International Journal of Industrial Organization 58 (2018) 1–30

Contents lists available at ScienceDirect

International Journal of Industrial Organization

www.elsevier.com/locate/ijio

Switching costs and network compatibility☆

Jiawei Chen

Department of Economics, 3151 Social Science Plaza, University of California, Irvine, CA 92697-5100, United States

ARTICLE INFO

Article history:
Received 15 March 2017
Revised 28 November 2017
Accepted 15 December 2017
Available online 16 February 2018

Keywords:
Switching costs
Network compatibility
Industry dynamics
Welfare

ABSTRACT

This paper investigates how consumer switching costs affect firms' compatibility choices and social welfare in network industries. Firms face a choice between two modes of competition: make their networks incompatible and compete fiercely for market dominance, or make their networks compatible and have mild competition. By incentivizing firms to harvest their locked-in consumers rather than price aggressively for market dominance, switching costs tip the balance in favor of compatible networks and mild competition. A public policy that reduces switching costs also tends to make networks incompatible, and results in small efficiency gains at best. Combining the policy with a mandatory compatibility policy, however, can lead to sizable efficiency gains.

☆ I thank Jan Brueckner, Luis Cabral, Yongmin Chen, Linda Cohen, Darren Filson, Amihai Glazer, Lukasz Grzybowski, Lingfang Li, Guofu Tan, Zhu Wang, and seminar participants at International Industrial Organization Conference (Boston), Econometric Society World Congress (Montreal), European Economic Association Annual Congress (Mannheim), EARIE Annual Conference (Munich), University of Nevada, Reno, Workshop on Antitrust and Industrial Organization (Shanghai University of Finance and Economics), Fudan University, and Claremont McKenna College for their helpful comments. I thank the NET Institute for financial support. Finally, I am grateful to the editor and two anonymous reviewers for their constructive suggestions.

E-mail address: jiaweic@uci.edu

https://doi.org/10.1016/j.ijindorg.2017.12.003
0167-7187/

1. Introduction

A product or service has network effect if its value to a consumer increases in the number of its users. For example, with mobile phone services, there are typically discounts for on-net calls, and therefore a user benefits from being in a network with more users, because in that case the user is more likely to be making on-net calls and paying discounted calling fees. Similarly, with banking services, a bank that has more customers typically has more extensive branch and ATM networks, which make it easier for customers to access their accounts wherever they happen to be.

Two prominent features of network industries are consumers' switching costs and firms' compatibility choices. First, consumers can switch between networks but it is often costly for them to do so (in terms of money and/or effort). For example, when a consumer switches from one mobile phone service provider to another, she needs to tell her new phone number to all her contacts (if phone numbers are not portable between two different providers), and she may have to pay early termination fees. Similarly, when a consumer switches from one bank to another, she needs to tell her new bank's name and her new account number to all the relevant parties (direct deposits, automatic payments, etc.). In fact, Shy (2001, Page 1) states that switching costs are one of the main characteristics of network industries.

Second, firms sometimes make their networks compatible—here compatibility between two networks refers to the ability of consumers in either network to enjoy the network effect from both networks.[1] For example, mobile phone service providers may extend their on-net calling discounts to cover each other's networks, and banks may allow their customers to access their combined ATM networks without extra fees.

Although each of the above two features of network industries has been analyzed in the literature, the interactions between them remain largely unexplored. Yet such interactions play an important role in determining the industry dynamics and market outcome. Here's a real-world example. In 1999, mobile number portability was implemented in Hong Kong, which enabled mobile phone users to retain their mobile phone numbers when changing from one carrier network to another, thereby reducing consumers' switching costs. In response to this policy, the mobile phone carriers in Hong Kong reduced the compatibility among their networks (shared on-net calling discounts) by adopting network-based discriminatory pricing schemes. Following the implementation of mobile number portability, the market prices went down, and moreover, the largest network steadily gained market share, resulting in a higher level of market concentration (Shi et al., 2006).

To better understand such interactions and their impact on industry dynamics and welfare, in this paper I investigate the effects of switching costs on network compatibility

[1] In the case of direct network effects, compatibility means consumers in either network can freely interact with consumers in the other network. In the case of indirect network effects, compatibility means the complementary product for either network can be used on the other network.