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Licensing a technology standard[☆]



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ABSTRACT

I examine the optimal licensing strategy of the owner of a proprietary technology standard in a monopolistically competitive industry. The standard owner can be either an outsider inventor or a joint venture of downstream firms. I find that (1) a simple revenue royalty replicates the integrated monopoly outcome; (2) a patent pool cannot do better than adopting a *non-discriminatory* licensing policy that offers *higher* royalty rates to pool members than to nonmembers; (3) if the standard owner also sells a complementary good, then it may choose a decentralized marketplace as a commitment not to maximize licensing revenue. Implications to the use of RAND pricing in standard settings are discussed.

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1. Introduction

The last half century witnessed the growing importance of technology standards. Numerous industries rely on technology standards to deliver consumers a diverse yet

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compatible selection of products. Movies/music have become widely distributed and easily accessible to consumers through the development of successive generations of standard formats; the ubiquitous Microsoft Windows operating system gives users unprecedented computing power through a broad range of applications; eBay provides an e-commerce platform for millions of buyers and sellers to trade a myriad of goods.¹

In all the above examples, a company or a partnership (henceforth, a standard owner) either owns a proprietary technology standard or controls a common platform on which other firms can develop applications. Due to its control over the technology standard, the standard owner can sell access to the standard or the platform through licensing contracts. The purpose of this paper is to examine a standard owner's optimal licensing strategy in a monopolistically competitive industry.² I consider several types of ownership, including an outsider inventor, a joint venture of downstream firms (i.e., insider inventors) such as a patent pool, and a standard owner (e.g., the platform) that also sells a complementary good.

I find that either a two-part tariff containing a fixed fee and a per-unit royalty (henceforth, output royalty), or a revenue-sharing royalty (henceforth, revenue royalty), maximizes an outsider inventor's licensing revenue, though a revenue royalty is more appealing due to its simplicity and its low information requirement: first, in the basic setting it is sufficient to use a revenue royalty alone to maximize licensing revenue without the use of another payment instrument; second, the implementation of a revenue royalty requires less information than the implementation of the two-part tariff. Furthermore, I find that both schemes replicate the integrated monopoly outcome and provide a greater product variety than royalty-free licensing.

Building on these findings, I examine the optimal licensing strategy of a patent pool. I find that *non-discriminatory* licensing requires pool members to pay *higher* royalty rates than nonmembers,³ for part of its licensing payment is "rebated" back when a pool member receives its share of the licensing revenue. Moreover, since the integrated monopoly profits can be obtained by an outsider inventor who has no incentive to discriminate, the patent pool can do no better than mimic an outsider inventor and adopt a non-discriminatory licensing policy. Therefore, even in the absence of antitrust concerns, a patent pool may find it beneficial not to use discriminatory licensing. This also means that any use of discriminatory licensing cannot be simply attributed to the patent pool's motive to monopolize the downstream market. Taken together, the above findings lend support to the US Department of Justice's rule-of-reason approach to discriminatory licensing in patent pool agreements.⁴

¹ Other familiar examples include, but are not limited to, Apple iPod and its "Made for iPod" accessories, credit card networks and merchants, and various trademark franchises.

² Strictly speaking, a standard itself is not a property right and cannot be licensed. In this paper, I use the phrase "license a standard" as shorthand for "license the proprietary technologies that are necessary to implement a standard".

³ Perhaps we can call it reverse-discrimination, but as shown later, reverse discrimination in nominal royalty rates is only being used to achieve parity in "real" royalty rates.

⁴ The finding also supports a lenient stance towards mergers between a patent pool member and a downstream producer. A case in point is the recent merger between Microsoft and Nokia, which won world-

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