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Antitrust, legal standards and investment

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ABSTRACT

We study the interaction of a firm that invests in research and, if successful, undertakes a business practice to exploit the innovation, and an enforcer that sets legal standards, fines and accuracy. In this setting deterrence on actions interacts with deterrence on research. When the practice increases expected welfare the enforcer commits not to intervene by choosing a more rigid per-se legality rule to boost investment, moving to a more flexible discriminating rule combined with type-I accuracy for higher probabilities of social harm. Patent and antitrust policies act as substitutes in our setting; additional room for per-se (illegality) rules emerges when fines are bounded. Our results on optimal legal standards extend from the case of (uncertain) investment in research to the case of (deterministic) investment in physical assets.

1. Introduction

In recent years, many important antitrust cases on abuse of dominance and monopolization have involved technological market leaders or incumbents owning essential infrastructures. In their investigations, competition agencies have scrutinized a wide range of business strategies that the dominant firms allegedly used to maintain and increase their market power, from rebates to tying, from interoperability to margin squeeze. Although antitrust intervention typically focuses on incumbent's practices and does not consider its research investment decisions, these latter have a strong impact on the evolution of high-tech industries and social welfare.[1] When business strategies are a tool to further extract profits from the innovation, the incumbent's research efforts depend jointly on the degree of patent protection and on the antitrust treatment of the practices that the innovator might undertake upon discovery.

This paper studies the optimal antitrust intervention – both in terms of legal standards and enforcement tools – for given intellectual property rights protection to condition the adoption of certain business practices in industries where the incumbent's investment plays a fundamental role.

Looking at competition policy in the last decade, many cases have involved dominant firms in high-tech industries, that reached the role of technological market leaders due to successful research investments and innovation. In the American and European cases Microsoft was alleged of foreclosure on a number of practices such as bundling of the operating system with the browser or media player applications, loyalty rebates granted to PC producers, and limited access (a mild form of refusal to deal) through a reduction in interoperability of its servers' and clients' operating systems with the competitors' server operating systems. The record fine to Intel in the case before the European Commission was motivated, among other conducts, by foreclosure through loyalty rebates. In the last years the focus of antitrust enforcement seems to be moving towards new technological leaders as Google and Apple. In parallel with those complex cases, the debate in competition policy has also raised questions about the impact of antitrust enforcement on the innovative activity characterizing these industries. For instance the commitments imposed in the EC v. Microsoft decisions to disclose

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[1] In this paper we do not consider antitrust issues related to joint research programs or licensing, that typically involve the threat of collusion, but rather analyze the case of individual firms research programs and business strategies that may lead to foreclosure. On the first topic, see Chang (1995), Green and Scotchmer (1995) and Erkal (2004).

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the API codes of the server operating system to competitors, have been commented not only in their ability to restore competition, but also in their adverse effects on the incentives to innovate.

The impact of antitrust policies on investment has recently emerged as an important theme also in network industries where the investment is primarily in physical capital. The early stages of public utilities liberalization in Europe have focused on granting the competitors non-discriminatory access to the existing infrastructures. In recent years, the need of huge investments in new electricity, gas or telecom networks has urged the policy debate to combine the promotion of competition and the incentives to invest.[2]

To sum up, several landmark cases have raised the issue of the effects of antitrust enforcement on the incentives to invest. The debate on competition policy has further examined the different components of antitrust intervention, that require to choose appropriate legal standards and enforcement tools. We argue that time is ripe to put together these ingredients, analyzing how legal standards and enforcement policies should be shaped to take into account the impact of short run monitoring and control of business practices on long run investment.

This paper studies the optimal legal standards and enforcement policy to regulate certain business practices of a dominant firm which invests in research or in physical capital. We include in the model a positive effect of a new technology on profits and welfare when the practice is not adopted, which derives directly from the innovation. In this framework, the baseline profits are guaranteed by patent protection, while the additional profits, that can be obtained through the practice, are affected by the antitrust policy. This way, we can consider in a simple setting the interaction of patent and competition policies.

If research is successful, the firm gains market power, the kind of winner-takes-all competition that we often observe in high-tech industries. Then, the fresh incumbent becomes subject to antitrust scrutiny when undertaking commercial practices. Its expected profits, therefore, reflect not only the degree of patent protection but also the stricter or laxer enforcement of the competition agency on the practices adopted by the innovator. While the practice applied to the new technology is always privately profitable, its social effects may be positive or negative depending on the market conditions present at the time the firm undertakes it. Something that is inherently uncertain at the time the investment is sunk.

A key feature of our approach is that the effects of the practices, when applied to the new technologies, are unknown at the time the investment is sunk and the policy is set. This may be due to the interaction of the innovation, whose properties may have been controlled and planned by the firm with sufficient confidence, with the economic or social environment at the time the innovation will be introduced. The features of this environment at this later stage, in turn, will depend on the decisions of other agents and cannot be assessed *ex ante* with certainty. To illustrate, consider the example of a dominant software company that may invest in research to tie a new software application into a new personal computer operating system. Beyond the initial intent of the company, the efficiency and foreclosure effects of tying this new software packages will depend, at the time of its commercial introduction, on the alternative packages and applications available from competitors, which may be only imperfectly foreseen at the time of the research investment.

Once the investment is chosen, enforcement affects how the practice is adopted and the profits realized (*ex post* deterrence); however, enforcement also influences the initial decision to invest, that is driven by expected profits (*ex ante* deterrence). These two effects determine the choice of the optimal intervention.

We consider two aspects of the antitrust intervention. The first is the selection of the optimal legal standard,[3] that establishes under which conditions a practice is unlawful and therefore specifies when a firm can be convicted, together with the evidence needed to prove it guilty. The second concerns the enforcement policy, that is the sanctioning rule and the accuracy in collecting evidence. We show that the optimal legal standard and enforcement policies depend on the expected social effects of a certain business practice, what we can call the "economic model" of the enforcer, or, in the words of Judge Frank Easterbrook, her presumptions (see Easterbrook, 1984). Easterbrook, for instance, quotes Donald Turner on the inhospitality tradition in antitrust: "the tradition is that judges view each business practice with suspicion, always wondering how firms are using it to harm consumers." This specific a priori corresponds, in our model, to a configuration of parameters that assigns a high probability to a negative and large impact of the practice on social welfare. Given these presumptions, then, we predict the kind of legal standard and enforcement policy that the judge will apply (for instance, a per-se illegality rule).

Our main results are the following. First, we fully characterize the optimal policies under per-se or discriminating rules for any expectation of the social effects of the practices. A general feature of the optimal enforcement policy – for any legal standard – refers to balancing the need to deter the practice when unlawful, a concern that is relevant *ex post*, and the attempt to sustain the investment by adopting a more lenient policy when, *ex ante*, the practice is expected to improve welfare. For instance, under a per-se rule, one may think that the practice should be allowed when welfare enhancing or completely discouraged when socially harmful. We show that the optimal enforcement policy is much richer than that. It may be optimal to allow the firm adopting the practice, giving up *ex post* deterrence, still fining the practice (that is per-se illegal) to reduce the incentives to invest; or, for more pessimistic expectations, it is optimal to implement the practice at an intermediate level, to balance the two dimensions of deterrence.

Secondly, we identify the optimal legal standards, that vary when the enforcer's presumptions on the effects of the practice become more and more pessimistic. Specifically, a more rigid per-se legality rule prevails on the more flexible discriminating legal standard for low probability of social harm: per-se legality rules out the possibility of sanctioning the firm that undertakes the practice in the (unlikely) event that the practice is socially harmful in order to boost the innovative investment. When the harmful effect becomes more likely, the enforcer moves to the discriminating rule and improves type-I accuracy to sustain investment. Third, the design of the optimal antitrust intervention adapts to the degree of patent protection, choosing a laxer (stricter) approach when intellectual property rights are weakly (strongly) protected. Hence, competition and patent policies act as substitutes. Fourth, some additional room for per-se rules emerges, as a cost saving solution to enforcement, when fines are capped at some upper bound: per-se legality is adopted for low probability of social damages, then replaced by a discriminating rule, with per-se illegality as the optimal legal standard when the new technology is very likely to be socially harmful. Fifth, we show that, although the two cases are not equivalent, our results on the optimal legal standard

[2] See, for instance, EC (2013) on the recent European debate on the different access price regimes to be adopted in the legacy copper telecom network and in the new optical fiber network to be constructed.

[3] The debate on the appropriate legal standards for foreclosure or monopolization practices has developed in recent years in Europe and the US. See DG Competition (2005), DG Competition (2008), Gual et al. (2005) and Department of Justice (2008).