



Is exclusionary pricing anticompetitive in two-sided markets? [☆]



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ARTICLE INFO

Article history:

Received 26 September 2012
Received in revised form 18 February 2015
Accepted 19 February 2015
Available online 3 March 2015

JEL classification:

D43
L12
L13
L41

Keywords:

Two-sided markets
Exclusion
Demand externalities

ABSTRACT

This paper studies the competitive effects of exclusionary pricing in two-sided markets. While formally showing that below-cost pricing on one market side can allow an incumbent firm to exclude a potential rival which does not have a customer base yet, the proposed model does not necessarily imply that below-cost pricing in such markets should be taken as anti-competitive conduct. Instead, I find that in sufficiently asymmetric two-sided markets, exclusion is always beneficial and if anything, there is too little of it in the sense that there are cases in which there is inefficient entry. Further, prohibiting below marginal cost pricing may destroy some socially efficient exclusion and worsen the problem of excessive (or inefficient) entry.

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1. Introduction

In recent years, there has been a large literature dealing with two-sided markets, that is, markets where a platform sells to two distinct groups of users which may affect each other's utility. Common examples of such markets are credit cards (card-holders and merchants), operating systems (computer users and software developers), malls (shoppers and shops), and media (viewers or readers and advertisers).¹

One important feature of such markets is that prices optimally take into account the externalities between the two sides of the market. Similar to what happens for firms selling complementary products, it may be optimal to sell below cost to – or even subsidize – one group (the group whose demand is more price-sensitive) to increase demand on this side of the market, with the objective of increasing demand on the other side of the market.²

This has led several commentators to state that below-cost pricing in two-sided markets should not worry antitrust agencies, since – far from implying an exclusionary objective – they would reflect normal competitive behavior in industries where there exist externalities between different sides of the market. For instance, [Evans and Schmalensee \(2007\)](#) claim that:

“Price equals marginal cost (or average variable cost) on a particular side is not a relevant economic benchmark for two-sided platforms for evaluating either market power, predatory pricing, or excessive pricing under European Community law ... it is incorrect to conclude, as a matter of economics, that deviations between price and marginal cost on one side provide any indication of pricing to exploit market power or to drive out competition.” (p. 27)³

Undoubtedly, in most cases pricing below cost on one side of the market does not represent a threat to competition, and in some cases it may be the only way to get ‘both sides on board’, and to ensure that a product is viable. Nevertheless, in this paper, I propose a model in which there exist indirect cross-group network effects and show that, under certain circumstances, pricing below cost on one side of the market may allow a dominant firm with an established and captive customer base to exclude a potential rival from both sides of the market.

Intuitively, sacrificing profits on one side so as to deter entry allows the dominant incumbent to enjoy monopoly profits on the other side.

[☆] I am very grateful to the Editor, Yossi Spiegel, and to two anonymous referees for their thorough and thoughtful reports. I also benefited from useful comments and suggestions on earlier versions from Claudio Calcagno, João Correia da Silva, Liliane Giardino-Karlinger, Pedro Gonzaga, Stephen Hansen, Andrés Hervas and Ricardo Ribeiro. Financial support from Fundação para a Ciência e a Tecnologia (project PTDC/EGE/ECO/117932/2010) is gratefully acknowledged. The usual disclaimer applies.

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¹ See, for instance, [Evans \(2002\)](#), [Rochet and Tirole \(2003, 2006\)](#) and [Armstrong \(2006, 2007\)](#) for additional examples of two-sided markets.

² As [Caillaud and Jullien \(2003\)](#) point out, “[d]ue to indirect network effects, the key pricing strategies are of a ‘divide-and-conquer’ nature, subsidizing the participation of one side (divide) and recovering the loss on the other side (conquer).” (p. 310).

³ See also [Wright \(2004\)](#) for a related discussion.

Obviously, the rival knows that getting consumers on each side is crucial for its overall existence, and this typically results in a price war on one side of the market (in my case, the side which is less affected by demand externalities).⁴ There are two effects which determine which firm will win consumers on this market side. On the one hand, the rival is assumed to have lower production costs, and this allows it to make more aggressive price offers. On the other hand, if the incumbent excludes the rival from one side of the market, it will be *monopolist* on the other, whereas the rival would always have to compete with the incumbent which has already an installed base of customers on both sides. In other words, other things being equal, the incumbent will set prices more aggressively on one side because it anticipates that, if it secures it, it will obtain monopoly (rather than duopoly) profits on the other market side. Only if the rival has a sufficiently strong cost advantage would it manage to overcome this latter effect.

Now, while the proposed model provides a rationale for exclusionary pricing in two-sided markets, it does not imply that below-cost pricing in such markets should necessarily be taken as anti-competitive conduct. Indeed, I find that if a two-sided market is sufficiently asymmetric, i.e., if consumers on one market side care sufficiently less about cross-group network externalities than consumers on the other side of the market, then below-cost pricing does not generate excessive exclusion: when exclusion occurs, it is socially optimal. Instead, some socially optimal exclusion may not occur. So, if anything, there is too little exclusion in equilibrium.

Another important finding is that the model always yields inefficient entry: there always exist cases in which entry occurs in equilibrium but it is socially inefficient (exclusion would be socially preferred).

The paper also studies a scenario of prohibition on below marginal cost pricing and the effects of such a rule on consumers' surplus and on social welfare. By so doing, it is shown that a policy prohibiting below marginal cost pricing may be counterproductive for two main reasons. First, this policy may destroy socially desirable exclusion by replacing an exclusionary equilibrium (that would occur in a context of unconstrained pricing) with an entry equilibrium which is inferior from a social welfare and also from a consumers' welfare perspective. Second, adding the policy constraining prices not to be lower than marginal costs may also worsen the problem of excessive (or inefficient) entry occurring in equilibrium.

The remainder of the paper is structured as follows. In [Section 2](#), I discuss related literature. In [Section 3](#), the basic model is presented, which is chosen as the simplest possible setting where the elements I am interested in could emerge. [Section 4](#) analyzes the scenario in which there is competition between an incumbent and an entrant when prices are not constrained and provides a welfare analysis of this case. [Section 5](#) considers the case of prohibition on below marginal cost pricing and studies the welfare effects of such a policy. [Section 6](#) investigates what are the main implications of relaxing the baseline model assumption that cross-group network externalities are unidirectional. Finally, [Section 7](#) concludes the paper.

2. Related literature

An important feature of this paper is that it combines two strands of the recent economic literature. The first strand of the literature is the one on two-sided markets, whose main references have already been mentioned. In terms of modeling assumptions, the closest paper to mine within this strand of the literature is that of [Armstrong \(2006\)](#).

⁴ Along similar lines, and considering a situation where two groups (1 and 2) interact via one or more platforms, [Armstrong \(2007\)](#) highlights that “[i]f a member of group 1 exerts a large positive externality on each member of group 2, then it is natural to expect that group 1 will be targeted aggressively (i.e., offered a low price relative to the cost of supply) by platforms. In broad terms, especially in competitive markets, it is group 1's benefit to the other group that determines group 1's price, not how much group 1 benefits from the presence of group 2.”

In particular, like me, he assumes that the fixed benefit a consumer enjoys from using a platform depends only on which side of the market the agent is on, platform charges are levied as a lump-sum fee and costs are incurred when agents join a platform.⁵ There exist, however, a few differences between [Armstrong's](#) framework and mine. In particular, in the proposed model the market is composed of a discrete number of buyers with inelastic demands, implying that buyers are strategic players in my setting: each of them is making a purchasing decision and is, thus, playing a game recognizing the existence of strategic interdependence. Further, I focus on a market that already exists at the moment the game starts, with an asymmetric position between an incumbent and an entrant.

The second strand of the literature deals with exclusionary conduct. In this paper, the incumbent firm exploits demand externalities across buyers to exclude a rival, a mechanism that is in the spirit of anticompetitive exclusion in the presence of contracting externalities, as stressed by [Bernheim and Whinston \(1998\)](#). Apart from the literature on exclusive dealing (see e.g., [Rasmusen et al., 1991](#); [Segal and Whinston, 2000](#)), a similar mechanism can be found in models of exclusionary pricing such as [Karlinger and Motta \(2012\)](#) and [Fumagalli and Motta \(2013\)](#). [Karlinger and Motta \(2012\)](#) consider an industry exhibiting network effects and show that an incumbent with an established customer base might charge a price below cost to some crucial group of consumers, thereby depriving the entrant from the scale it needs to operate profitably in the market. Even though in their setting (like in this paper) the incumbent and the entrant choose prices simultaneously, exclusion takes place because of miscoordination among buyers,⁶ whereas the mechanism in my benchmark model does not rely on miscoordination. [Fumagalli and Motta \(2013\)](#), on the other hand, propose a theory of predatory pricing in a setting where in addition to an incumbency advantage, which also exists in this paper,⁷ the exclusionary effect depends on price discrimination over time (below cost pricing to early buyers so as to deprive the entrant of reaching the efficient scale needed to operate successfully and subsequent extraction of rents from late buyers). In contrast, in the proposed model, and as already mentioned, the rationale for exclusion is different as it relies on the distributional impact of the simultaneous pricing policy (sacrifice profits on one market side to exclude the entrant and, at the same time, recoup monopoly rents on the other market side). In addition, in the very simplified extension dealing with two-sided markets in [Fumagalli and Motta \(2013\)](#), the incumbent and the rival have similar costs, whereas in the present paper it is shown that exclusion may occur even if the entrant benefits from a cost advantage.

3. The setup

In this Section, I present a model of two-sided markets which contains some new features: in particular, I model buyers as discrete.

Suppose there are two groups of agents, labeled $i = 1$ and 2 , which interact with each other via intermediaries or “platforms”. At the moment the game starts, there exist two competing “platforms”. Platform I is the dominant incumbent, and has already an installed base of

⁵ There exist a number of important differences in the modeling assumptions between [Armstrong \(2006\)](#) and the pioneering article by [Rochet and Tirole \(2003\)](#) that concern the characterization of agent's gross utility, the structure of platforms' fees and the structure of platforms' costs (see [Section 2](#) in [Armstrong \(2006\)](#) for a discussion). As [Armstrong \(2006, p. 671\)](#) highlights, “[w]hich assumptions concerning tariffs and costs best reflect reality depends on the context. [Rochet and Tirole's](#) model is well suited to the credit card context, for instance, whereas the assumptions here are intended to apply to markets such as nightclubs, shopping malls, and newspapers.”

⁶ [Karlinger and Motta's \(2012\)](#) exclusionary equilibria crucially depend on some fragmentation of buyers: if buyers could coordinate their choices, exclusion of the more efficient entrant would no longer take place.

⁷ It should be highlighted, however, that while in [Fumagalli and Motta \(2013\)](#) the incumbency advantage results from scale/scope economies on the supply side, in the present paper the advantage of the incumbent comes from scale economies on the demand side.

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