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**Lecture 23: Double Marginalization and Monopoly**

1. Double marginalization
   1. What’s the deal with Google? They pay software engineers top dollar to make high quality products which they give away for free. Why?
   2. A possible explanation lies in an economic concept called *double marginalization*—both “upstream” and “downstream” firms have monopoly power
      1. Upstream refers to production farther away from the final product; downstream refers to production closer to the final product. Both concepts are relative: manufacturing is downstream with respect to mining, but upstream with respect to retail.
   3. Because the consumer needs to pay both monopolies, each monopoly externalizes a cost onto the other monopoly when it raises prices. Consumers buy a product based on the combined prices, but each monopoly only controls part of that combined price.
   4. Thus, you get a *lower* price, *more* total profit, and *more* total output with a single monopoly than with a chain of monopolies.
      1. Consider the Rhine River during the Holy Roman Empire (HRE) and its castles which were the basis for collecting tolls.
      2. Since the Rhine was a major trade route into the interior of the Empire, each merchant had to pay the toll for each castle.
      3. During a weak period in the HRE, castle building on the Rhine took off as renegade lords built toll points without the emperor’s approval. Trade plummeted. After control was re-established, those unofficial castles were dismantled and the Rhine re-entered widespread use once again.
   5. Double marginalization is a very powerful idea and leads us directly to an increasingly important application: the tragedy of the anti-commons.
2. The tragedy of the anti-commons
   1. Why, at an airport, does it take so long to take off?
      1. Airports are incredibly crowded, largely because growth runways haven’t kept up with growth in passenger travel
      2. So why don’t we add more runways? It’s not easy because busy airports are, almost by definition, old airports. And as old airports, a lot of homes and businesses have built up around them.
      3. A runway takes up a lot of space. To build one, you’ll have to buy the land from *every single* landowner, and they know you need every single one. We thus enter a holdout problem.
   2. Just as the tragedy of the commons leads to people using the resources too much due to too few property rights, the *tragedy of the anti-commons* leads to too little use due to too many property rights.
      1. Note how this is similar to double marginalization: property rights are a form of monopoly.
      2. Nowhere is this problem clearer than in patents.
   3. Over the past 30 years, patents have skyrocketed (it’s not exactly clear why). Note this doesn’t *necessarily* mean patents have become more important to firms: it’s money on the table firms are picking up
   4. One of the consequences of this patent explosion is that lots of bits of technology are owned by lots of different people.
   5. Now remember what makes patents different from copyright: the scope.
      1. In other words, if you make something that uses or improves upon someone else’s patented technology—even if you’re not using their technology directly—you need their permission. If you don’t get their permission, you’ve violated their patent and they can sue you.
   6. Not always a big deal but when lots and lots of people own little bits of technology, this starts hampering technological growth, especially since new technology builds on previous technology (or, new downstream technology is always on the horizon).
      1. In the words of Isaac Newton “if I have seen a little further it is by standing on the shoulders of Giants.” (1676)
      2. Jerome Lemelson held about 600 patents. Some of them are for ideas of inventions, not inventions themselves, including video cameras (#4,819,101) and machine vision[[1]](#footnote-1) (#5,351,078).
      3. The unmade Alzheimer’s treatment
3. Monopoly
   1. In microeconomics, we learn monopolies create deadweight loss and that is true. In general, monopolies are undesirable.
      1. However, monopolies create economic profit, and that profit is sometimes needed to motivate people to action. Remember, this is the justification for patents.
   2. Here, we can see how monopolies have a desirable effect: if one individual owned a bunch of land instead of many individuals, we’d have more runways.
   3. There are times when *vertical integration*—turning the steps of production into one company—can be quite beneficial.
   4. This is in contrast with *horizontal integration*—aggregating competitors into one firm.
      1. Another way of describing double marginalization is that if each step is horizontally integrated (in the sense that it has no competitors) without being vertically integrated, vertical integration will be socially desirable (compared to having this chain of monopolies).
   5. So what’s the deal with Google?[[2]](#footnote-2)
      1. HINT 1. When you go online you are consuming two goods: access and content.
      2. HINT 2. Google has market power in monetizing content.

1. As in the ability for machines to visually detect the environment around them and use that information to manipulate said environment. This patent was originally filed in the 1954 but due to patent office delays and alterations, was not granted until 1994—well after robots were using electromagnets to identify objects. Instantly, he started collected hundreds of millions in royalties. [↑](#footnote-ref-1)
2. This theory was pointed out to me by my good friend Eli Dorado. <http://elidourado.com/blog/theory-of-google/> [↑](#footnote-ref-2)