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International network competition under national regulation[☆]

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ABSTRACT

We extend the workhorse model of network competition to international calls. This model enables us to show that national regulatory authorities (NRAs) maximizing domestic welfare have incentives to increase termination rates above the social optimum to extract rent from international call termination. Excessive termination rates distort prices but transfer surplus from foreign to domestic consumers via intensified network competition. The model can explain the regulation of termination rates through rate floors. International network ownership and deregulation are alternatives to combat the incentives of NRAs to distort termination rates. We identify conditions under which each of these policies increases aggregate welfare.
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1. Introduction

Mobile telecommunication markets have gone global in terms of both traffic and ownership structure. Annual international non-VoIP call volumes have increased continuously

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over the last 20 years, from 55 billion minutes in 1994 to 340 billion minutes in 2014.[1] Former national telecommunication champions have expanded abroad and merged to create international network operators. Four international network operator groups, Vodafone, Telefonica/O2, T-mobile and Orange, share approximately 80% of the mobile subscriptions in the EU (Benzoni et al., 2011). In this paper, we analyze the consequences of the globalization of mobile telecommunication markets by allowing consumers to initiate and receive international calls in the workhorse model of network competition (Armstrong, 1998; Laffont et al., 1998a; 1998b).

A key component of network competition is the termination rates that operators charge for connecting calls from networks at home and abroad. Termination rates are usually regulated because operators could otherwise use them to soften competition at the retail level. Our main finding is that a regulatory failure drives termination rates above the social optimum in international telecommunication markets. National regulatory authorities (NRAs) concerned with maximizing domestic welfare have an incentive to set excessive termination rates to extract termination rent from international calls. Termination rates are higher when the share of incoming international calls is larger because rent extraction is then more valuable. By the same token, the model predicts termination rates to be higher in countries with a large share of incoming international calls than in countries with mostly national calls.

Recent investigations opened against Germany (BEREC, 2014) and Finland (European Commission, 2015) point to the relevance of regulatory failure in telecommunication markets. Specifically, the NRAs in the two countries apply cost models that yield higher termination rates than the forward-looking, long-run incremental cost model recommended by European Commission (2009). A key objective of introducing that model was precisely to (European Commission, 2015, p. 9):

> "*ensure that regulators do not favour their national operators at the expense of operators in other Member States by not introducing fully cost-oriented mobile termination rates [...] This difference would be incurred at the expense of the operators, and eventually consumers, in the Member States from where the calls originate.*"

Furthermore, in recent years, a growing number of non-OECD countries have introduced government-mandated termination rates for incoming international traffic. In effect, network operators (OECD, 2014, p. 14) *"act as a government-sanctioned cartel, precluding competition and raising prices for consumers in the countries involved."*

European Commission (2015) emphasizes favoritism of the domestic industry, but this is not a prerequisite for trade policy in a setting with international network competition. A higher termination rate intensifies domestic retail competition, which lowers equilibrium subscription fees. This "waterbed" effect is so strong that international termination

[1] According to the market research firm TeleGeography, see http://www.telegeography.com/research-services/telegeography-report-database, accessed January 2016. VoIP refers to Voice over Internet Protocol, a phone service that works over the Internet instead of over the traditional telephone network. We exclude VoIP calls because they typically generate neither termination costs nor revenues.

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