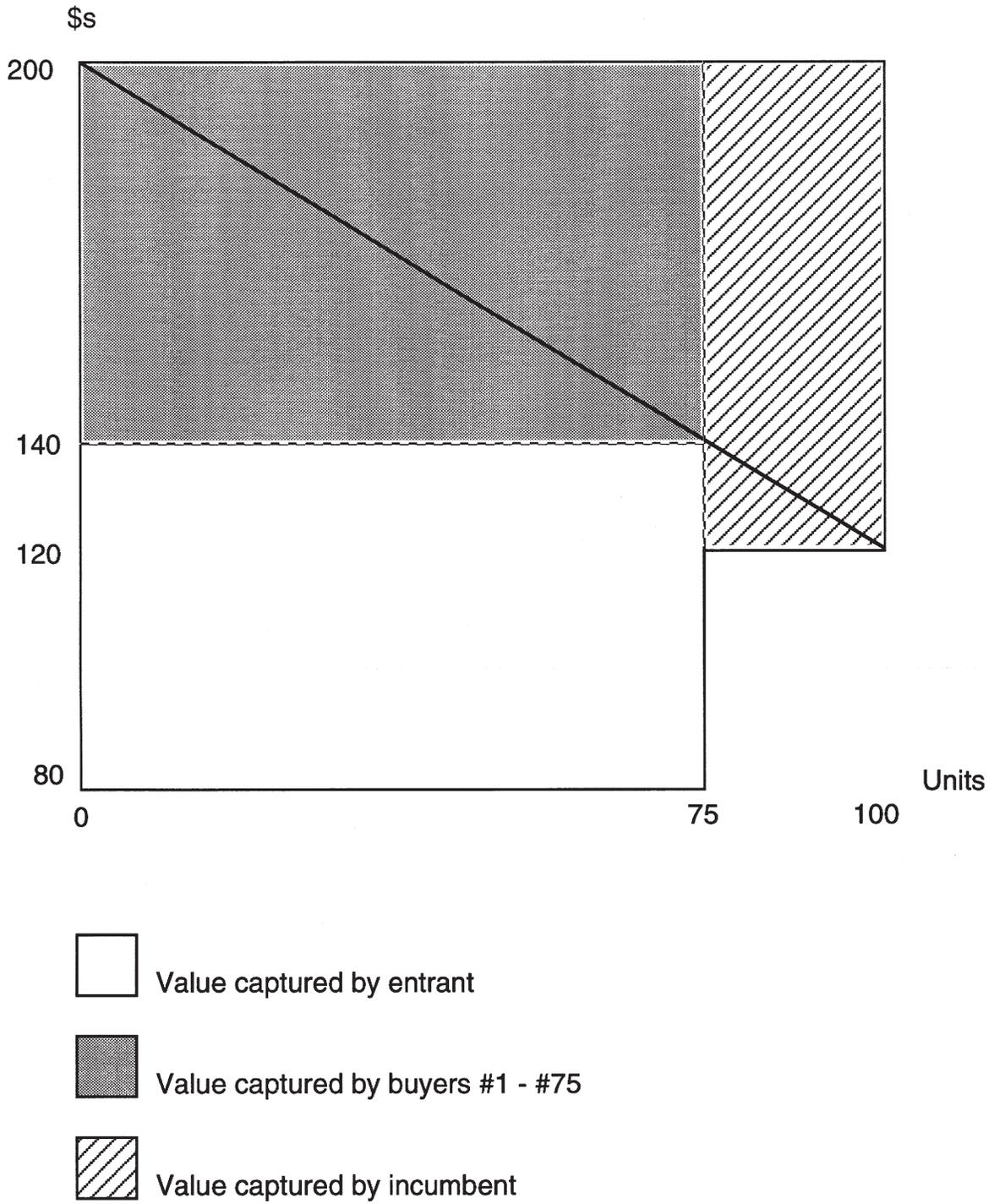


Figure 3

Notes

- Credit cards: The question is whether Citibank can drop rates to mobile/contested customers without lowering across the board. The relative cost issue also arises—maybe specialists are simply intrinsically lower-cost.
- Notes on formulation: For completeness, one should say how the market would divide if both entrant and incumbent named equivalent prices. In fact, this case does not arise.

What are critical are that the entrant can target only a part of the market, and the rule of one-price-to-all. Other aspects of structure, such as the entrant's selecting a price before the incumbent does, are not critical.

- When should the entrant's added value be measured—pre-entry, post-entry but before deciding how many buyers to target, after this? The most meaningful point would seem to be after deciding how many buyers to target, but before setting a price. This is the point at which the size of the pie has been fixed, and all that remains is the division of value between entrant, incumbent, and buyers. That is, what remains is bargaining. (Of which price setting is a particular manifestation.)
- Question 1: What about the incumbent? How much money would it make in the absence of the rule?

First argument: Well, let's calculate the incumbent's added value. It is $$(200 - 100) \times 50 = \$5,000$. With a positive added value, the incumbent will surely make money—up to that amount.

Second argument: Conventional supply-and-demand analysis says something different. Since there is excess aggregate capacity, it would predict a price of \$100. Neither entrant nor incumbent will make money.

Third argument: The added value calculation is optimistic. The buyers can use the entrant's presence as a bargaining chip against the incumbent. And this is likely to depress the incumbent's profits well below \$5,000. Quite where this will end up is unclear. Perhaps somewhere in between the above two answers.

Summing up: Ex post (i.e., after the entrant comes in), the absence of the rule is bad for both entrant and incumbent. Ex ante, however, this works to the benefit of the incumbent. (Which, by definition, is already "in.") The entrant is more likely to stay out.

- The loss in value appropriation suffered by the incumbent exceeds the value captured by the entrant. (By the windfall to the buyers.) So there is a classic bargaining problem here between entrant and incumbent. The entrant can threaten to spoil the market. How much will the incumbent pay it not to enter? Alternatively, the incumbent should acquire the entrant. (Of course, this serves to encourage future "blackmail" by other potential entrants.)
- Contracts with customers: Contractual clauses that require buyers to notify the incumbent of discount offers help the incumbent to match the entrant (selectively). Hence they deter entry. Examples include meet-the-competition and last-look clauses.

Conversely, a most-favored-nation clause makes it impossible for the incumbent to match selectively. It is then vulnerable to the judo strategy.

- The case provides an instance of the legitimate use of low price as a competitive weapon.

In general, low price is a much abused weapon. It is mentioned interchangeably with high quality, low cost, etc. as possible ways of competing. Yet the latter refer to ways of increasing the size of the pie with a view, of course, to sharing in part of the increase. Low price serves only to redivide the pie—in one's favor, at best. It is an intrinsically less robust route to capturing value than is operating on the value fundamentals.

What we've seen is that the circumstances in which a low-price strategy seems to make sense are quite special. They involve a small player competing with a larger one. And a rule.

A low-price strategy for small players is very much the mirror image of the sort of strategy that Coke and Pepsi, as large players, undertook in the U.S. soft drink market in the 1980s.³ What they did was escalate fixed costs (principally advertising expenditures) to the point that small players could no longer match them.

³See "Coca-Cola versus Pepsi-Cola and the Soft Drink Industry," Harvard Business School Publishing, 391-179, 1993.