



Creative destruction and productive preemptive acquisitions[☆]



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ABSTRACT

We develop a model of entrepreneurial innovation for entry and sale into oligopolies suitable for welfare analysis. We show that the expected consumer welfare can be higher under commercialization by sale than under commercialization by entry despite increased market power in the product market. The reason is that when the quality of the invention is sufficiently high, preemptive bidding competition among incumbents drives the acquisition price above the entry value. Entrepreneurs who sell their inventions will then have a stronger incentive to develop high-quality inventions than entrepreneurs who aim at entering the product market. Incumbents are hurt by this creative destruction process ignited by the entrepreneurs and thus have an incentive to undertake research to block entrepreneurs' research activities. We show that incumbents' own research effort can reduce, but not eliminate, the entrepreneurs' incentives to innovate for entry or sale.

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1. Executive summary

The process of creative destruction and its welfare effects have been extensively analyzed in the literature in the case where an entrepreneur challenges existing oligopolistic markets by commercializing an invention by entering the product market. An incumbent monopolist's incentive to block entrepreneurial entry by entry-detering research or by an entry-detering acquisition has also been thoroughly analyzed. Our paper complements this literature by allowing for the case where several incumbents compete to acquire the potential entrant, and where incumbents can also undertake blocking research.

We develop a model of entrepreneurial innovation for entry and sale into oligopolistic markets suitable for welfare analysis. We first establish that if the quality of the invention is sufficiently high, the incumbents' profits are diminished so much that they will try to acquire the invention in order to preempt other incumbents from acquiring it. This, in turn, implies that the acquisition price of the entrepreneurial firm will be significantly higher than the entrepreneur's reservation price which is simply the entrepreneur's net profit from entry.

We show that the expected consumer welfare can be higher under commercialization by sale than under commercialization by entry, despite the increased market power for the acquiring incumbent firm in the product market. The reason is that entrepreneurs who sell their inventions will have a stronger incentive to develop high-quality inventions than entrepreneurs who aim

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at entering the product market. Incumbents are hurt by this creative destruction process ignited by the entrepreneurs and thus have an incentive to undertake research to block entrepreneurs' research activities. We then show that incumbents' research effort can reduce, but not eliminate, the entrepreneurs' incentives to innovate for entry or sale.

In recent decades in Europe and the US, government policies have favored the growth of small firms as compared to the alternative to sell or license inventions. This has been accomplished by tax-favoring the market entry of entrepreneurs, or by offering subsidies for SMEs. The results derived in the paper suggest that industry policies that disfavor innovation for sale over innovation for entry may be suboptimal. The reason is that reducing the cost of selling inventions may not only have a direct positive effect on the reward for entrepreneurship, it may also create bidding competition over high-quality inventions, which may further increase the incentives for entrepreneurial research. Policies that improve the M&A market could then be preferred. Such policies may involve making the tax system neutral between keeping and selling a firm, or improving the legal system to reduce the transaction costs associated with acquisitions in order to ensure a bidding competition over target firms.

2. Introduction

Schumpeter (1942) argued that the ongoing process where new inventions create “monopoly rents” for entrepreneurs while reducing rents for incumbent firms is central for sustained growth in a market economy. This process of “creative destruction” and its welfare implications have been extensively studied in the case where an entrepreneur commercializes the invention by entering the product market.¹ However, if the incumbents' profits are diminished by entrepreneurial entry, incumbents have an incentive to acquire these entrepreneurial firms (or their inventions) to block entry (entry-detering acquisitions) or preempt rivals from obtaining superior assets (preemptive acquisitions).²

The purpose of this paper is to examine how the innovation process and its welfare effects are affected by the hitherto ignored fact that entrepreneurial entry might be blocked by incumbents – either by entry-detering or preemptive acquisitions. To this end, we develop a theoretical model where, initially, an entrepreneur decides how much to invest in research to discover an invention. If successful, the entrepreneur can either enter the product market with the invention or sell it to one of many incumbent firms competing to acquire the invention in an auction framework. Finally, firms compete in oligopoly fashion, thereby generating profits.

We first examine what type of inventions – in terms of quality – that will be sold. At first sight, it seems reasonable that the level of quality should not matter in a context of perfect information, since the entrepreneur's reservation price and the incumbents' willingness to pay should be equally affected by a change in quality. However, we show that the incentive for commercialization by sale relative to commercialization by entry increases with a higher quality of the invention, when the invention is used in an oligopolistic market. The reason is that the incumbents' willingness to pay for the invention increases more than the entrant's profit due to the fact that the value for the incumbent of preempting others from using the invention increases in the quality of the invention.

Next, we examine how the acquisition price (the reward from selling) depends on the quality of the invention. We show that for medium quality, the entrepreneur is paid her reservation price which is simply the entrepreneur's net profit from entry. Such entry-detering acquisitions are then replaced by preemptive acquisitions at even higher quality. The reason is that since non-acquiring incumbents' profits in the product market deteriorate when the quality of the invention becomes higher, a bidding war among incumbents' over the invention will eventually occur.

We then direct our attention to welfare implications. Entrepreneurship has emerged as a key issue in the policy arena in Europe and the US, where policy makers believe small entrepreneurial firms to be the firms that are better at capturing opportunities and coping with challenges created by the ongoing globalization process. In the European Union, for instance, the Commission has taken action, launching the “Small Business Act for Europe” in June 2008, proposing that member states should create an environment that rewards entrepreneurship and small firm growth (Commission of the European Communities, 2008).³ According to a report by the OECD (2007), in the year 2007 several countries offered tax subsidies for R&D targeted specifically at SMEs. Examples are: the UK, Canada, Japan, the Netherlands, Norway and Poland. Moreover, many countries effectively tax-favor the market entry of entrepreneurs over the alternative of selling a business or patent.⁴ Government policy can also be geared towards supporting commercialization by young and small firms. Examples of this type of policy are financial support for incubators, and loans specifically designed to facilitate the commercialization process in new firms. Recently, there has been a substantial increase in spending on such policies. For example, in 2009, the US Small Business Administration had approved over \$13 billion in loans and \$2.7 billion in surety guarantees to small businesses in a year.⁵

Thus, government policy tends to disfavor innovation for sale over innovation for entry. To capture this in a stylized way, we compare two policies: (i) one where there is no government intervention referred to as the non-discriminatory policy and (ii) one where innovation for sale is extremely disfavored by being forbidden. We refer to this policy as the discriminatory policy.

¹ See, for instance, Arrow (1962), Aghion and Howitt (1992), Gilbert and Newbery (1982) and Grossman and Helpman (1991).

² Bloningen and Taylor (2000), Granstrand and Sjölander (1990), and Lerner and Merges (1998) present evidence of firms acquiring innovative targets to gain access to their technologies. Grime and Hussinger (2008) empirically test how the acquisition price is related to key technologies in the acquired and acquiring firms. The authors find that firms with technologies that deter entry and preempt competition are of high value for acquiring firms.

³ Baumol (2002) documents that small entrepreneurial firms create a large share of the breakthrough inventions in the United States. Scherer and Ross (1990) list a large number of breakthrough inventions made by independent innovators and state that “new entrants without a commitment to accepted technologies have been responsible for a substantial share of the really revolutionary new industrial products and processes”.

⁴ See, e.g., the chapter on small business taxation in Mirrlees et al. (2011).

⁵ 2009 Summary of Performance and Financial Information, US Small Business Administration, 2009.

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