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What is the link between competition and innovation?

By [Paul Belleflamme](#) 24 September 2010 48

In an article published in 2004 in *The Economist* (and later reproduced in the book '[The Future of Technology](#)' pp. 107-110), one can read the following:



“On the record, any top executive in the IT, consumer-electronics and telecoms industries today will profess that his firm is leading the way towards simplicity. But are those claims justified? In theory, says Ray Lane, a venture capitalist, the company best placed to deliver simplicity should be Microsoft. It controls virtually all of the world's PCs and laptop computers (albeit smaller shares of mobile phones, hand-held and server computers), so if its software became simpler, everything else would too. The bitter irony, says Mr Lane, is that Microsoft is one of the least likely companies to make breakthroughs in simplification. “It cannot cannibalise itself,” says Mr Lane. “It faces the dilemma.”

The dilemma Mr Lane is alluding to is "[The Innovator's Dilemma](#)" that [Clayton Christensen](#) describes in his book. The innovator's dilemma refers to companies that succeed in one generation of innovation but whose success becomes then an obstacle for coping with the next wave of innovation. This observation lends credence to the idea that firms with more market power (monopolies in particular) have smaller incentives to innovate than firms facing a higher degree of competition. As Steve Jobs (Apple CEO) said in a [Business Week interview](#) back in 2004:

“what's the point of focusing on making the product even better when the only company you can take business from is yourself?”

Should we infer from the previous quotes that there is a positive relationship between the degree of competition and the level of innovation or, in other words, that the more firms face competition, the more they tend to innovate? The answer is no: the relationship between competition and innovation is more complex than that.

From a theoretical point of view, there is a distinction to be made between the *capacity* to innovate and the *incentives* to innovate. In terms of capacity, large firms are generally better equipped than smaller ones to undertake R&D (they can benefit from economies of scale, they have better access to capital markets and they can cope more easily with the uncertainty associated to innovation). On the other hand, as illustrated by the quotes above, large firms may have lower incentives to innovate than smaller firms, basically because they have more to lose. These ideas have been formalized, respectively, by [Joseph Schumpeter](#) and [Kenneth Arrow](#) (for a nice review of their contribution and of subsequent theoretical developments, see '[Creative Disruption](#)' by Douglas Clement).

From an empirical point of view, establishing the link between competition and innovation is a complex task. Innovative activity and the degree of competition are indeed both the product of a number of economic relationships that vary across market environments. It is not surprising, therefore, that contradicting findings emerge from various empirical works.

The nature of the bond between competition and innovation remains thus an open question. That should not prevent you from voicing your own opinion about this issue.



About Paul Belleflamme

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48 Responses to *What is the link between competition and innovation?*



Delphine Wauty 8 November 2012 at 11:04 #

The relationship between competition and innovation has given rise to contradictory models and results, certainly because of the numerous factors that have to be taken into account.

First of all, I would like to share an example of what can be considered as a positive relationship between competition and innovation. In September 2012, Alexander Italianer, Director General for Competition of the European Commission, gave a speech about innovation and competition at the Fordham Competition Law Institute Conference (see http://ec.europa.eu/competition/speeches/text/sp2012_05_en.pdf).

First, he simply reminds that competition increases innovation as it forces firms to produce at a lower cost and it also gives them incentives to offer better products and services than their competitors, both of these improvements requiring innovation. Afterwards, he also explains how liberalisation had a positive impact on sectors such as telecoms and air transport. For instance, since new telecommunications companies have been allowed to enter the market, the will to innovate increased. Thus, technologies has developed faster, offering, among others, cheaper and quicker broadband connections. Furthermore, the Microsoft's case (see Lecture 6) also shows that the firm tends to innovate more on competitive segments than on those where it owns a market power.

However, so far, we have not yet discussed the firm's capacity to innovate. In a more formalized point of view, Schumpeter specifies that monopolies are innovation-friendly as a large firm has more capacity to invest in R&D and therefore, innovate. According to him, smaller firms can not afford important R&D expenditures. From then on, if we consider that firms only innovate based on their resources without taking into account any other influential factor, governments should then intervene to help smaller companies. As I wrote in a comment on « How to make innovation drive economic growth ? », the European Union should improve financial access to innovative companies by, for instance, encouraging banks to lend to smaller companies.

Nevertheless, let us not forget that many other factors play a role in a firm's incentives to innovate, such as products differentiation, the conjecture, the possibility to protect an innovation by a property right,...

In conclusion, in my opinion, competition may have a positive impact on innovation if we consider it increases the firm's motivation to innovate. However, several other factors have to be taken into account, which makes the relationship between competition and innovation much more difficult to determine.

Reference : http://ec.europa.eu/competition/speeches/text/sp2012_05_en.pdf

Like: 0

REPLY



Paul Belleflamme 8 November 2012 at 11:11 #

Your comment can also be useful for the discussion that we will have next time about cooperation in R&D.

REPLY



Nissa Merckx 8 November 2012 at 09:46 #

My first thought on the subject is that, there is no doubt a more positive link between competition and innovation than between monopolistic and innovation. Why? Because when a firm faces competitors, its first instinct will be to try and find something that will enable him to surpass its rivals in order to protect and increase its market power and shares. This is where innovation comes in handy. Indeed, when there are a lot of competitors, firms will need to differentiate from each other. One way to do that is by investing in R&D. Competition will lead to more productivity from the firms, since firms – wanting to be one step ahead – will pay close attention to the development of their competitors. In this sense, we can easily say that under competition, innovation acts as incentives. It's important to note that innovating, and thus investing in R&D, is a necessary risk in competition which is often rewarded, but it is only possible to those who have the capacity and motivation (since innovation is an incremental process and is costly).

Contrary to competitive markets, in a monopoly – since the firm doesn't have opponents – a firm will find less interest to innovate since it already has a secure dominant position on the market.

With this in mind, I can say I agree with Arrow's theory, in which he underlines the fact that: "incentive to invent is less under monopolistic than under competitive condition". [c.f. Clement D., Creative disruption: The Region, September 2008: p.32]

Despite that, I can't say I entirely disagree with Schumpeter since a positive link between innovation and monopolistic competition can exist, even if it is less visible (due to the non-existent competition). In his theory, he says that "monopolies and innovation are closely related" and Tirole adds that monopolist will invest in innovation because in doing so, they have the "advantage of increasing returns". Also, taking into consideration the size of a monopolist firm – usually they are big firms –, they have more capacity to innovate and to deal with the possible risks of innovation since they don't have "competitors (trying) to imitate his innovations" [c.f. Clement D., Creative disruption: The Region, September 2008, p.32]]. Looking at it from this point of view, innovation can be used by a monopolist as a way to deter entries. Indeed, if a monopolist is aware that the market he is in has lots of potential and that it attracts newcomers, he will want to prevent entry. To do that, the monopolist, who has the power and the capacity, will innovate before its potential future rivals enter the market.

In the end, I think that the use of innovation by a firm and thus the relation it will have under a specific type of situation (either a

competitive or a monopolistic competition) cannot be generalized but will depend, among other things, on both its “incentive to innovate” as well as on its “capacity to innovate”. Maybe I am wrong but as I understand it, both Schumpeter and Arrow put forward two different sides of a coin and to make it work on an empirical level maybe a more open combination of the both is required. Because eventually innovation is at the grasp of any firms wishing to expand whether it's in a monopolistic or a competitive market and it can be a positive link as well as a negative one. All depends of the resources the firm has and how well it uses them to achieve a profitable innovation.

Like:  0

REPLY



Andres Chamba 8 November 2012 at 08:54 #

The case for the extremes in markets is arguably an unwanted case. In this analysis, the extremes in markets would be a monopolistic market and a perfect competition. Monopolies have a large advantage over potential competitors. This advantage is the “capacity” to innovate. But “capacity” should be taken with discretion. Monopolies have big profits and supposedly with this profits they will make higher investments in R&D, and hence, more innovation. But this large “capacity” does not necessarily means monopolistic firms will actually invest in R&D. There is empirical evidence that shows that monopolists actually do not invest in R&D (Gilbert, 2006), and, CEO's have actually directly expressed their inconformity with having to innovate. Granted, innovating is not easy, requires a lot of funds (for certain industries) to switch from one product to another, or from one process to another. An additional discomfort that monopolistic firms face is that that they could “cannibalize” themselves or worse, venture with an unsuccessful innovation. Then, why would they go into the trouble of innovating when they can keep making profits? It seems that they will not invest in R&D.

Now, monopolist can be broken down into several firms (i.e., through the judicial apparatus) or, government can create a framework that eases the entry of new firms into the market. Actually, we have seen many attempts from the U.S. to break down, for example, Microsoft into several firms. The case was United States vs. Microsoft in 1998, but it ended without any major success and Microsoft remained with its monopoly (U.S. Justice, 1998). If the policy of break down fails then attempts to ease a framework that facilitates the new entry of firms should be in place.

On the other hand, we have a highly competitive market. In this case we have many firms who are competing their profits out, hence, living marginal profits to innovate. Here, firms clearly do not have a “capacity” to innovate, rather an “incentive” to innovate. This “incentive” is a robust catalyst for innovation; otherwise, the firm may be forced out of the market.

Competition will keep incentives to innovate but when profits are not totally competed out. The question is: who can access credit markets without profits? That seems a difficult venture. Nevertheless, if they keep profits and access to credit markets, then “incentives” to innovate will be strong and it seems that this is a stronger trigger for innovation that having large “capacity”.

Sources:

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Schumpeter, Joseph A. (1942), Capitalism, Socialism, and Democracy.

Like:  0

REPLY



Milad Avaz 8 November 2012 at 02:23 #

Thank you for a fascinating topic, Professor. Having read The Innovators Dilemma I would like to present to you some thoughts, revolving the innovation-competition paradigm, I have had ever since my first innovation courses.

Lonely kids can invent

As you say in your blog post there is a clear distinction to be made between the capacity to innovate and the incentive to innovate. Let us remember the steel mill case of 'The Innovators Dilemma' where it was not about ability but incentive to take on smaller clients. Another fine example is Xerox, the old printer monopoly. Xerox' R&D department developed the first computer mouse, keyboard, what we know as Microsoft Office today and what we know as Adobe Photoshop. Yet, Xerox marketed none of these many innovations, as they did not choose to market them before patents ran out. In both these cases the organizations were more than equipped to innovate, yet the incentive was not there because it was simply not to scale with the ambitions of the organizations; At the same time it is worth noticing that both of these cases are unlike the Microsoft example made in your blog post, because in none of these cases the innovations would cannibalize their own products, only supplement them. Additionally it is worth noting that the steel mill case is not a monopoly.

Size Matters

So what can we conclude from these cases? I hypothesize that it is not as much about the market structure as it is about the size of the organization. It seems that the larger an organization becomes, the blinder it becomes to the potential radical innovations. A solution to this is expressed as the sub organizational conceptualization named 'ambidextrous' units. An ambidextrous unit is a unit that emulates a start-up company with limited resources but is still owned by a bigger company. I witnessed a variation of the ambidextrous thought

when I visited the Googleplex in Mountainview, California this summer. Here, employees are granted 10% of their workweek for any projects they might want to explore on their own. It is initiatives as these that keep bigger organizations on the edge of the market.

Ushering in a new age

"Don't worry about people stealing your ideas. If your ideas are any good, you'll have to ram them down people's throats."

Ideas come about all the time, in large organizations as well as in the garage start-ups. The difference between an idea and a great idea is simply the feedback that is given upon explaining the idea. I believe that this is exactly why smaller organizations are more mobilized to bring about radical innovations, simply because there is a shorter path between presenting an idea and positive feedback. If this is truly the case, it is manageable to emulate this environment for larger organizations. I am excited to see what the future holds for the field of innovation in an age of social media, where one can present an idea with the click of a button, and others can legitimize your idea by simply clicking another 'like' or 'view' button.

Like:  0

REPLY



Paul Belleflamme 8 November 2012 at 08:20 <#>

Thanks for these comments.

REPLY



Edoardo Gili 8 November 2012 at 01:11 <#>

Which market structure will spur innovation? This question has been asked by many economists for a long time, and we have different schools of thought that brought theories about it. A rather competitive market would force innovation in order for the firms to capture 100% of the market and be able to make a higher profit. On the other hand, a monopolist or a dominant firm would have significant share of the market, so why would it invest money in order to innovate? Especially when he would cannibalize his own previous profits/gains by putting a new and better product (or with lower costs, hence lower prices) on the market. Of course, monopolies have higher probability to innovate "succesfully", since it has economies of scale and a rather big capacity to invest (1. operating on a surplus and 2. large firm size leads to a better stability of internal funds). But why would they?

Potential entry in the market is of paramount importance. The higher the likelihood of entry in the market, the higher the incentive to innovate. The reason is obvious here: a monopolist, fearing entry on his turf, would (more often than accomodating) rather deter any potential entrants in order to keep his dominance. Probability of entry depends highly on the fixed and sunk costs of an industry. According to Schumpeter, this game of "incentive to innovative" leads to creative destruction (monopolists cannibalizes/destroy their own foundations, in order to keep an edge over its potential entrants / OR / a potential entrant has enough capacity to innovate successfully to enter the market and topple the incumbent). Righteously, Schumpeter mentions the importance of entrance and threat credibility. So this should definately be studied by economists in any industry which is required to be innovative.

Also, while monopolies have better chances to be innovative, lets not forget about the dead weight loss (why would it disappear?) in the market, due to the monopolist dominance (high mark-up). Schumpeter was probably right, but he did not write extensively about the latent DWL the industry would face even if innovation is present. I suppose that we should weigh the pros and cons: Is an industry more efficient when innovative and dominated? Or should we spur some competitiveness in the industry in order to diminish the DWL? How big is the estimated DWL? How long does it take to innovate (very variable from industry to industry, Hi-Tech versus Pharmaceutical for example)? All those questions should be asked systematically.

I believe there is strong power that can be brought by governments as well as consumers. If a certain market (be it monopolistic or oligopolistic or rather competitive) is lacking of incentives to innovate, subsidies can be arranged or other types of bonuses (R&D investment deducted from tax base?)

In my most humble opinion, the link between market structure and innovation is difficult to make, and is most probably very specific to each and every industry (as empirics show). No rule of thumb can be applied successfully, and technological opportunities as well as R&D costs are/might be as important as the basic degree of concentration of the market.

Like:  0

REPLY



Daniel Stöhlker 7 November 2012 at 23:49 <#>

As stated in the blog post and in several articles and papers, the effect of market competition on the incentive for firms to innovate is ambiguous. On the one hand side, empirical investigations suggest a positive correlation between the degree of competition and innovations (see e.g. Nickell [1996]) but, at the same time, publications of the endogenous growth theory deny this relationship (Aghion et al. [2005] name some examples). In the following I would like to shed light on one possible reason for the different outcomes in research, namely the distinction between innovative and non-innovative industries.

The point I make in this brief statement, looks as follows: A certain degree of competition can have different effects on innovations due to differences in market characteristics: The first 'type' of market is highly innovative; think of the technology sector for example. Small

but trend-setting innovations are connected with a huge increase in the firm's market share or even taking a market leading position. The same holds for possible market entrants or small companies with small current market share, too. Such a dynamic market environment forces all companies to be anxious to innovate for two reasons: First, every firm aims at producing innovations that increase its market power and, secondly, every firm tries to reduce the possibility/threat of losing market share to others.

The second 'type' is the exact opposite of the first one: slowly innovating markets. As an illustration one can imagine the automotive industry. In this case, market shares only change step-by-step from one period to another. What does this imply in terms of the incentive to innovate? Let's see things from the perspective of a firm with a big market share, maybe the market leader. The threat of losing this comfortable position to others in the next period (assume a few years in the automotive industry) is reduced significantly. Just to get me right, this does not imply that it's not necessary to invest in R&D in such markets to maintain a position but the adjustment process will be much more gradual. Moreover – although this is rather a psychological than an economical interpretation of the situation – the firm with smaller market share could be discouraged to produce innovations because the chances of increasing market power in the following period are low.

To sum up, we have seen that a certain degree of competition (measured in number of firms, distribution of market shares, Herfindahl index etc.) can have quite different effects in different markets, depending on how innovative the market is. This result has an important implication for empirical research on the relationship between competition and the rate of innovation: While comparing several states of competition and related rates of innovation, it's essential to stick to the same 'type' of market in order to avoid the type of bias described above.

Aghion, Philippe et al. (2005). "Competition And Innovation: An Inverted-U Relationship". Quarterly Journal of Economics, 2005 (May), 701-728.

Nickell, S.J. (1996). "Competition and Corporate Performance". Journal of Political Economy, Vol 104.

Like:  0

REPLY



Paul Belleflamme 8 November 2012 at 08:13 <#>

Interesting typology. Does it have anything to do with the distinction between "scarce ideas" and "common knowledge ideas" (see Lecture 6)?

REPLY



Lucille Nyembwe Ngomba 7 November 2012 at 23:39 <#>

There is clearly a link between competition and innovation and it does not only depend on the industry or the type of market.

Firstly, I would say that I agree with the fact that competition leads to innovation. If you, as an entrepreneur want to capture a competitive market, you will need to innovate more to have a good position in this market. Furthermore, we see that there is a tendency to innovate more in competitive market than in a monopolistic world.

Secondly, I will more focus here on the innovator's dilemma.

As an example, RCA is an American company who was creating semiconductors in the 1950s. At the beginning, it was very innovative in vacuum tubes and was number one in the industry. But with evolution in this sector with transistors, integrated circuits and submicron, RCA started to lose more shares in the market and by 1995, it was not in the top 10 anymore. Some economists said that, this failure was due to the fact that, in the mid-1950s vacuum tubes represented around \$700 million market. When the time came to move to transistors, new firms such as Transistron, Motorola appeared in the market. Then, RCA was able to do the transition, even though they didn't know if this would be successful but they thought that it was too risky to refuse to adapt to the transistor technology; The main problem was how to manage both technologies (vacuum tubes and transistors) and they failed at this level.

I gave this example to emphasize the fact that many innovators can succeed in one generation of innovation but are not able to catch the next wave not only for reasons of incentives but also for reasons of change. Managers have to be able to face evolutionary, revolutionary and technological change.

To cut a long story short, I would say that there is a strong link between competition and innovation and one cannot exist without the other. As I do not have the necessary tools to discuss the empirical point of view, I focus more on the theoretical one. But we should really pay attention to the empirical view because history shows us that in theory, everything is fine but in practice it does not.

Source:

Tushman M. , O'Reilly C. : AMBIDEXTROUS ORGANIZATIONS : MANAGING EVOLUTIONARY AND REVOLUTIONARY CHANGE, California Management Review vol 38, no. 4 summer 1996 p 8-10

Like:  0

REPLY

**Andreas P. Engstrand** 7 November 2012 at 22:53 #

Perfect competition is an ideal driver for innovation. Firms have a great incentive to innovate because any innovation will make the company able to undercut the competitors' prices and gain huge profits. But there are two problems. The first is funding. Since companies set prices equal to marginal cost, they are not able to accumulate capital to fund research and development. They will therefore depend on external funding, or the innovations carried out may be relatively small. Second, if a company comes up with a new innovation, other companies can easily imitate the innovator. Whether this effect occurs or not depends on whether the property rights of the innovation is strong or not. In industries like the software industry, there are weak property rights and any innovation may easily be imitated by the competitors in the industry. But if there are strong property rights, companies have a greater incentive to invest in R&D because this may give them a competitive advantage.

Schumpeter believed that there is little relevance in studying perfect competition because it is only an idealised situation. Under monopoly, a monopolist has an incentive to retain the monopoly position if a potential entrant threatens to enter. If the market has low barriers to entry, monopolists have a greater incentive to innovate rapidly in order to retain their market share. But if the barriers are high, the monopolist's incentive is relaxed, as his position is less likely to be challenged (Sastry, 2005).

However, if the monopolist's technology is available to all firms, a potential entrant may be able to leapfrog the monopolist in order to gain larger market shares. Leapfrogging is a term referring to Schumpeter's creative destruction. In a market with a strong monopolist whose market power is based on its own technology, new entrants who are willing to take risk will eventually capture market power as they invent radical technology to replace the technology by the monopolist. Monopolists are aware of this effect, which means that entry barriers have no effect on the monopolist's decision. He will innovate anyway (Sastry, 2005).

Kenneth J. Arrow later criticized Schumpeter's theory, saying that a monopolist has a weaker incentive to innovate than a competitive firm because he has relatively more to lose. Innovations in monopolies are only replacements of old technology, and the monopolist's relaxed motivation hinders adoption of radical innovation. He further assumed that a monopolist's innovation might be disruptive because of high switching cost (Sastry, 2005). This effect is proven empirically in a study by Holmes et al in 2008.

Perfect competition may seem as the best condition for promoting innovation, but this conclusion is too simplified. Different industries demand different levels of investment in R&D, and firms need to retain profit to fund innovation. An example is the pharmaceutical industry. Perfect competition remains only an idealistic situation. In some cases, monopolies are positive. A study by Cabral and Polak (2007) shows that in markets with strong property rights, firm dominance is not only positive for innovation, but it can also has a direct positive impact on social surplus. We therefore cannot conclude whether market structure alone defines the level of innovation, but we have to take into account industry-specific factors that may affect the outcome.

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Like: 0

REPLY

**Paul Belleflamme** 8 November 2012 at 08:05 #

Interesting references, thanks.

REPLY

**Irene Orlandi** 7 November 2012 at 20:53 #

I would like to give my opinion on the issue of the link that connects innovation and competition.

As exhaustively said, the two school of thought on the role of competition in the drive for innovation have reached opposite conclusions – the Austrian school, led by Schumpeter, argues that “monopolies are natural breeding grounds for R&D and that if one wants to induce firms to undertake R&D one must accept the creation of monopolies as a necessary evil.”¹; Arrow points out that innovation flourishes in competitive environments. Gilbert-Newbery, modifying Arrow, reach a conclusion similar to Schumpeter's while Holmes, Levine and Schmitz include to the last two mentioned approaches the disruptive element, so as to consider also empirical evidence.

However, in the analysis carried out by D. Clement², none of the models specifies the nature of the innovation: is it process or product innovation? I believe results would turn out different if the kind of innovation was considered. For example, looking at process innovation, competitive firms and monopolies should have the equal incentives – the former would be more competitive, the latter would increase its profits.

Moreover, do Arrow's results still hold when dealing with monopolies that innovate by developing new products complementary to their existing ones? I think monopolies in such case are very willing to innovate, since they would expand their monopolist status – even though innovation implies costs, the possibility to undertake risk, to exploit economies of scale/scope and to conduct R&D mean high

probability of success and consequently, higher profits in the future, also due to brand awareness the monopoly has built with previously existing products enjoying non-rivalry.

Anyway, I would like to discuss an issue that hasn't been raised so far: monopoly's innovation in competitive markets where similar products are traded. Please, forgive me for the lack of preciseness in the terminology, and for not quoting any source. The fact is that I came to know this problem while talking to the European Sales Director of Igea3, a small family owned firm in the north of Italy. IGEA invented and developed a new machine, the Cliniporator®, which cures skin cancer. It owns the patent and it's the only business commercializing the machine. Even though the treatment's rate of success is much higher than that obtained with chemio or radiotherapies (and with much lower side effects), the greater visibility of traditional treatments and the competitiveness of their market prevent IGEA from being know, from earning enough profits to pay the debts incurred to develop the machine and expand internationally and from exploiting its monopolistic status.

IGEA was aware of this possible scenario when its managers decided to start the business. But they were driven not only by the economic rationale, but also by the idea that, with that machine, they could have saved thousands lives. Thus, they approved the development of the invention.

This is to say that, surely, returns are important, but decisions to innovate may sometimes be driven by the awareness that the innovation will have positive consequences for the society or for the environment.

1. Jean Tirole, The Theory of Industrial Organization, 1988
2. Douglas Clement, Creative Disruption, The Region, 01/08/08
3. <http://www.igeamedical.com>

Like:  0

REPLY



Paul Belleflamme 7 November 2012 at 21:11 #

Thanks for the case-study. Using the economics terminology, we could say that the managers of IGEA (probably because of a form of altruism) internalized part of the social value of their innovation, which gave them incentives to innovate that were larger than the simple private value of their innovation.

REPLY



Antoine Wouters 7 November 2012 at 19:37 #

First, I think that in fact the size of a company has no influence on its incentives to innovate. A small firm will have incentive to innovate if it wants to compete quickly with large companies which are already on the market and a large firm has to innovate if it wants to remain a major actor in the sector and if it does not want to be quickly overtaken by small innovative firms.

On the other hand, I think that innovation can also be dangerous in the long term. Indeed, take for example the company Apple. Historically, the firm places innovation at the heart of its values and we can feel it in its products. Indeed, this firm has revolutionized the market of mobile phones and touchpad. For years, she kept several steps ahead thanks to all the new things that appear on the new models. But there comes a time when innovations in these products become less important. At this point, people may feel a sense of frustration to Apple because the development of a model to another is not as important as earlier. They will be susceptible to turn to a competitor as Samsung, LG, HTC or Nexus because without innovation, they have followed the innovations of Apple with a few weeks or months late. But current models are all similar.

Apart from That, I think innovation can transform low consuming goods into fast consuming goods. We could speak of premature obsolescence. For example, a few years ago, we changed computer every 4 to 5 years. Today, people tend to change more quickly because the new models are faster, more efficient, etc... and people feel faster that their model is too old.

Finally, I think it is essentially the market structure which affects innovation. Indeed, in a monopoly, the monopolist will not have any interest to innovate because every major innovation represents a risk for him, and in the current situation, it has all the market shares. So why should it innovate? In an oligopoly, the incentives to innovate increase because if competitors innovate and we do not, we'll take some late, and we risk losing rapidly our market share. And in a situation of perfect competition, the risk that competitors innovate is even bigger because they are more numerous. In addition, the innovation may also cover production processes. This can lead to a decrease in production costs and thus a decrease in the selling price. If you sell the same product at a higher price, theoretically, you lose your market share. It is imperative in these conditions to innovate to remain competitive.

Like:  0

REPLY



Christian Ramirez Ledezma 7 November 2012 at 19:09 #

I think to some degree, yes there is a positive relationship between competition and innovation, but it depends if within this competition environment exist some type of incentive. My personal experience in two manufacturing companies which have implemented a system of high performance teams (HPT) is as follows:

In a company, one of the objectives of this HPT system was to improve the productivity, quality indicators, safety, customer service, human resources and continuous improvement. Within the area of continuous improvement, the teams had to develop projects which could generate savings or profit to the company through process or products improvements. This system seems very good since during a year, each team performed approximately 2 projects, and were the operators the ones who developed the projects with the assistance of Black Belts. The incentive that existed here was that contests were realized between projects and there was a healthy competition between the teams since they did separate projects and everyone was focused on his own.

In the other company, in a different market and size, in the HPT, there was no formal means to develop improvement projects, however when the workers identified something that could be improved, they communicated and implemented it, but sometimes there was documented evidence of it. In this business there was no competition environment between teams and even ideas were founded and implemented.

I think this reinforces that competition promotes innovation, in some percentage, which is difficult to mention but definitely if there is no competition, companies would take longer to develop new products until consumers demand for them.

Like:  0

REPLY



Paul Belleflamme 7 November 2012 at 21:16 <#>

Interesting case.

REPLY



Morgane Haid 7 November 2012 at 17:51 <#>

I have been surprised while reading the literature about innovation and competition by the arguments used by the different "schools" to support their beliefs regarding the direction of that relationship. Most of the authors have indeed argued against each other by using only one main channel: the link between competition and incentives. They left aside or maybe took for granted the mechanism of innovation capabilities.

To my opinion, one has to take 2 relationships into account to get the whole picture about the link between innovation and degree of competition. The first relationship links innovation incentives and firm competition; I would tend to agree with Arrow and claim that under a competitive environment, firms have more incentives to innovate in order to keep a competitive advantage and survive. On the other hand, firms with monopoly power don't have to incur such a cost unless they are threatened by prospective new entrants. They have less marginal benefits from innovation, and, as you explain in your book, chapter 18.1, monopoly firms just face a replacement effect, by enlarging profit (not creating a whole new source of profit).

The second relationship that I consider very important as well links the degree of competition to the firm's capabilities to innovate. It is straightforward to assume that a firm with monopoly power will be more able to innovate, as it can take more risky actions, it has less threats of losing a market share because of a failed innovation, and because it usually makes enough profit to invest parts of it into innovation. More competition would decrease a firm's abilities to innovate, as it would increase the risk and reduce the investment available.

Hence, I would say that in general, the incentives to innovate and the capabilities to innovate are positively and negatively related the degree of competition, respectively. The intensity of competition, the market conditions, and probably even other endogenous parameters would make one of the relationship stronger and its effect would dominate the other. For example, a firm might be in an environment where there is lots of competition, but the innovation is so cheap that it is still able to innovate. Hence the total effect of increased competition would be hard to analyze. This dual relationship could explain the difficulty encountered when it comes to state the exact relationship between competition and innovation.

Like:  0

REPLY



Paul Belleflamme 7 November 2012 at 21:22 <#>

You're right to draw a distinction between incentives and capabilities.

REPLY



Jerielle Akoto 7 November 2012 at 16:41 <#>

As asked in the assignment I will give my opinion about the link there might be between the competition and innovation. As we know, competition is an important factor for the market to work efficiently. It allows the prices to be lower than in a monopoly

situation and it allows maximizing the social welfare.

Besides, innovation allows the improvement of technologies. This improvement is one of the factors that lead to the economic growth of the market. According to Joseph Schumpeter, the incentive to innovate is the difference in profit that a firm can earn if it invests in research and development compared to what it would earn if it did not invest.

Those two notions depend on a lot of factors, that's why it is hard to say that there would be a simple correlation between them.

On one hand, it would be logical to say that there is a positive link between competition and innovation. Indeed, it seems to me that that less there is concentration on a market and more they will be willing to innovate in order to acquire a competitive advantage over other firms. In that case, I would say more there are firms on a market more there will be innovation on a market.

Furthermore, when there is a lot of competition on a market it seems to me that the introduction of patents or copyright will lead the firms to more innovation because of the protection. In the same way, the non-existence of those rights will lead to less innovation.

On the other hand, I think that in some sectors that affirmation is not always true. On some industries such as the computer industry, even if a firm has a big market power, it has to innovate in order to keep its "dominant position". Furthermore, the preferences of the consumers change over the time and firms have to adapt themselves to those changes. So, sometime more concentration can also lead to more innovation.

Finally, I think that I cannot say if competition directly influences innovation but it is sure that they have an impact one on the other.

Source: <http://www.nber.org/chapters/c0208.pdf> – Looking for Mr. Schumpeter: "Where Are We in the Competition Innovation Debate?" By Richard Gilbert, University of California at Berkeley

Like:  0

REPLY



Paul Belleflamme 7 November 2012 at 21:23 <#>

Good reference, thanks.

REPLY



Philipp Alexander Rathjen 7 November 2012 at 15:49 <#>

In Competition and Innovation: an inverted-U Relationship Aghion et al. find a theoretical model that explains the inverted U Shape they discovered when plotting patents against the Lerner Index. However, as mentioned in the Blog entry above, finding a relationship between Innovation and Competition is remarkably difficult. In fact, in my opinion, it is not possible to discover a general direction of the causality in neither one of the prominent market forms – it depends on the industry.

It is often argued that perfect competition provides the best incentives to be innovative, whilst limiting firms' capacity to innovate. From a theoretical perspective, Arrow pointed towards the lower opportunity cost of innovation for firms in a competitive environment. Furthermore, a firm that discovers an innovation may be in the position to expect huge profits. In terms of capacity, smaller firms often lack access to venture funding and may not be able to cope with the inherent uncertainty of R&D, as mentioned above. However, let us assume they do innovate, though on a small scale. Geroski (1990) pointed out that the probability of finding an innovation increases with the number of firms and this is feasible. If some firms are more Innovative than others, which market structure will unravel in the long run? Are Innovations going to be drastic or non-drastring? The point is, in a competitive market there may be many incentives to innovate, but as innovation increases, competition may lessen or increase. It depends on the market, because the development of the market depends on what kind of innovations it can produce.

In a market with a limited number of firms competing, the incentive to invest in R&D is also crucially dependent on the industry. More specifically, it depends on the number of firms competing (competition effects), the type of competition and the degree of product differentiation. This is because the latter variables may affect the current rents, which may be perceived as both the opportunity cost of innovation and contributing factors to the capacity to innovate, the expected future rents of an innovation (competitive advantage), which provide an incentive, and a firm's probability of being successfully innovative prior to a rival. Furthermore, oligopolies have to be concerned about the type competition they face (price, quantity), the estimated time they will be competing (a pizza place is different VCR manufacturers) and how moves first, or when you get to move in general. All this makes it difficult to detect a definite causality between this market structure and innovation. One may suspect the capacities to be higher, given that companies may collude informally, even without speaking. However, in this shaky setting it is unlikely for the incentives to invest in R&D to be ubiquitous.

In terms of monopolistic markets, i.e Schumpeter assumes a high capacity to drive innovation and this view is generally accepted. In terms of incentives, it depends crucially on whether a Monopolist is threatened by entry or not. Both Arrow's replacement effect and the creative construction are valid in this context. And as Homes, Levine and Schmitz have found out, the existence and magnitude of switchover costs further determines how and to what extent a monopoly is innovative. Therefore, even for a monopoly the relationship between (potential entry=) competition and innovation can be positive or negative, big or small.

Overall, I believe discovering a fixed set of rules that relate competition and market structure proves difficult because there is none. However, it may be possible to find rules and quantifiable effects for individual markets, or even reasonable aggregates of industries. For example, in Europe, the number of patents filed annually for furniture and games has remained arguably constant since 1990'

(between 5000 – 7000). On the other hand, the number of patents for pharmaceuticals has increased by roughly 70% during the same time period.

<http://ipstatsdb.wipo.org/> (search)

Like:  0

REPLY



Malgaud Quentin 7 November 2012 at 14:24 #

I found this article very interesting but a little bit too focused on one part of the problem as well. I partially agree about the position on innovation. But at the same time I would split innovation into two main streams. R&D is one of these streams but innovation is not only about R&D and hardware, about improving the specifications of a product or making it in a different way. Therefore an important part of nowadays industrial key success factor has not been covered.

As we look at the markets of DSLR or tires for example. We see that their structure is most likely oligopoly. In opposition to this example we might take the market of portable speakers (the ones for computers, Ipods, Smartphones) and the market about Smartphones applications. Let us assume that these two markets are close to perfect competition. If we assume that every actor of every market spends roughly the same amount of money in R&D, what is the main factor justifying such a difference in the market structure? Making some assumptions (that certainly deserves to be debated), it is the approach to industrial design and the industrial design itself.

Introducing this notion, let us start by making things simple. A firm can/has to innovate by R&D or/and industrial design.

R&D is crucial in today's consumption economy. As science is still progressing, enterprises must transfer those progresses in science into its products.

Another factor implicating R&D is the constant automatization together with the new technology possibilities.

In addition to that the ecological awakening leads to resources spendings. This forces enterprises to innovate on the energy consumption of its products.

These are a few factors leading a firm to innovate on R&D.

Apart from that, in a planned obsolescence culture people are not used to buy things and use them for more than 5 years. And at the same time they will refuse to buy the exact same item 5 years later. Then the manufacturer has to change at least the industrial design of its products. But industrial design can differentiate the product by itself, it is not only an excuse to renew existing products. Also, one of the successes of Apple is that in the company, while working on the same project, the industrial designer and the engineer are judged as equal. As a result the brand acquired rather big market shares, especially in the mobile phone sector.

The interactions between those two aspects are complex but we assume that an enterprise can use R&D to fight back on design improvement of a competitor and vice versa. Improving design to counter quality (acquired by R&D) is what Chevrolet did realizing they could not strike back on Ford's car quality back in the early 1920's. They simply improved the design.

Considering the examples of the second paragraph we see that markets where there is no possibility for design improvements (DSLR and tires) tend to be stable and oligopolies. In opposition to that market where R&D and design together can be improved tend to be much more competitive. Portable speakers can have various forms and the specifications are still improving. Most of the new ones include Bluetooth. Same for smartphones applications, the complexity and the utility can be improved as well as the design of the interface. From those examples, markets where design and R&D improvement are possible tend to be more competitive.

The incentive to innovate of a firm is strongly related to the market structure. A monopolist will not behave the same than in a perfect competition market. But as far as there is competition (i.e. not monopoly or cartel) there is an incentive for innovation. The example talks about windows in the year 2004, at that time the company was nearly a monopolist but there are a lot of big enterprises that still innovate (3M, Toyota, Coca Cola, ...)

As a conclusion I would first differentiate R&D and industrial design as two main streams of innovation. I join the idea of difference between capacity and incentive to innovate. But I would rather translate it to the macro scale and analyze the capacity of the sector to be innovative: can enterprises innovate both design and other specifications (R&D) of products on this market? About incentive of enterprises to innovate, it is strongly related to the market structure. And from the moment there is competition there will be incentive to innovate no matter the size of the enterprise.

Notes:

There are several possible exemptions, most of them can be justified.

1 Pentax Colour DSLR (design in DSLR market)... But : niche strategy relatively irrelevant compared to the volume of all DSLR sales worldwide.

2 Fire weapons market (no real design improvement but strong competition)... But : very specific market with personal attachment to the products and brands.

3 Portable media player market (no competition but real design and R&D improvement possible)... But : monopoly by a big brand that has also the monopoly on music player software, complementary goods together with the portable media player.

4 Comparing two types of market, young (Applications, Portable speakers) and old (DSLR, tires)... But: DSLR market is only 10 years old even if the big brands come from the SLR market. And we can also consider the watch market, old but strongly competitive because of R&D and design improvement possibilities.

Like:  0

REPLY

**Paul Belleflamme** 7 November 2012 at 15:54 #

Interesting idea, to be analyzed further.

REPLY

**Crépin Philip** 7 November 2012 at 12:28 #

There are clearly some opposite effects interfering on those mechanisms. Personally I believe that the results of the competition level on innovation depends on the type of market. There are many parameters to consider in order to identify the market's behavior and trends. I think to opportunities to innovate, entry costs, technology level, culture, etc.

But most of all, I rather focus on the length of the product's life cycle. Indeed, I believe that fast consuming goods market will be characterized by a higher level of innovation if competition remains high. Vice versa I think that competition won't spur innovation on a market where the products have a very long cycle time.

My intuition is the following: fast consuming goods require customers to repeat very often their act of purchasing. So they will see again the substitutes and their attributes. Furthermore, the repetition of purchase leads the customer to be quality and price sensitive. So the innovative firms have here a real opportunity to convince customers.

On the other side, I don't believe that markets with long cycle time products will be stimulated to innovate when competition is high. Let's consider heavy furniture market. People will buy such goods very few times in their life, and maybe collect it from older owners or parents. So here I think that manufacturers won't try to differentiate much. They rather will optimize the geographic covering and production costs.

There is another element to be considered here. A well-known phenomena: planned obsolescence. Some companies try to change long cycle-life products into fast consuming goods. That way they probably try to increase purchase frequency and make the consumers innovation sensitive. For instance, here, the bulbs market.

Like: 0

REPLY

**Paul Belleflamme** 7 November 2012 at 12:49 #

Good point.

REPLY

**Meike Hildebrandt** 7 November 2012 at 10:58 #

In the following i will give my opinion about the link between innovation and competition strucutres. Like most of the other students, i think it is a difficult question to answer. I think there is more than one factor, having an influence on the incentive to innovative, but the extend of competition is surely one of them. Nowadays, there are still different opinions about the direction of the influence, which can be seen based on contradictory statements, like the following from Arrow and Schumpeter:

At first, it appears logical that in a market with a high degree of competition the incentive to innovate is also high, because competition is seen as a main driver of innovation. The firms have a higher incentive to innovate, because they want to establish and get an advantage, hoping that they can exit the competition (see Arrow). You just need to be a little bit better/different than your competitors to gain a higher profit. But a lot of these firms do not have an access to needed informations or to needed assets. Furthermore, they are not able to take the risk that investments in R&D entail. Furthermore, I agree with some models (e.g. Aghion, Bloom, Griffith and Howitt (2005)), which say that there is a U-shaped relationship between competition and innovation. That means, that competition influences innovation positive, but just until a certain level/point.

But on the other hand, the firm in a monopoly market strucutre seems to have the better possibility to innovate, because it has the required assets to invest in R&D (and can benefit of the economies of scale). And it can spread the risk by having more than one project at the same time. This is also supported by Schumpeter, saying that a monopoly is more attractive for innovation than markets with a lot of competition, becasue the monopolist wants to save his position. Therefore, threat of entry is a main driving force.

Summarizing, I think that competition and innovation are in context. But in the different types of markets, the extend of this correlation is still different. Other influences like assets, capacities, access to information etc. (depending on the sector) should definetely be considered in analysis.

Like: 0

REPLY



Paul Belleflamme 7 November 2012 at 13:38 #

Good summary.

REPLY



An Vu Pham 7 November 2012 at 10:41 #

In this comment, I would like to give my point of view about the link between competition and innovation which can be more complex than it looks like.

At first, I agree that depending on the situation of the market, the incentives to innovate are different. If there is a fierce competition, like an oligopoly, there will be more incentives to innovate and pricing wars to take the edge over the concurrents. On the other side, in a monopoly or even a situation with several firms are battling but one of them has way more market shares, the market leader can rest on their laurels and only build on its achievements rather than innovate which can be prejudicial for the customers but also for their own. But we have to remember that to become that market leader, the company has innovated at one time or another.

In fact, not only the market situation is important but also the evolution of the society has to be taken into account. The mentalities and the way of consumptions are in constant evolution and at one point, a product which was very succesful can suddenly become outdated. As an example, I would like to use the situation of the mobile phones. In the mid 90's, the cell phone was something that just appeared and so the first ones to innovate it were also the strongest on the market. Motorola and Nokia were thus the market leaders. Nokia went to consolidate that lead position in favor of some improvements about the cell phones but nothing really innovating. Everybody was satisfied with a cell phone which can phone and send texts. But now that communication is more and more important, other needs were created and by this way, the smartphone has became the standard communication tool. Firms like Apple or Samsung who went to innovate to put those smartphones on the top are now leading the market while Nokia couldn't make the transition between classical cell phones and smartphones and is still struggling to find a place in that market and Motorola was bought by Google in 2011.

As said in some comments, an other example could be Microsoft who is the leader on the computer market but due to the emergence of the mobility represented by tablets and smartphones, where Apple and Google are the leaders, the Californian company has to adapt and innovate in function of those standards. That's why the new Windows 8 is not only conceived for PC's or laptops but even more for tablets and smartphones to regain some market shares lost due to the switch from PC's to tablets.

That last example also illustrate the fact that bigger companies have more capacity to innovate in R&D and find some new niches or just only to innovate to maintain their position againts their competitors.

To sum up, the incentives to innovate can depend from the market competition but an innovation can also define a new competitive situation where the roles are redistributed. In consequence, innovation is an important part of a company, whether it's in order to battle in the actual market or to develop a new business that can take over the competitors.

Like: 0

REPLY



Paul Belleflamme 7 November 2012 at 12:27 #

In Schumpeter's words, these are examples of "creative destruction".

REPLY



Aditya Ahluwalia 6 November 2012 at 12:16 #

In the world that we live today, it is information which rules. Clear, transparent and full information are rules to play any game. Technology is accessible to every one so the question arises is that if I do not innovate, I am very sure my competitor would and take away the business from me. Thus a natural rat race is created where the companies not only strive to the best among their competitors but also from themselves. In today's world the relaxed regulations to trade have made it very difficult for the monopolist markets to survive and they are also on the path of innovation i.e. striving to do better than themselves to keep the monopoly or the major share of the market. Taking a few examples of the above statements:

In India almost a decade ago the position of Nokia was unassailable, but with the android wave coming in and Nokia refusing to let go of its Symbian platform, Samsung has officially over taken Nokia in terms of number of handsets produced globally, breaking its 14 year old record and is above Nokia in the smartphone market in India. Nokia which is now fighting back is phasing out Symbian and coming with windows based phones, phones supporting 41 MP cameras and various other user friendly apps like navigator i.e. innovating to stay in competition. (for more information <http://www.livemint.com/Industry/jsKoelaYRb2itvLBXmy2KM/Nokia-fights-back-as-Samsung-eats-into-India-handset-share.html>) Thus we can see that even in a very competitive environment and after having a lion's share of the market you choose not to innovate for the fear of cannibalization of your own products, some one else is bound to do it and take the share away from you.

A second stark example I can think of is Google, a firm which has almost 85% share in the search engine market did not refuse to innovate. It came up with innovations like Chrome, Gmail, Android and list is endless. A company which is already on the top of the pyramid, basis its entire roots on innovation. The way it chooses and nurtures its employees, the kind of work atmosphere and support they get to create and work on their own projects is what has made this company as among one of the most innovative companies in the world. The important point here is this was not done to reach the top of the pyramid, but even after comfortably occupying that position they choose to do it.

Thus we can see that be it any type of market structure in today's world when you interact with so many elements, it is of the utmost importance to innovate because if the firm is not up to the mark there would be thousands waiting in line to serve you better.

Like:  0

REPLY



Paul Belleflamme 6 November 2012 at 12:46 <#>

Two contrasting and instructive examples. Thanks.

REPLY



Ieva Jurgalane 4 November 2012 at 19:33 <#>

It is undoubtedly true that efficiency and innovation are the key words that any governmental or public authority would like to attain as much as possible in every market, sector or industry. However, the means how to achieve this varies from case to case, consequently also the applied tools differs in every particular situation.

As mentioned by Douglas Clement in his article "Creative Disruption", K. Arrow strongly believes that firms within higher competition level in the market are more incentivized to invest in R&D and innovate, while firm with monopolistic market power has less. On the contrary, J. Schumpeter argues that monopolies are better qualified in investing and innovating, and has more capabilities to take on the inherent risk, that new production inevitably captures.

Therefore, important and crucial question appears – till which extent it is profitable and efficient to incorporate strong competition in the market?!

In favor of K. Arrow and by significant empirical evidence – in industries where there is more intense competition exhibits more innovation than monopolies. Biggest advantage of competition is that it involves rivalry among firms for the customer's business across all the dimensions of the service – price, quality and innovation. Competition is by far the most effective means of giving customers what they want in terms of price and quality of the particular commodity. In such circumstances, firms also have a strong incentive to gain a temporary advantage over their rivals through innovation and the development of new services. A final argument in favor of competition is that it encourages firms to produce more efficiently. However, it should not be forgotten that due to economies of scale, it may be possible for a monopolist to serve a market at a lower unit cost than two or more competing firms can achieve.

Consequently, government intervention by help of regulatory agency (as for instance) to unbundle different sectors of industry (for example – distribution networks are with few exceptions monopolistic, while retailing always competitive), could be justified to ensure an efficient allocation of resources and greater social welfare, that are inherent factors of sustainable economic growth and prosperity. In addition, unbundling strategies are likely to promote innovation (see Robert Baldwin, Martin Cave, "Understanding Regulation: Theory, Strategy, and Practice", Oxford University Press, 1999). Accordingly, regulator would have crucial role in apportioning the competitive sectors from monopolistic and therefore permitting competitors to enter and warrant the access to incumbent's monopoly assets. Nevertheless, the agreed terms and conditions (frequently, the agreement should be not only between the incumbent and regulator, but also should include entrants and in some cases consumers) are with significant impact, and in some sectors, regulators can impose separation remedies, to ensure fair competition in an unbundled environment.

As mentioned by R. Baldwin: "Incentive regulation appears to increase the deployment of modern switching and transmission equipment, to spur an increase in total factor productivity growth, and to foster a modest reduction in certain service prices.", and for that reason, proper regulation can be applied as a powerful tool to promote efficiency and innovation.

Like:  0

REPLY



Frank Müller 2 November 2012 at 16:14 <#>

With my following contents I would like to explain my point of view. Like a majority of the previous comments here I share the fact that the link between competition and innovation is complex and difficult to measure. In the last decades many empirical approaches were offered underlining the relationship between competition and innovation.

I'd like to pick up one approach which I found interesting. Gustavo Crespi and Pari Patel describes in their paper the relationship between competition and innovation efforts for specific sectors and what changes according to the position of countries as technological leaders or followers could be shown. The conclusion is that there is a great deal of sectorial heterogeneity in the

relationship between innovation and competition. Figuratively, they talk about an inverted U-shaped relationship between competition and R&D investment.

Referring to that, the inverted-U curve means that strong monopoly power does not favor innovation, free competition may not be all that good, and innovation is maximized somewhere in the middle. As one result, Crespi and Patel confirmed the fact that competition is good for innovation which could be observed particularly in the case for the ICT and Aerospace sectors.

Let me give you an example from the ICT sector. As you could see in the recent launch of Microsoft's Windows 8 last week, Microsoft tries to fulfill a redefinition its brand to keep its strong position in the operating system segment. The operating system is based in Modern User Interface, a unified approach to desktop, tablet and mobile. It features a "Start Screen" of apps displayed as live tiles that continuously keep current information updated.

This innovation I think is a result triggered and evoked by Google or Apple. They work with such matters in the tablet and smartphone market in which Microsoft struggles to find a connection.

Sources:

Crespi, G.; Patel, P. (2008): Relationship between Innovation and Competition – Differences across Sectors; Prepared for Innovation Watch/Systematic project, funded by the European Commission.

<http://www.forbes.com/sites/onmarketing/2012/10/26/windows-8-opens-opportunities-for-brand-marketers/>

http://www.huffingtonpost.com/2011/09/13/windows-8-features_n_960478.html

Like:  0

REPLY



Paul Belleflamme 5 November 2012 at 08:35 #

Thanks for the references and for the nice application to Microsoft's recent strategies.

REPLY



Karan Kumar 29 October 2012 at 01:24 #

Innovation and competition can be seen as concepts that have both created changes in the market dynamics. Both these powerful, yet complex phenomenons have their own intricacies. Competition can force a long time market leader to innovate and innovation lead a market leader to fall.

In the Indian context, online retail was never an easy game to play. eBay had been in the market for a long time, it was leading the market but still market size was too small to be proud of. Flipkart, a small e-commerce start up by two young Indians, who had worked in amazon.com had some other ideas. It brought in both, competition and innovation. It touched the root nerve of the Indians by providing COD(Cash on delivery). Indians are very particular when it comes to online purchase. They have apprehensions about buying a thing without looking at it and also to make payments using cards, which most Indians are still not comfortable using. They are skeptical about the safety of online transactions.

So what Flipkart did was to make the customer comfortable with the COD option and also provided a very quick delivery mechanism. It started first by selling books, and was achieving delivery times of less than 36 hours of order, even to small towns of India. This was staggering and showed in their initial sales. So, a company like Flipkart changed the face of e-commerce in India and made way for a surge of companies in the market. eBay also followed suit by providing COD soon.

Another very nice example which connects competition to innovation is a sensational innovation with incredible price of USD 2000 from Tata Motors called Tata Nano. Tata group is a big brand all across the globe. Mr. Ratan Tata had a dream when he saw a family of 4 riding a 2 wheeler scoter on the roads of Bangalore to give this country a car which would be affordable and safe. These two criteria became the platform for designing a sensation, Nano. It was cheap, safe, stylish, fuel efficient and had everything for the needs of a middle class Indian family. Now, when we talk about competition, it had nothing whatsoever. Nano operated in a market where no other vehicle was there and no other car manufacturer all over the world could believe they can ever operate. The average two wheeler costed around USD 800 and the cheapest car available was for around USD 4500. So, Nano was alone, it was a true innovation. A point worth noting is that this concept came from a company which was so big that it acquired Jaguar- Land Rover in the coming years. Tata Motors has been known to work for the society and bring out innovations.

I believe competition and innovation are dependent but not to a level that an equation can be drawn out. This world is full of brilliant minds and breakthrough innovations have happened and will keep happening. Humanity is waiting for some innovation that will change the face of the world, something like an air operated engine. No need of fuel, no dependence on superpowers of the world and may be the balances will shift.

Like:  0

REPLY



Paul Belleflamme 29 October 2012 at 10:32 #

Nice illustrations!

REPLY



Roman Jedlička 27 October 2012 at 21:07 #

After taking into account all relevant points of view I sympathize with the idea that the main driver of innovation incentives is the level of competition on markets regardless of market power of the company (see <http://www.people.hbs.edu/tnicholas/EH03.pdf>).

I acknowledge that larger companies have more resources that may be used for innovation. But with small level of competition is higher chance that firms will cooperate together and market structure will tend to Cournot oligopoly (considering no others potential entrants) or monopoly-in case of no competition. On the other hand, there is lower chance for cooperative behavior with higher competition or potential entrants on the market (see ie Motta – Competition Policy: Theory and Practice; Cambridge University Press; 2003).

I think that we could observe the innovator's dilemma only on the markets with very low level of competition in the long run. Otherwise there could be immediately another company offering better substitute to customers.

Some theories try to convince us that durable-goods monopoly has a power to discourage potential entrants on the market (see <http://www.econometricsociety.org/meetings/wc00/pdf/0610.pdf>).

I agree with this approach, but only in the short run. The reason is that we live in dynamic (not static) world and we cannot say that there will be no demand for product of potential entrant in the time T just because incumbent sold a lot of their products in the time T-1. If the incumbent firm does not innovate and improve its product today, there is no claim that potential entrant will not offer a better substitute tomorrow.

Yes, we can consider a lock-in effect of incumbent's product, however in my opinion, the lock-in effect is only strong to the extent, that the product is good and user-friendly. Consequently, with more competition there is higher chance to introduce product that can break this lock-in.

That's why I believe that key for more innovation is mainly higher competition on the markets.

Like: 0

REPLY



Paul Belleflamme 29 October 2012 at 10:36 #

Thanks for the references.

REPLY



Shoira Mukhsinova 25 October 2012 at 06:22 #

Empirical research suggests there is a link between the level of competition companies face and innovation. According to Schumpeter (1942), monopolies are breeding grounds for R&D and creation of monopolies is inevitable when inducing firms to undertake R&D. While according to Arrow (1962) incentives to innovate is less under monopolistic than under competitive competition. Thus, monopoly has capacity to innovate but less incentives, while a competitive market structure will have more incentives but less capacity.

Intuitively, most influential (broad) innovations require higher R&D costs and longer duration to realize. Lets distinguish between long term and short term R&D. Basic research R to lay basis of innovation A has to be done for a long period and is riskier. When basis are laid and A is close to commercialization, R&D in a short run is needed to realize it. Private firms are less interested to invest in long term R&D, because of higher risks, low present value of profits occurring far in the future, etc. Obviously, only firms which make a profit, will have resources (capacity) to undergo R&D costs and at the same time need to be provided with incentives to do so.

Intuitively, perfect competition would not be the market where innovation by private firms will take place because of low capacity to innovate. At the other hand, its incentives to innovate are high and would lead to higher social welfare if competition would persist after innovation. On the other hand firms acquire innovation in order to make profits afterwards, which will always lead to a lower social welfare in a short run. Nevertheless, competition should be present to create incentives to innovate.

Since firms with incentives do not always have capacity to innovate, the role of governments to sustain basic research and make it publicly accessible becomes important. The role of Public Private Partnerships can be significant to increase firm's capacity via public research institutes (e.g. universities). Obviously, research capacity should be directed towards a topic which has more likelihood of setting bases for future innovations based on their priority to answer society needs. It will provide capacity (through basic research) to competitive market to undertake shorter term R&D to commercialize innovations based on the research. It would increase social welfare because high priority society needs will be satisfied first, and competition will sustain since firms will be provided with capacity to innovate.

Therefore, private public partnerships can help to find a balance between dynamic and static efficiency.

Like: 0

REPLY

**Paul Belleflamme** 25 October 2012 at 06:51 #

You're right to think about the appropriate policy interventions in this matter.

REPLY

**Delphine Delaunoy** 19 October 2012 at 14:03 #

I would like to give my opinion about innovation and market structure. Indeed, as mentioned in the text, I think too that there is a link between innovation and competition.

According to Kenneth Arrow, competitors have more incentive to innovate than monopolists. The explanation is that since new entrants could enter the market at any time, incumbents in competitive market will try to be creative and innovative in order to keep an advantage on the new entrant. And, on the other hand, new entrants would try to be as innovative as possible to be able to break through in this competitive market. Each firm trying to give their best would result in more innovation on the market. Hence, competitive environment are more favourable to innovation. More competition, therefore, tend to result in increased innovation which could then lead to higher productivity.

However, we shouldn't forget that according to Joseph Schumpeter, large establishment are "better qualified or more eager to undertake R&D than smaller firms". Moreover, he said that monopolies and innovation are closely related. And his argument was that they can take advantage of increasing returns prevalent in R&D. Thus, those firms would try to innovate as much as they could to be able to gain from those benefits. Furthermore, another point was that monopolies have greater capacities to take on the inherent risk compared to other type of firms; monopolies usually benefit from economies of scale and have a higher profit than competitors, so knowing that no one will compete them on the market, they would use this extra profit to risk themselves in research and development. But the fact that the firm is the only one on the market could also mean that it has less incentive to invent and incur additional costs if it knows that there is no competition.

It's clear than the links between innovation and competition is complex but still I think that a link actually exists.

Source : http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=4052

Like: 0

REPLY

**Goffin Matthieu** 17 October 2012 at 17:29 #

In these followings lines, I will give my opinion on the link between competition and innovation. From my point of view, I think that the link depend of the nature of the competition on the market. So, I will take one per one different type of competition and I'll give my opinion on the links there are between this two.

If we are in a monopoly, the firm has no need to innovate. Because she is alone on the market she will have all of the consumers. Why risking to lose money in R&D? It's true that with the innovation, the firm may decrease cost; hence she is able to increase her profits. And perhaps the innovation can permit to the firm to cover a larger market, to go into other markets, or to attract new consumers. To sum up, the incentives to innovate are too low.

If we are in an oligopoly with Bertrand's competition, the incentives to innovate are huge. The firms who put the lower price will attract all consumers. So, the most rational issue is to innovate to diminish cost. And to lower prices. So with the innovation, the profits will greatly increase.

If we are in a Cournot oligopoly, the incentives to innovate exist, but they are lower than before. If a company decreases her cost, she doesn't catch all the market, she just will make few benefits. The firm has to make a tradeoff between lower her cost and spend money on R&D.

If we are in a competitive market, the innovation will be a solution to gain more market shares. But in a competitive market, the firms make no profits. So, if the innovate, and she doesn't change the structure of the market with the innovation, it is not rational. She will lose money in R&D for nothing. Whether the innovation is drastic and leads to a change in the market structure, another problem occurs. How the firm can have the money to spend in R&D if she doesn't have rents?

Some characteristics of the markets can also influence the incentives to innovate. In a market at the end of his cycle of live, there would be ridiculous to make expenditures, like for example the DVD player's market. On the other hand, in a growing market like for example tablet computer, firm have to innovate whether they want to remain on this market.

To sum up my ideas, we can't say that there are in general a positive or a negative relationship between competition and innovation; because, the link varies from one sector to the other. So to study this question we have to take particularly each market.

Like: 0

REPLY

**Paul Belleflamme** 25 October 2012 at 06:37 #

Your intuition is correct but there are some subtleties that we'll cover during the lecture.

REPLY

**Marlon Braun** 17 October 2012 at 14:48 #

Determining the link between innovation and competition is a difficult question to answer. There are many factors having an influence on the innovative strength of a specific market. In my opinion, the strength of innovation is not only influenced by the type of the market, but also on the necessity and the possibility to innovate. I would like to elaborate on this notion by analyzing each market form individually.

Perfect competition yields the best incentives for innovation. Even a small advantage over your competitors like producing at lower costs may result in a huge raise in profit, since it can put you ahead in the market. Innovation, however, is mostly fostered by investments in research and development. These investments typically require assets or funding, something small firms usually have no access to. There are however markets, where innovation can be achieved rather by having bright ideas than investing millions of euros in research facilities. Software development for example requires little investments. An ingenious idea can make a billion dollar corporation out of small start-up. Microsoft, Google and Facebook are perfect examples. Operating systems, search engines and social networks had already been around at the time of their rise, but it were those companies that became the big players in their field. At the same time, there are many industries for example in the service sector, where there is little room for actual innovation. Even if competitors innovate, this may have little impact on your business.

In oligopolies firms still have a high incentive to innovate. A technical advancement may leave one company outperforming its competitors. This is the case, when firms face Cournot competition and especially when competing via prices in a Bertrand competition, which actually resembles the situation of perfect competition. Just when looking at all major oligopoly markets, this assumption seems to be verified. For example the automobile industry invests billion of euros each year in developing new technologies that will put them ahead of their competitors. Oligopolists have both the resources and the incentive to innovate.

Monopolies on the other hand tend to hinder innovation. Once a company has secured its market position and does not have to fear competitors, there is little incentive left to innovate. Of course, innovation still pays off in additional profit, but the margin becomes much smaller as in the latter two cases. Microsoft is a perfect example for this problem. They have dominated the computer operation system market nearly since its inauguration and have ever since missed out on important developments. They entered the browser market after Netscape had become market leader. Today the Internet Explorer is losing ground against Firefox. Currently, Microsoft still struggles in setting foot in the tablet and smart-phone market. Competitors like Google and Apple are the pioneers in this field now. On the other hand, if a monopoly is threatened by entry, the incumbent firm has a high incentive to innovate. Again, Microsoft invested billions in their home video game consoles Xbox and Xbox 360, when they noticed that no major console manufacturer will use a Windows-based operating system.

All in all, the innovative potential of an industry is not only influenced by its market type. Although, monopolies, oligopolies and perfect competition play a major role in giving economic incentives for innovation one has also take into account sector-specific aspects, like the amount of assets and funding are required for research and development or the actual advantage an innovation gives you over a competitor.

Like:  0

REPLY

**Paul Belleflamme** 25 October 2012 at 06:34 #

Thorough answer; good!

REPLY

**Georgin Maxime** 15 October 2012 at 22:23 #

As it is said in the post, there are probably strong relationships between competition and innovation but it is hard to understand what are the consequences of one on the other. The debate is still open and I want to give my opinion about it.

I tend to agree with the fact that more competition lead to more innovation even if, as it is said in the post, the relationship is far more complex. I don't say it is always the case but, in most markets, going from monopoly or duopoly to an oligopoly with much more competition would give companies more incentives to innovate. On the opposite, approaching the idealist situation of perfect competition means there is not profit to invest in R&D anymore.

I am not convinced about Steve Jobs sentence: "what's the point of focusing on making the product even better when the only company you can take business from is yourself?" This can apply in some restricted markets with huge barriers to enter and where products takes decades before becoming obsolete. However, in IT-like markets structure where we find Apple and Microsoft for example, innovation is a need existing in monopoly and increasing with competition. In general, people on these market are used to change and new product stimulate the sales. Indeed, if your computer is still so performant five years after buying it and if changing doesn't have any ergonomic interest, you won't change before it breaks. Firms have to innovate to create the feeling that "old" products from one or two year(s) before are already obsolete even if this "old" product is yours. Furthermore, increasing entrants force the incumbent monopoly – or duopoly – to innovate faster in order to keep the best technology.

On the distinction between capacity and incentives to innovate, I agree on the easier access to funds for R&D for big companies. I explained before that these big companies have incentives to innovate and they developed systems to capture the benefits of smallness while using their big capital possibilities. It is know as the Corporate Venture Capital (CVC). Summarizing, big firm invest in some start-ups with an option for buying them if the project works (see http://www.atp.nist.gov/eao/gcr_08_916_nist4_cvc_073108_web.pdf for more informations). There are much less loss if it doesn't work and it leads to more innovations.

In brief, I think that competition is correlated with innovation but with different strength depending of the type of market, the structure and the industry. It is also necessary to go in depth when analysing a market because of all other relationships, which can have an impact on competition (innovation) without influencing innovation (competition).

Like:  0

REPLY



Paul Belleflamme 25 October 2012 at 06:29 #

Thanks for the link about CVC!

REPLY

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