

Pricing and the Prisoner's Dilemma

Competitive pricing is a complex topic that's important to understanding competitive markets and business strategy. Is it best to cooperate with or compete against other firms in the market?

PROBLEM 1 illustrates this dynamic — the *prisoner's dilemma* originated in game theory and is a model that helps us to understand the circumstances behind each pricing strategy / option.

It is illegal to collude with your competition to keep prices high. You and your competitors should never discuss pricing in any format. However, by understanding the *prisoner's dilemma*, you will better understand what economists call "*implicit collusion*." This is when industry prices stay high because no competitor acts aggressively. In other words, competitors seem to cooperate without colluding.

Given how the prisoner's dilemma works in a game situation, apply this dilemma to pricing. We assumed you and your competitor enjoy an equal share in the market and relatively high prices with large profit margins. The question becomes, should you lower your price?

The payoffs looked like:

- If you both cooperate and keep prices high, you each make \$1 billion / week in profit.
- If you both compete and lower prices, you each make \$0.5 billion / week in profit.
- If you lower prices and your competitor doesn't, you make \$1.3 billion / week in profit and your competitor only makes \$0.2 billion / week.
- If your competitor lowers prices and you don't, your competitor makes \$1.3 billion / week and you make \$0.2 billion / week.

The Dilemma: In every scenario *you* are better off when you lower your price. The same is true for your competitor. But, if you both lower the price, you each make only \$0.5 billion in profit. Whereas if you could find a way to cooperate, without either of you lowering your price, you would each end up with \$1 billion. The form of cooperation needed for both firms to enjoy high prices is agreeing to behave rationally and follow self-interest over the long term.

The *prisoner's dilemma* represents a situation where two players both **do better when they cooperate** but have **incentives not to cooperate**. It's the same with pricing.

What's the solution to the *prisoner's dilemma*? Ultimately, there is no solution to the game. But there is a solution if you change the game so that two players can play over and over, which is what we have with pricing in a free market. You set a price this week, next week, the week after and so on. These are called price signals. And, as you make the next decision, you can observe how your competitor responds.

Business literature concludes that the best solution to this *repeated prisoner's dilemma* is a strategy called counteraction (i.e., *quid pro quo*). The simple explanation is that you start out cooperating and then do whatever your competitor just did.

Assume you and your competitor start out with high prices. Then, if your competitor decides to lower their price to gain market share during one period, you *counteract* by doing the same the next period. If

your competitor keeps their price low, you do too. If your competitor believes you will follow this strategy over the long term, they don't have an incentive to lower prices.

The same holds true for you. If you believe your competitor will follow you if you lower prices, then you have no incentive to do so. Economists call this *implicit collusion*, in other words, the *rational pursuit of self-interest* or an *economic equilibrium*.

Without talking to each other, firms cooperate with higher prices simply because of the threat of lowering prices in a free market.

If you mistake your competitor's actions in the market as aggressive pricing when in reality they are not a long term strategy it may start a price war. For example, imagine you and your competitor have been implicitly cooperating, when suddenly your competitor lowers their price. Now you feel compelled to lower your price too. But perhaps your competitor only wanted to clear aging inventory. Now you're in a price war, or at least in an alternating high-price, low-price game.

When there's a good reason to temporarily lower price in a free market, it's important to signal the market in a way the industry will understand. The market needs *non-price information* to *counteract the lower price signal* sent out into the market.

On the other hand, perhaps you can use lessons from the *prisoner's dilemma* in your favour to raise industry prices. A common tactic in the airline industry is for one airline to announce fare increases. One reason is to get other airlines to follow suit. If they don't, the fare increase won't last. This is also why almost all airlines add the same types of fees at the same time.

Ultimately, the following inevitably holds true: **the most profitable companies are those allowing their competitors to make a profit too.** In other words, they cooperate by following rational self-interest. If you compete aggressively, odds are good your competitors will as well, and neither of you will make as much profit.

Firms in a free market have a critical decision to make: do they want to win, or do they want to make a profit?

Price is important in every deal and every competitive situation; it's equally important to be smart about how you use it. Be sure to watch your competitors' pricing carefully, don't jump to conclusions, and when you make price changes, try to be clear about why you're making those changes. Finally, if your goal is to put your competitors out of business, be prepared for your own profits to suffer too.