

Mergers and disruptive innovation

The media industry is obsessed with disruption. The news media have been going through a decade and a half of decline – most notably in advertising revenues – that has caused many bankruptcies and also a rethink of how organizations, such as the *New York Times*, organize their businesses.¹ And despite all of this, new entrants abound. The same is true of larger infrastructure-based media businesses. The recent proposed merger between Comcast and Time Warner was surely part of a strategy to deal with the threat posed by the Internet as a distribution mechanism for content. But equally, it may have been motivated to ensure that online competitors could not build market share as the DOJ and FCC argued in opposing the merger.

In the business world, *disruption* is a catch-cry; something that business leaders live in fear of. To the antitrust lawyer, it may actually sound like a familiar process whereby monopoly power is undone by an entry into the market based on new technologies. But, in actuality, the conditions whereby new technologies may actually overturn incumbent market power can be special. In other words, the mere presence of what appear to be radical and inevitable new technologies may not be sufficient to overturn market leadership in an industry. And our expectations about whether that can happen play a critical role in how we might view mergers in industries. Specifically, when the conditions are right, even mergers that would look like consolidating to high concentration can be viewed as promoting competition because the resulting firms are disciplined and vulnerable to technological competition. But what have we learned about how likely those conditions are to arise?



The mere presence of what appear to be radical and inevitable new technologies may not be sufficient to overturn market leadership in an industry.



¹ Gans, Joshua S. (2016), *Disruption: The New Dilemma*, MIT Press: Cambridge (MA).

Dynamics and Innovation

At the heart of disruption is innovation. Innovation has always represented a challenge in antitrust circles precisely because the economics of it is not obvious. The “bigger is better” camp argue that the main challenge in encouraging innovation is appropriating sufficient rents from it and this cannot be done when those rents flow away due to competitive pressures. The “competitive spirit” camp argues, conversely, that there is no pressure to innovate unless firms face an existential threat from innovation brought about by new entrants. Both of these theories have shades of truth to them while having seemingly diametrically opposed views to how we should view horizontal mergers.

The economist’s answer to all this is “it’s complicated.” And that is because it is. But the broader question is: how hard is it to assess mergers when innovation plays a big role? In particular, do antitrust authorities have to abandon tools that do nicely for static environments when dynamics come to play?²

To understand this, I have to give you a sense of the “complications.” Suppose there is an industry with some incumbent firms and they are competing intensely. They also engage in innovation to come up with better products than their rivals. What motivates them? Without going into details yet, let’s call it a prize. That is, if they beat their rivals to a new product, they get a prize. This is likely to be determined by how much better the new product is and how easy it is to capture customers from rivals based on that product. Subtly, the prize, therefore, is not just the profits a firm gets if it “wins” the innovation race but also would take into account the amount that it would earn if it “lost” that race. In other words, for the firm, what spurs them to innovate is not just getting more profit than they currently have but also ensuring they don’t end up with less profit because someone else beat them to the punch.

So far so good, but this is not a world where we play a game and we all take home our winnings (if any). This is a world where the game will likely be played again and again. For any firm, this fact is going to impact on the prize they expect from innovating today. In particular, if conditions in the industry are such that innovation is hard and does not happen often, what

² Gans, Joshua S. (2010), “When is Static Analysis a Sufficient Proxy for Dynamic Considerations? Reconsidering Innovation and Antitrust,” in J. Lerner and S. Stern (eds), *Innovation Policy and the Economy*, Vol.11.

they get from a new innovation may be relatively long-lived. By contrast, if innovation is relatively easy and happens often, what they get from innovating may be short-lived. Thus, we have one of those brain-bending ironies: if the prize from innovation tends to large, it will encourage more innovation and so lower the prize and reduce innovation!

Economists are familiar with these potentially circular arguments. We get the same when it comes to normal markets: suppose prices are high, then firms will want to supply a lot more which will push prices down making them want to supply less! That conundrum is resolved by separating out supply and demand and realizing that there is a point where all of these things balance themselves out. We can then think just about what happens to demand and supply to predict what happens to prices and quantities.

The same is true for innovation. There is a point where the prize (based on a rate of innovation) and the rate of innovation (based on a prize) are the same thing: they are in balance.³ And what is great about that is that we only have to think about what impacts the prize (taking as given the rate of innovation) to work out what, say, a change in merger policy might do to innovation in a market.

Merger Policy and Innovation

When we look at mergers we tend to consider them one case at a time. However, when dynamics and innovation play a role, the case by case approach may not be appropriate. This is because the strength or tenor of the merger policy will have an impact not just on the present case at hand but also on the prospects for future mergers.

To see why this matters, suppose that in our industry two firms wish to merge. Using static analysis, we can assess the likely impact on prices and hence, consumer welfare. We can also examine whether there may be any efficiencies from the merger. But the impact on innovation is more subtle. To be sure, competitive pressure to innovate will disappear between the merging parties but may also change for others from that merger.

That, however, is not all that will happen. This is because the prospects for future mergers being permitted or not will also have changed. That will impact on their likelihood and also have an impact on what determines innovation prizes into the future.⁴ The hard issue is: in what way?

As it turns out there are competing effects and no amount of introspection can resolve them. A more permissive merger policy will make mergers more likely. On the one hand, when mergers are more likely, that may reduce innovation competition and so cause innovation rates to fall. On the other hand, mergers may themselves be part of the prize – for instance; you are going to be a more attractive merger partner if you have innovated more and so you can expect to get more of the share of gains from mergers. This effect may mean that more permissive merger policy may spur innovation. Which effect dominates is hard to say.

Going to the Data

The way to resolve this is to understand whether the conditions in the industry, historically, are likely to support one effect being larger than another. These studies have only been recently conducted and one of the most important concerns the hard disk drive industry.

The hard disk drive industry has a special place for those who have studied disruptive innovation because it was the centrepiece of Clay Christensen's famous book, *The Innovator's Dilemma*.⁵ In that book, Christensen showed that when big innovations come along – like step size changes in the physical size of disk drives – it is usually new entrants who bring them to market first. Now while that may look good in terms of competition, as it turned out, and this was studied by those after Christensen, incumbent firms react strongly to that new entrant by investing more themselves and also by acquiring those entrants. Consequently, the hard disk drive industry has gone through rapid consolidation and increasing concentration.

³ Segal, I. and M. Whinston (2007), "Antitrust in Innovative Industries," *American Economic Review*, 97 (5): pp.1703-1730.

⁴ Gans, Joshua S. and Lars Persson (2013), "Entrepreneurial Commercialization Choices and the Interaction between IPR and Competition Policy," *Industrial and Corporate Change*, Vol. 22, No. 1, 131-151.

⁵ Christensen, Clayton M. (1997), *The Innovator's Dilemma*, Harvard Business Review Press: Boston (MA).

This is well-known in antitrust circles. It is only a few years ago that the industry went from 5 to 3 players in a short period of time due to the Seagate-Samsung and Maxtor-Hitachi set of mergers. In those cases, antitrust authorities were concerned about the reduction in competition but also on a potential reduction in R&D expenditures and so placed conditions on the mergers to ensure those reductions did not take place.

But our understanding of this industry has now been aided by a 2015 study conducted by Mitsuru Igami and Kosuke Uetake.⁶ They took historical data from the industry to develop a model with all of the complications I have described above to see if permitting those final two mergers was a good idea or not. On the static side, what they found is that compared to mergers in the past, these mergers had relatively large effects. In particular, they likely led to a large reduction in consumer welfare while at the same time also generating substantial realized efficiencies. In the past, both of these effects had been dampened by smaller scale. Nonetheless, even though the effects became large, they balanced each other out.

What was more interesting was what the likely impact of a long-term merger policy would have been on the industry. For instance, suppose that antitrust authorities blocked mergers that reduced the number of competitors below 5. If this had been the policy 15 years ago, it would have reduced the rate of R&D because it would actually encourage some firms to exit the industry. Specifically, firms that might otherwise have stayed in longer to find a merger partner, leave and with them goes any innovations they may have produced. The end result of this is that while the R&D rate did not vary much when the industry moved from 5 to 3, had a 5 threshold been the policy, it would have slowed R&D earlier in the industry lifecycle.

Conclusion

All this serves to reinforce the importance of examining dynamic implications of merger policy while, at the same time, reducing our need to guess too strongly about dynamic implications for any particular merger case. For the recent hard disk drive mergers, it appears that the mergers would not, on net, have impacted much on R&D rates. However, the industry as a whole would have benefited, during its period of low concentration, with a clearer merger policy about what would happen in the 'end game' when the industry evolved to higher concentration levels. Thus, the value of certainty in policy-making is not so much for when the industry is concentrated but for industries that are competitive right at the moment.

Joshua Gans is a Professor of Strategic Management and the Jeffrey S. Skoll Chair of Technical Innovation and Entrepreneurship at the Rotman School of Management at the University of Toronto. He has been involved in antitrust regulatory and intellectual property consulting for twenty years.

Dr. Gans has submitted expert testimony in the United States, Australia, and New Zealand in a variety of matters ranging from antitrust harm to copyright negotiations to damages calculations. Recently, he was the chief economic expert witness to the Federal Trade Commission in its antitrust claim of exclusionary conduct and abuse of market power against Intel. He has also advised Microsoft on antitrust and patent royalty matters. His industry experience includes computing technology, electricity, gas, rail, and telecommunications.

Joshua Gans

Professor of Strategic Management and holder of the Jeffrey S. Skoll Chair of Technical Innovation and Entrepreneurship at the Rotman School of Management, University of Toronto
T +1-647-273-3202
 joshua.gans@gmail.com



⁶ Igami, Mitsuru and Uetake Kosuke (2015), "Mergers, Innovation and Entry-Exit Dynamics: The Consolidation of the Hard Disk Drive Industry," paper presented at the NBER Summer Institute, Cambridge MA.