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The impact of intra-platform competition on broadband penetration☆

Tom Ovington[a], Ron Smith[b], Juana Santamaría[c,*], Luigi Stammati[c]

[a] Frontier Economics Ltd., 71 High Holborn, London WC1V 6DA, United Kingdom
[b] Birkbeck, University of London, Department of Economics, Mathematics and Statistics, Malet Street, Bloomsbury, London WC1E 7HX, United Kingdom
[c] Frontier Economics Ltd. Paseo de la Castellana 60, 28046 Madrid, Spain

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ABSTRACT

There has been an extensive debate about the role of broadband access regulation on market outcomes. This paper estimates the impact that the different modes of competition have had on broadband take-up to date, using a data set for EU27 countries. We find that ULL, which is one of main types of access-based competition in Europe, has had a positive impact on broadband take-up. However, the impact of ULL becomes smaller as its share increases. That is, ULL entry is less effective in areas where ULL take up is already high. Further, there is evidence of a crowding out effect between ULL and inter-platform competition. This means that ULL is less effective in enhancing broadband penetration in the areas where alternative networks already have a significant share of broadband lines.

1. Introduction

Operators around the world are deploying new fibre networks (next generation access networks or NGAs) in order to offer very high-speed broadband services. There has been much debate about the role that governments and regulators should play in helping to encourage the deployment these new networks and encourage the adoption of ultra-fast broadband services. A key question is whether access based obligations over copper networks should be extended to fibre infrastructures. The main argument in favour of access regulation is that it makes new entry easier, as the entrant has to build only part of a network, or no network at all. This potentially allows for more intense competition if there is a greater number of market players. However, there is a concern that mandating access could deter operators' from investing in fibre networks in the first place if the operators think that they will struggle to make a return on their original investment.

In most countries, access regulation for copper networks has been in place for a number of years, being introduced in the early 2000s in Western Europe. Entry into broadband markets can take a number of forms. New entrants can make use of the incumbent's network, which is known as intra-platform competition. Alternatively, entrants can completely bypass the incumbent's network, using an alternative technology, such as cable broadband. This is known as inter-platform competition. There are different levels of intra-platform competition ranging from resale of the incumbent's products to full unbundling of the local loop (ULL). Resale requires a much smaller upfront cost to the new entrant compared to ULL, but it also offers much less scope for product differentiation. Another form of access, which sits in between ULL and resale, is bitstream. The figure below summarises the

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* Corresponding author.
E-mail address: juana.santamaria@frontier-economics.com (J. Santamaría).

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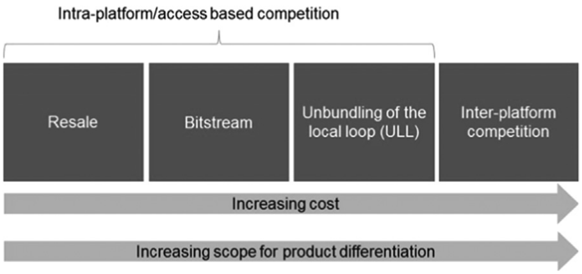

Fig. 1. Different forms of competition in broadband markets.

different forms of broadband competition (Fig. 1).

Europe is considered to have placed most emphasis on a wholesale broadband access regime. Regulators have relied heavily on wholesale access regulation to promote competition and investment in fixed broadband markets. Although the experience varies across countries, the take-up of the incumbent's regulated wholesale services has been relatively high. As of January 2012, 45.3% of broadband DSL lines at EU level were provided by new entrants.[1] Among these, 98.8% relied on incumbents' wholesale products, rather than entrants own DSL network. The most popular wholesale product has been full ULL.

The popularity of ULL can be explained by the regulatory approach adopted by most jurisdictions in Europe. ULL prices have been set based on costs, which has led to a significant fall in ULL prices over time. Between October 2005 and October 2011 the monthly average total cost of full ULL has decreased from 12.4 to 9.7 euro. For shared ULL access monthly prices decreased from 5.1 to 2.9 euro in the same period. In contrast, in many EU countries, bitstream prices, at least initially, have been set on a retail minus basis, which makes it difficult for bitstream providers to compete on price. As we will explain below, the difference in the approach that regulators have taken to ULL and bitstream may help explain the results obtained in our analysis.

Given the current debate about the appropriate form of access regulation for fibre networks, this provides an apt time to review the effectiveness of access regulation for copper networks. This paper adds to this debate by looking at the impact of wholesale broadband policies on broadband take-up, using the latest available data set for the EU27.

There are several reasons why we have focused on EU27 countries.

- There is sufficient variation in the take-up of wholesale broadband access products within the EU27 to be able to make inferences on how intra-platform competition affects broadband outcomes. As such, whereas in Bulgaria, Lithuania, Malta and Romania the percentage of ULL and bitstream (plus resale) lines was close to 0% in 2011, in France and Greece this percentage was 50% in the same year.
- At the same time, the drivers of broadband take-up will to some extent be similar, which makes it easier to identify the impact of the different measures of intra-platform competition.
- There is good quality data available. The EC provides information on the number of DSL ULL, bitstream and resale lines for EU27 countries for an extensive period (2004–2011) on a bi-annual basis. This information is not easily available for non-EU countries. Even if we focus on OECD countries: (i) the number of ULL lines is not available for some of the non-EU countries, e.g. Japan; and, (ii) ULL lines include also non-DSL lines.

Our paper is unique in that it considers whether the different modes of competition are subject to diminishing returns (not necessarily over time). It also considers whether intra-platform competition is less effective when there is already high inter-platform competition.

There is an extensive empirical literature addressing the impact of the different modes of competition on broadband outcomes. However, existing articles: (i) either focus on a given mode of competition[2]; (ii) or consider heterogeneous, not comparable, measures for inter- and intra-platform competition[3]; (iii) and do not address the existence of diminishing returns or the interaction between the different modes of competition. The exception would be Nardotto, Valletti and Verboven (2015), who report a decreasing impact for ULL over time.

Next section provides a more detailed review of existing literature. The approach is set out in Section 3. The results are included in Section 4. Section 5 concludes and discusses the policy implications. In an Appendix we include further details of the data that we have used and some further tests.

2. Literature review

There is a wide empirical literature investigating how access regulation affects broadband diffusion. Studies have either been carried out across countries or within-countries for countries where there is regional variation in the mode of competition (like the

[1] See ⟨https://ec.europa.eu/digital-agenda/en/download-data⟩

[2] For example, Crandall, Eisenach and Ingraham (2013) focus on the role of intra-platform competition and do not control for inter-platform competition.

[3] For example, Höffler (2007) use the ULL price in order to assess the impact of ULL and the market share of cable to estimate the impact of cable on broadband penetration.