Chapter 5

Mobile Broadband:
Substituting for Fixed Broadband
or Providing Value-Added

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ABSTRACT

This chapter discusses the relationship between fixed-wire and mobile broadband. In the first section, background on the types of broadband connections is provided, and the nature of substitutes and complements is described. For purposes of comparison, findings on the relationship between fixed and mobile telephony are presented. There follows a detailed analysis of fixed and mobile broadband as substitutes and complements. Since fixed-wire broadband is available predominantly in developed countries, the discussion of complementarity between fixed and mobile broadband focuses on developed countries. The chapter concludes with a discussion of the relationship between fixed and mobile broadband in the future and with concluding remarks.

INTRODUCTION

Subscriptions to mobile broadband services have grown exponentially in recent years. The International Telecommunications Union, which collects data from over 200 economies worldwide, estimates the number of mobile broadband subscriptions globally at 1 billion for 2010, almost double the subscriptions for 2009. Research shows that by 2015, more U.S. internet users will access the internet through mobile devices than through PC’s or other wireline devices. Furthermore, Western Europe and Japan will not be far behind the U.S. in following this trend (Mansfield, 2011).

These statistics, however, do not provide information on whether mobile broadband is being adopted instead of, or in addition to, wireline internet service. For some users, mobile broadband may be a substitute for fixed-line broadband. For others, mobile broadband may complement fixed-line service, because of the unique features of each type of services.

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In this chapter, we discuss fixed-wire and mobile broadband and the relationship between the two services. We begin by providing background on the types of broadband connections, and on the nature of substitutes and complements. We analyze data on the relationship between fixed and mobile telephony and discuss its relevance to broadband. There follows a detailed analysis of fixed and mobile broadband as substitutes and complements. Since fixed-wire broadband is available predominantly in developed countries, the discussion distinguishes between developed and developing countries and the discussion of complementarity between fixed and mobile broadband focuses on developed countries. The chapter concludes with a discussion of the relationship between fixed and mobile broadband in the future and with concluding remarks.

BACKGROUND: DEFINITION OF BROADBAND AND TYPES OF BROADBAND CONNECTIVITIES

The term “broadband” refers to high-speed internet. Internet speed is measured both by upload and download speeds. Upload speed refers to the speed at which a user can send data to the internet. Download speed refers to the speed at which a user can obtain data from the internet. For many users, uploading files is quite a bit slower than downloading files. Most high-speed internet connections are asymmetric. They are designed to provide much better speed for downloading than uploading, because most users spend much more time downloading (which includes viewing web pages or multimedia files) than they do uploading. The actual speeds that consumers experience are often below advertised speeds, because of usage demands on the broadband network.

In the United States, the minimum speed threshold for broadband was set at speeds in excess of 200 kbps in both directions in 1999, and increased in 2010 to download speeds of at least 4Mbps and upload speeds of at least 1 Mbps (Federal Communications Commission, 2010). While other nations define broadband somewhat differently, as of January 2009, the minimum speed for broadband was usually either 128 kbps or 256 Kbps (Telecom Regulatory Authority of India, 2008). However, ARCEP, the telecom regulator in France, set a minimum speed of 512 Kbps, and in Korea and Japan, broadband plans during this same time frame started from a minimum of 2 Mbps. IDA (Infocomm Development Authority) of Singapore defines broadband as an internet connection speed greater than or equal to 256 Kbps, as of 2011. Moreover, there has been a tendency to increase the minimum speed threshold because of network evolution and usage demands.

The broadband industry has developed various types of wireline and wireless broadband connectivities, although an individual consumer may have access to only some of these connectivities. There are four types of fixed-line broadband service: ADSL (Asymmetric Digital Subscriber Line), FTTN (fiber to the node), FTTH (fiber to the home), and Cable/HFC (hybrid fiber coax) (Atkinson, 2011).

FTTH connectivity is the mode often used by legacy telephone companies in order to provide consumers with triple-play service (phone, internet, and television). In the United States, Verizon’s FIOS service is an example of FTTH connectivity. As of March 2011, FTTH connectivities in the United States had advertised downstream speed of 50 Mbps and upstream speed of 20 Mbps.

Cable broadband generally uses a hybrid fiber-coaxial architecture. Fiber optic lines bring cable services to a neighborhood node at which point connections are made to coaxial cables that bring service to customers’ homes. Unlike telephone companies’ FTTH and FTTN, clusters of cable users share the capacity of each node so that actual speeds vary depending upon the simultaneous use of others sharing the node. Cable download
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