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A CDS approach to induce facilities-based competition over NGA networks

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ABSTRACT

The current regulatory framework in the European NGA market provides the basic principles for the gradual migration from service-based competition over the legacy copper access networks to facilities-based competition over fiber-based Next Generation Access (NGA) networks. This paper initially reviews the related literature and shows that: (i) an unbundling policy that boosts entry by alternative operators promotes service-based competition but provides operators with disincentives to invest in network upgrade; (ii) there is no consensus about the optimal regulatory policy that promotes competition and encourages investments in NGA networks; and (iii) the reviewed research articles are not consistent with the current regulatory framework in the European NGA market in terms of both the evolution of the regulatory goals over time and the recommended regulatory settings. This paper aims to propose a novel approach in order to effectively meet the current regulatory goals using the recommended settings. It is shown that the proposed approach, which is based on the basic principles governing a Credit Default Swap (CDS), provides an effective migration path towards facilities-based competition over NGA networks.

1. Introduction

The Telecommunications Act of 1996 (FCC, 1996) passed by US Congress and administered by the Federal Communications Commission (FCC), as well as, the European Commission's (EC) Regulation on Local Loop Unbundling (EC, 2000) mandated unbundled access to the metallic local loops of incumbent operators at cost-based prices. The short-run goal of this unbundling policy was to reduce the incumbent's market power in order to enable alternative operators (new entrants) to enter the market and compete effectively with the incumbent in the retail (downstream) market. Therefore, operators would compete on their services (service-based competition), and hence, consumers would enjoy the welfare gains from static efficiency (i.e. existing assets are used efficiently and prices are driven towards marginal cost). Armstrong (2002), Valletti (2003) and Vogelsang (2003) summarize the optimal access pricing policy in different static contexts static contexts, in which it is appropriate to apply cost-based access pricing, Ramsey pricing and the Efficient Component Pricing Rule (ECPR).

However, the long-run goal of this unbundling policy was to promote investments in new network infrastructures from the incumbents, and especially entrants. In this case, operators would compete on their facilities (facilities-based

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competition) rather than on their services, and hence, consumers would enjoy the welfare gains from dynamic efficiency (i.e. the encouragement of investments in competing infrastructures and the deployment of new technologies). In particular, facilities-based competition is regarded as the only means to achieve sustainable competition (Cave, 2006; Oldale & Padilla, 2004) since it creates a level playing field between incumbent and entrants (De Bijl & Peitz, 2002). In addition, a growing number of empirical studies conclude that facilities-based competition has been the main driver for broadband diffusion (Bouckaert, van Dijk, & Verboven, 2010; Denni & Gruber, 2007; Distaso, Lupi, & Manenti, 2006; Höffler, 2007) although they do not find a negative relationship between service-based competition and broadband diffusion. Given that broadband penetration positively affects economic growth (Greenstein & McDevitt, 2009; Koutroumpis, 2009), it can be deduced that facilities-based competition creates a superior potential for economic growth than does service-based competition.

Many research articles try to model such unbundling practices and assess their effectiveness and efficiency implications both theoretically and empirically.[1] Using different theoretical models of downstream competition, Foros (2004) and Kotakorpi (2004) show that cost-oriented access prices discourage incumbents to invest in network upgrade unless they are much more efficient than their rivals in the downstream market. Sarmento and Brandao (2007) also find a negative relationship between cost-based access prices and the incumbents' incentives to invest even if the incumbents are partially compensated for the investment cost. Not only the incumbents' investment incentives are negatively affected by cost-oriented access prices, but also the new entrants' investment decisions are negatively influenced. Valletti (2003) argues that potential entrants, who can free-ride on the incumbent's network, will wait for the incumbent to invest in access infrastructure and then seek access. In addition, Bourreau and Doğan (2005, 2006) show that unbundling of the local loop may delay the entrants' investments, even in an unregulated environment. Grajek and Röller (2009) empirically confirm the negative impact of an unbundling policy that boosts entry by alternative operators on incentives to invest in facilities-based competition. In particular, they use a comprehensive panel data set (180 fixed-line operators in 25 European countries observed from December 1997 to December 2006) in order to show that unbundling results in a significant negative effect on the incumbents' incentives to invest in network upgrade, whereas easier access pushes entrants towards service-based competition.

It is thus obvious that cost-based access prices disincentivize both the incumbents and the entrants to invest in network upgrade. On the other hand, cost-based access prices have been proven very effective in promoting static efficiency. Indeed, by analyzing the results of Tselekounis, Varoutas, and Martakos (2012), it can be deduced that when the access is priced at cost, the productively efficient make-or-buy decision undertaken by the entrant is always socially optimal. The main conclusion of the above studies is that an unbundling policy that boosts entry by alternative operators promotes service-based competition but leads to losses in dynamic efficiency (Bouckaert et al., 2010). This implies that cost-oriented access prices is an effective regulatory tool for fostering service-based competition over the legacy copper access networks, which were largely deployed by public funds, but they cannot promote investments in new fiber-based access infrastructures (the so-called Next Generations Access Networks, or NGAs) by either incumbents or entrants.

However, the need for the deployment of NGA networks is almost imperative. Firstly, the numbers of internet users, as well as, the capacity they demand have increased dramatically during the last decade. As a result, the increasing transmitted volume of data has made the traditional access copper networks incapable of providing end-users with the demanded bandwidth. On the contrary, NGA networks are the only future-proof solution capable to handle future demand (Shumate, 2008) since the transmission capabilities of fiber are theoretically unlimited, whereas it also provides high data rates, low loss and low distortion. Secondly, investments in broadband infrastructure have an indisputable positive effect on broadband diffusion, economic growth, job creation and consumers' welfare (Czernich, Falck, Kretschmer, & Woessmann, 2011; ITU, 2012; Katz, Vaterlaus, Zenhäusern, & Suter, 2010; Reynolds, 2009).

These two reasons partially interpret why national governments rank among their top priorities the encouragement of investments in NGA networks rather than the promotion of facilities-based competition. The US government's National Broadband Plan (FCC, 2010) and the European Commission's Digital Agenda for Europe (EC, 2010a) are examples of these perceived political priorities for the diffusion of broadband infrastructure access and services.

Considering the above-mentioned technical and economic issues that make the need for investments in NGA networks imperative, as well as, the inappropriateness of cost-based access prices for promoting such investments, the European Commission (EC) issued a Recommendation on regulated access to NGA (EC, 2010b) providing the National Regulatory Authorities (NRAs) with guidelines for tackling the trade-off between fostering competition and promoting investments with regard to NGA networks. Section 2 discusses the EC Recommendation, as well as, its impact on competition and firms' investment incentives. The main implication of this Recommendation is that the initial regulatory focus is to establish service-based competition over NGA networks, and then to promote facilities-based competition. This implies that regulators should initially tackle the trade-off between encouraging investments in NGA networks and promoting competition. Once service-based competition over NGA networks has been achieved, the disclosed regulatory policy should provide access seekers with incentives to invest in their own network infrastructures in order to be facilities-based competitors.

[1] See Cambini and Jiang (2009) for an excellent review of the theoretical and empirical literature on the relationship between broadband investment and regulation.