

**Determinants of Broadband Internet Access Take-Up**  
**– Empirical Analyses of Constraints and Drivers –**

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## Abstract

Broadband Internet access ranks high on international policy agendas: In their information society strategy statements, the European Commission views high broadband availability as one of their core targets (European Commission 2002, 2005). Similar objectives and goals are set forth by the United States Congress and the Worldbank. Such examples show that broadband Internet – in 2006 commonly defined as connections with download capacity of 256 KBit/s or more (cf. OECD 2006) – is seen as a means to bolster economic growth and educational opportunities (e.g., Turner 2005).

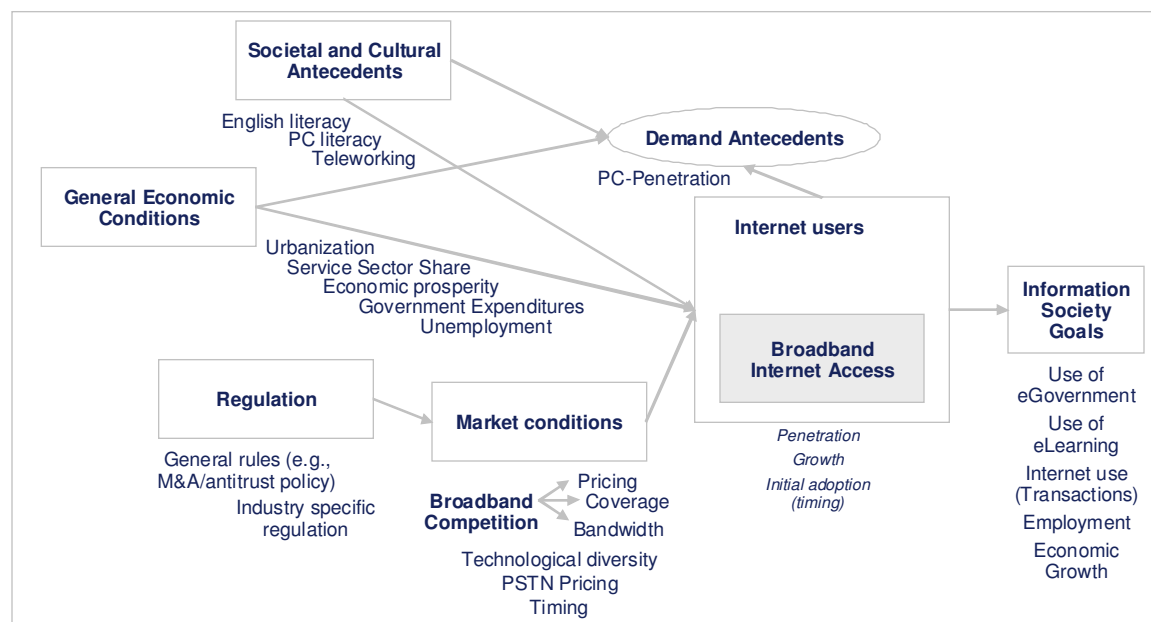
Overall, broadband connections have reached 67m (195m) in Europe (worldwide) compared to an estimated 235m (1,012m) Internet users at the end of June 2006 (December 2005). The average population penetration in OECD countries stood at 16.3% indicating that the broadband Internet market was in an early growth stage of its life cycle mid-2006 (EITO 2006; OECD 2006). However, large differences persist between the diffusion levels of broadband Internet access worldwide. Major industrialized nations such as the United States or Germany are criticized for "lagging behind" in broadband development (e.g., Redding 2006; Turner 2005). Such differences or below-expectations level of broadband deployment may be attributed to inhibiting market characteristics both in terms of demand for and supply of this type of Internet access in a country market. To this end, a wider set of factors such as English literacy and proficiency in computer usage, teleworker density, service sector employment, narrow-band-price level and many others that may be driving demand for broadband subscriptions at an aggregate, country-level, has not been reviewed for a larger set of countries so far.

The number of studies that specifically address differences in broadband diffusion across countries is limited. Bauer et al. (2003), Cava-Ferreruela/Alabau-Muñoz (2004), and Turner (2006) analyse broadband diffusion as a function of various economic, societal and country specific circumstances for OECD countries, while Chaudhuri/Flamm (2005) only analyse demand drivers within the United States. European countries or worldwide demand patterns have not been compared in comprehensive empirical analyses. A larger number of studies is available in the potentially related field of mobile telecommunications diffusion across countries, which attribute differences to characteristics of the competitive environment as well as general country parameters.

The aim of this study is to present empirical explanations for broadband achievement differences based on a wholistic conceptual model. The main research questions are (1) why have some countries outperformed others in terms of diffusion levels reached for broadband Internet access and (2) what can countries that currently have below average penetration levels do.

Broadband Internet access take-up is analysed for three data subsets (Europe, OECD, world) and draws on a wide range of explaining variables that help understand each individual nations current broadband position and anticipate future market developments. First, a conceptual framework is presented (see illustration in Figure 1), the relevant literature is reviewed and hypotheses are formulated. Secondly, variable measurements, the empirical setting and samples are described. Third, results of the empirical analyses are presented. Finally, conclusions and recommendations are developed.

**Figure 1: Conceptual framework of antecedents and consequences of broadband Internet access**



Preliminary results of the analyses show that broadband penetration differences among countries can be traced to (1) English language proficiency, which affects the attractiveness of global Web content for the countries' population, (2) teleworking, which increases the base of potential early broadband adopters, (3) service sector employment, which is positively correlated with the need for information access, (4) unemployment, which reduces the spending power of consumers, (5) narrowband Internet access prices that influence the attractiveness of switching to a broadband subscription, (6) traditional fixed voice telephony prices that affect the demand for innovative broadband substitutes such as voice over Internet Protocol, and (7) broadband prices at the time of mass market introduction, which influence speed of adoption.

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