



Contents lists available at ScienceDirect

Information Economics and Policy

journal homepage: www.elsevier.com/locate/ieop

Receiver benefits and strategic use of call externalities in mobile telephony markets

Maciej Sobolewski^{1,*}, Mikołaj Czajkowski

Department of Economics, University of Warsaw, Długa 44/50, 00-241 Warsaw, Poland

ARTICLE INFO

Article history:

Received 22 November 2017

Revised 16 February 2018

Accepted 15 March 2018

Available online xxx

JEL classification:

L1

L86

D62

Keywords:

Call externalities

Receiver benefits

Network effects

Mobile telephony

Stated preferences

Discrete choice experiment

ABSTRACT

Recent models of network competition demonstrate the incentives for incumbent firms to reduce receiver benefits in an entrant's network through excessive off-net pricing. Theoretical reasoning behind the role of call externalities in limiting the market share of smaller networks assumes that receiving a call contributes to consumer utility. This paper tests this critical assumption with stated-preference data elicited from subscribers of mobile telephony in Poland. Our findings show that receiver benefits are a significant driver of mobile operator choice. Thus by reducing the volume of outgoing calls, larger networks can limit customer base growth of smaller rivals. Regulatory options for mitigating this effect are discussed. The size of market share gained by introducing a common off-net markup is low: 1.7–2.8% depending on the market segment. However under symmetric termination rates, an entrant would increase its market share by 6.1–8.5% at the expense of incumbents. In case of Poland, this would shorten the catch-up period from eight to five years.

© 2018 Elsevier B.V. All rights reserved.

1. Introduction

Economic externalities play a significant role in network industries. Telecommunication services, for example, generate various types of external benefits for their users. By controlling the extent to which those benefits are internalized, network operators can increase profits and improve their own competitive position in the market. In this paper, we show this empirically, using data from mobile telephony market in Poland. More specifically, we investigate how incumbent operators can realistically use call externalities to slow down the market share growth of late entrants (primarily in user or SIM card metrics). We also contribute to the discussion on the effects of making mobile termination rates (MTRs) asymmetric. Such regulation has been widely applied in Europe with the aim being to provide support by improving late entrants' revenues from interconnection. We show that in the presence of

call externalities, asymmetric MTR could also have a negative effect on a small network, slowing down its market share growth.

The two primary sources of economic externalities in mobile telephony, are call and network benefits. Network externality is a well-known phenomenon which arises among subscribers of the same network. In this case the external benefit takes the form of savings from cheaper on-net calls.² On the other hand call externalities are an example of benefits generated in one network for subscribers of rival providers. They arise because telecommunication services generate two-sided benefits. For example, when a voice connection is established, not only the calling party but also the receiving party derives some positive utility. Under the *calling-party-pays* (CCP) regime, receiver benefits turn into a positive economic externality, which remains under the control of the call originating operator. In the presence of both types of externalities networks will typically implement the combination of a low on-net rate and an (excessively) high off-net rate to maximize the amount of network benefits available to a firm's own consumers while minimizing receiver benefits available to current or potential

* Corresponding author.

E-mail addresses: maciej.sobolewski@uw.edu.pl (M. Sobolewski), mc@uw.edu.pl (M. Czajkowski).

¹ Since July 2017 he is a research fellow at the Joint Research Centre of the European Commission. The scientific output expressed in this study does not represent the position of the European Commission. The opinions and conclusions contained in this study are solely those of the authors.

² Several papers showed that in addition to their pecuniary nature, network effects in mobile telecommunications are localized, in the sense that the positive contribution to the subscriber utility function comes mainly from frequently called parties, such as family and friends (Corrocher and Zirulia, 2009; Maicas et al., 2009b; Czajkowski and Sobolewski, 2011).

clients of rival firms. Such discriminatory pricing strategies are a good example of how operators maintain control over both types of external benefits, to improve profitability and defend market share.

Network effects have attracted the attention of researchers for almost three decades. There is a large body of theoretical literature and empirical evidence documenting their impact on consumer behavior and competition between providers in various network industries. Notably, in mobile telephony networks, externalities have incentivized incumbent operators to exercise termination-based price differentiation, which has raised some antitrust concerns.³ In contrast, call externalities entered the economic research agenda later, after the wave of late entry that took place in several European countries as a result of 3G licensing in 2001–2002. The interest in call externalities arose because of similar antitrust concerns related to the effects of price discrimination on the competitive position of late entrants. In a nutshell the reasoning points to a motivation to increase off-net prices in order to reduce receiver benefits for subscribers of rival operators. The incentives to use call externalities grow with the size of the network. Hence, incumbent operators will unilaterally set higher off-net prices for calls to a new entrant, depressing its volume of incoming calls and putting it into financial deficit in the access market. Antitrust literature has used the above mechanism to argue that call externalities may facilitate incumbent predatory pricing (Hoernig, 2007) or even a complete market foreclosure (López and Rey, 2016). Call externalities also have welfare impacts. For example, in the case of the T-Mobile/Orange merger case in the UK, Harbord and Hoernig (2015) show that post-merger welfare and consumer surplus are both decreasing functions of the strength of receiver benefits.

Theoretical studies suggested that call externalities are the source of competitive advantage over late entrants. By setting high off-net prices incumbents reduce the number of incoming calls and lower the attractiveness of the smaller network in the eyes of current and future subscribers (Jeon et al., 2004; Armstrong and Wright, 2009). However, this mechanism can be effective if and only if receiver benefits significantly contribute to consumer utility and thus can drive subscription choices. So far this critical assumption has not been tested empirically and various authors have either calibrated or used a generic value for the call externality parameter (Hurkens and López, 2012; Harbord and Hoernig, 2015). Given that call externalities fundamentally affect theoretical predictions and have implications for antitrust policy, access regulation and merger assessment, there is a need for more rigorous empirical evidence documenting their practical relevance on various mobile markets.

Our paper fills this gap by estimating the effect of call externalities on utility from mobile subscription. To do this, we used a dataset collected from a large-scale stated preference survey on prepaid and postpaid mobile phone users in Poland. The survey was administered to two samples of individual consumers representative of private users of prepaid and postpaid mobile

services.⁴ We controlled for call externalities with a price for incoming off-net calls which directly impacts call volumes received by respondents. A discrete choice experiment approach (Carson and Czajkowski, 2014) conveniently allowed for the inclusion and variance⁵ of several elements, which determine individual utility from mobile subscription, such as termination-based discriminatory prices, personal network effects, switching costs and brand loyalty. We examine these factors and receiver benefits jointly in one model and identify their influence on the choice probabilities of particular operators. This analysis is followed by a policy exercise in which we simulate how market shares in Poland would react to the hypothetical reduction in off-net prices set by incumbent operators for calls terminating in a late entrant's network. Our results can be of practical relevance to operators and regulatory authorities in Poland and other countries where the discussion about the anti-competitive impact of call externalities has been lively. In particular, we illustrate how market shares would react to fully symmetric access charges. Our results suggest that higher termination rates may become an impediment for a late entrant in its market share expansion. Therefore as an entry assistance policy it should be applied for a limited period of time, as suggested by European Commission (2009).

Recently Rojas (2017) estimated receiver benefits on the Ecuadorian market. Overall receiver benefits from a unit of call are significant in magnitude, corresponding to 30–70% of sender benefits depending on the type of the contract and the type of the call. His study adopts a similar methodological approach to ours, but differs much with respect to experimental design. Rojas uses generic alternatives with only price-related attributes while skipping other determinants of choice. With respect to the strength of receiver benefit our results are of the same order of magnitude, although some differences occur. However, our framework allows us to go a step further and show the impact of call externalities on the choice of mobile subscriptions. We show how operators might realistically influence subscribers' behavior in the Polish market by affecting the size of receiver benefits with off-net pricing.

The remainder of the paper is organized as follows. In the next section, we review relevant literature devoted to call externalities. Section 3 presents the design of our study, characterizes the data and provides a description of the econometric framework. This is followed by the empirical results and the simulation of the counterfactual scenarios and policy implications related to the impact of alternative levels of off-net price asymmetry for market share changes. The last section summarizes the main results and draws conclusions.

2. Literature review

Call externalities have been studied in economics for over a decade as a component of two important theoretical problems: network competition under discriminatory tariffs and an optimal interconnection regime. With regards to the second issue, the main conclusion from the literature is that if both the sender and the receiver derive utility from a call, the optimal network utilization requires that both parties share the cost of a call (DeGraba, 2003; Hermalin and Katz, 2006). Given the large heterogeneity of two-sided benefits for individuals, such a shared optimal pricing scheme is not implementable. In practical terms this leaves the floor to one of the two extreme regimes where either the calling

⁴ Because subscribers whose mobile phones are exclusively or predominantly paid by their employer were excluded from the analysis, our samples are not representative of the entire prepaid and postpaid segments.

⁵ Revealed behavioral data (assuming we had access to it) exhibits lower variability in explanatory variables and suffers from co-linearity, resulting in larger standard errors of the estimates and a risk of biased results (Louviere et al., 2006).

³ There were several competition cases in Europe concerning the abusive rate differentiation between 'on net' and 'off net' calls. For example, dominant operators Orange and SFR were fined in 2012 in France for introducing plans with unlimited on-net calls. The French Competition Authority argued that zero on-net rates resulted in excessive on-net/off-net differentiation leading to lock-in of subscribers and putting the late entrant into competitive and financial disadvantage. The latest entrant (Bouygues Télécom) could not effectively strike back as it encountered higher termination costs. The FCA considered the on-net/off-net price differential set by incumbents to not be justified by the difference in costs. Similar arguments have been raised by small operators in other countries as well as by the European Regulatory Group (ERG, 2008): "an on-net/off-net retail price differential, combined with significantly above-cost MTRs, can, in certain circumstances, tone down competition to the benefit of larger networks" (p. 97).

Download English Version:

<https://daneshyari.com/en/article/8965237>

Download Persian Version:

<https://daneshyari.com/article/8965237>

[Daneshyari.com](https://daneshyari.com)