Available online at www.sciencedirect.com
SCIENCE DIRECT
INFORMATION ECONOMICS AND POLICY
ELSEVIER Information Economics and Policy 15 (2003) 271–290
www.elsevier.com/locate/econbase

Network externalities, price discrimination and profitable piracy

Stephen P. King[a,*], Ryan Lampe[b]

[a]*Melbourne Business School and Intellectual Property Research Institute of Australia, University of Melbourne, Melbourne, Australia*
[b]*Department of Economics and Intellectual Property Research Institute of Australia, University of Melbourne, Melbourne, Australia*

Received 2 September 2002; received in revised form 29 October 2002; accepted 9 November 2002

Abstract

Recent papers have argued that a monopoly firm might be able to maximize its profit by allowing some customers to steal its product. In particular, with network externalities, it is claimed that allowing piracy can be profitable because it increases the user base of the product and raises the willingness-to-pay of other customers. In this paper we analyze these claims when the producer can freely choose the degree of piracy prevention. We consider profit maximizing equilibria and show that allowing piracy cannot raise profits if the monopoly producer can directly price discriminate between potential-pirates and other customers. In the absence of price discrimination, allowing piracy will only maximize profits when the ability to pirate is inversely related to customer willingness-to-pay. Even in this situation, there is no profit maximizing equilibrium where some potential pirates buy while others pirate the product. Thus, even though potential pirates differ in their ability to illegally gain the product, the profit maximizing outcome involves either no piracy or complete piracy.

Keywords: Piracy; Network externalities; Intellectual property

JEL Classification: D21; L11

*Corresponding author.
E-mail address: spking@unimelb.edu.au (S.P. King).

0167-6245/02/$ – see front matter
doi:10.1016/S0167-6245(02)00110-5

1. Introduction

The idea that a firm can maximize its profits by allowing some consumers to steal its product seems perverse. But when considering patents, copyright and the protection of intellectual property (IP), the case for 'profitable piracy' has been forcefully made in a number of recent papers beginning with Conner and Rumelt (1991).

Of course, if complete prevention of piracy is very costly, it will usually be optimal for firms to allow some piracy. Whenever there are high enforcement costs, there will be an optimal level of any illegal activity.[1] Similarly, if copying technology is cheaper than the marginal cost of 'original' production, then selling one unit at a high price to a group of consumers who then copy can be more profitable than selling an 'original' to each individual customer (Besen and Kirby, 1989). However the recent 'profitable piracy' claims take a different approach, arguing that allowing some piracy can be profit maximizing in the presence of network externalities.[2]

Three lines of argument relating 'profitable piracy' and network externalities have been presented in the literature. First, piracy can maximize profits for a single firm because it increases the user base of the product. With network externalities, this means that non-pirates are willing to pay more. By allowing some piracy, the seller can raise the price to paying customers and more than make up for any lost sales (see Conner and Rumelt, 1991; Takayama, 1994; Slive and Bernhardt, 1998). Alternatively, piracy can be a commitment device for a firm. Allowing piracy today can alter the firm's incentives in the future and can limit the standard problems that face a durable goods monopoly (Takayama, 1997). Finally, piracy can be used strategically as a device to undermine the appeal and market share of competitors (Shy and Thisse, 1999).

In this paper we examine the first of these claims. When there are network externalities between customers, can it be profit maximizing for a single firm to allow piracy because it increases the willingness to pay of non-pirates? And if allowing piracy can be a profit maximizing strategy, what are the minimal requirements for this to occur? In other words, is 'profitable piracy' a myth and, if not, when will it be observed?

Understanding the case for 'profitable piracy' is important because it flies in the face of much observed business behavior. The piracy of intellectual property and illegal copying of copyright material is a major issue in international commerce

[1] The optimal level of illegal activity has been extensively studied in the literature on law and economics. See Kaplow (1990), Polinsky and Shavell (1992), and Shavell (1991). Garoupa (1997) provides a survey of the literature.

[2] Network effects or network externalities occur among customers of a product whenever the value of the product to one customer increases when more customers use the product. The idea was initially developed by Leibenstein (1950) and Rohlfs (1974).