



Determinants of broadband access: Is platform competition always the key variable to success?



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ABSTRACT

Previous studies have identified the rivalry among technological platforms as one of the main driving forces of broadband services penetration. This paper draws on data from the Spanish market between 2005 and 2011 to estimate the main determinants of broadband prices. Controlling for broadband tariffs features and network variables, we examine the impact of the different modes of competition on prices. We find that inter-platform competition has no significant effects over prices, while intra-platform competition is a key driver of the prices charged in the broadband market. Our analysis suggests that the impact of different types of competition on prices is critically affected by the levels of development of the broadband market achieved by the considered country.

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1. Introduction

Over the last decade, many governments have considered access to high-speed data networks – otherwise known as broadband networks² – a priority in the design

of their economic policies.³ The objective of these policies has been lowering prices and increasing the penetration rates of broadband services.

One of the main tools used to develop broadband services has been the use of public resources to spread the broadband networks. For example, the 2009 American Recovery and Reinvestment Act, which comprised a package of measures to stimulate the US economy, among the items budgeted were 7200 million dollars assigned to the completion of broadband networks.

However, direct government investment is not the only way to promote the technology with one of the basic tools for enhancing the penetration of broadband services being the promotion of competition among telecommunication

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¹ The views and opinions expressed herein are solely those of the author and do not necessarily reflect those of the Comisión del Mercado de las Telecomunicaciones (CMT).

² There are three main network types known as broadband platforms: xDSL (Digital Subscriber Line) Platforms: xDSL technology is based on the conversion of the copper pair telephone line into a basic high-speed digital line that can carry broadband services as well as transmit voice. The connection speed of this technology ranges from 256 Kbps to 40 Mbps. Cable modem platforms or HFC (hybrid-fiber coaxial): These hybrid networks combine optical fiber and coaxial cable. Cable platforms were deployed in many countries before the emergence of the broadband internet service as initially they were built to broadcast television frequencies. Later, in the mid-1990s, TV cable operators adapted their facilities so as to offer broadband internet services too. Cable platforms

can achieve data transmission speeds in excess of 100 Mbps. Optical Fiber Platforms or FTTx: Today, this technology permits the highest data transmission speed for internet access. Fiber optic platforms can offer internet data speeds higher than 1 Gbps.

³ Several studies have found that the expansion of broadband technology may have a significant impact on the economic growth of a country (Koutroumpis, 2009; Qiang and Rossotto, 2009; Katz and Suter, 2009).

operators. In recent years, the debate as to what constitutes the best market structure for maximizing such competition has been lively.⁴

Two types of competition have developed in most broadband markets: first, inter-platform competition, i.e., competition between two technology platforms (typically xDSL and cable platforms) in the same area; and, second, intra-platform competition, i.e., competition between operators using the same technology platform (as we shall see below, this type of competition is limited to xDSL platforms and requires regulatory intervention).

These two types of competition may have different effects on prices due to differences in the investment requirements of new operators and the role of regulation. Firstly, in the case of competition among platforms the investment requirements are critical because a new operator has to build a full network to compete in the market. In the context of intra-platform competition, the needs for investment are much lower due to the possibility to offer telecom services through the incumbent network. Secondly, the inter-platform competition performs in a deregulated environment and only according to market forces. By contrast, intra-platform competition requires an intensive regulatory intervention. Thus, the regulatory agency has to overcome multiple challenges – such as to build a real cost accounting model, to manage the existence of likely information problems or to avoid the threat of the regulatory capture – to regulate efficiently the intra-platform model. The predominant type of competition may also affect prices when considering new technologies. For example, the spread of optic fiber networks has had a different impact in cable than alternative xDSL operators. Given these differences, we can expect that the development of one mode of competition over the other may lead to different prices in the market.

Various studies (Distaso et al., 2006; Bouckaert et al., 2010) have analyzed the market in these terms and present evidence to indicate that inter-platform competition is the driving force behind the expansion of broadband services, while they have tended not to find a positive impact in the case of intra-platform competition.

This paper draws on data from the Spanish market between 2005 and 2011. The market was characterized by a low level of broadband diffusion among the population and the charging of higher prices than those applied in many European countries. Our aim here is to determine whether the results for the Spanish market verify previous empirical findings regarding competition (i.e., the dominance of inter-platform competition) and to identify the causes of the delayed development of broadband technology in this specific market. Although the study focuses on Spain, our findings should be valid for other countries with a similar development of broadband technology.

The empirical analysis reported here makes two main contributions to the literature. First, we examine the effects of different competition modes on broadband price

levels. Second, we take into account all the prices of each telecom operator in the Spanish market, whereas previous studies have opted to use aggregated data at the national level. This approach allows us to examine the specific impact individual operators might have on market price performance. In contrast with previous studies, we find that intra-platform competition has been the main driver of price levels, while the impact of inter-platform competition has been insignificant.

The rest of this paper is organized as follows. Section 2 provides a brief overview of the development of broadband technology, focusing on the situation of the Spanish market. Section 3 describes different forms of competition in the broadband market and reviews the literature. Section 4 presents the empirical model and discusses the results. Section 5 closes with a summary of the main results and their implications for public policy.

2. Origin and development of broadband platforms

The need for deploying broadband networks among a high percentage of the population results from the technological revolution initiated by the expansion of the internet in the early 1990s. At the outset, most users had a narrowband access to internet based on a dial-up modem via a standard phone line. However, the exponential growth of Internet connections explains why these narrowband networks, which were nevertheless crucial for internet development, became an obstacle as users sought to access services requiring markedly higher connection speeds. The telecommunications industry responded to these new demands – both from the residential and business segments – by developing new technology platforms (i.e., xDSL, cable modem and FTTH), the so-called broadband networks.

Since the creation of these platforms, the number of broadband users has grown exponentially. An OECD study conducted in 2011 reported that up to a quarter of the population of its member countries accessed internet via broadband platforms, equivalent to 309 million broadband users. Moreover, in the last decade, broadband had experienced annual growth rates higher than 40%. The study also reported that certain European countries – including, France, the UK and Germany – all presented very similar levels of penetration and all of them above the OECD average. By contrast, a group of other countries – including, Spain, Austria, Italy and Greece – found themselves lagging some distance behind the leading group and at levels below the OECD average.

Three main groups of operators can be identified in the Spanish broadband market: (1) the incumbent who owns the public switched telephone network deployed in the country – Telefónica de España, (2) cable operators who provided their own network access nationally or regionally, and (3) alternative xDSL operators that need to access, at least partially, the incumbent operator's network to offer their broadband services. FTTH or WiMAX access technologies have only a residual presence in Spain.

Table 1 shows that, since 2004, alternative xDSL operators have increased their market significantly – almost

⁴ Vogelsang (2013) claims that the different regulatory efficiency levels observed among countries is affected by a large number of heterogeneous variables, such as considerations of global competitiveness, their institutional endowment or their existing telecommunications policies.

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