Analysis of Broadband Penetration Policy : Empirical Findings on 30 OECD Countries and Their Policy Implications

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論 文 名　：Analysis of Broadband Penetration Policy: Empirical Findings on 30 OECD Countries and Their Policy Implications
（ブロードバンド普及政策についての分析―OECD30 カ国のデータを用いて得られた実証知見とその政策含意）

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論　文　内　容　の　要　旨

The level of broadband development and the growth rate of broadband penetration are complex outcomes of many complementary factors, including socioeconomic determinants (not only income, location, education, family size, individuals' characteristics but also market structure, country's level of technological development, and other factors), regulation, and public policies. There have been a number of opinions and discussions regarding the influence of socioeconomic factors and regulation on broadband penetration. To the best of my knowledge, however, only a handful of research studies have explicitly analyzed the ex-post effectiveness of public policies for broadband promotion. To fill this research gap, this dissertation examines the public policies from both the supply and demand sides and investigates their impact on broadband penetration in selected countries. Based on the observations from these literature reviews and case studies of four countries, the following hypothesis is proposed: demand-side policies are more effective than supply-side policies to stimulate broadband penetration. Then, empirical analysis is conducted to verify the hypothesis. The results suggest that demand-side policies have a positive and significant influence in stimulating broadband penetration in OECD countries, and have a greater impact on broadband penetration than supply-side policies.

Chapter one defines the scope and purpose of this research; it presents a theoretical and empirical examination of the effect of public policy on broadband penetration.

Chapter two presents the research questions after providing a survey of the literature on the factors of broadband services, focusing on the socioeconomic drivers of broadband penetration, the interplay between regulatory factors, and direct policy factors. It is found that public policies generally fall into two groups: policies that primarily intend to increase broadband deployment and policies that largely work to promote broadband penetration. Only a handful of studies have specifically investigated the effectiveness of public policies for promotion of broadband penetration, but their conclusions are inconsistent. Besides, most of these are based on qualitative research; empirical studies are rare. This study aims to fill this research gap by investigating, both theoretically and empirically, the impact of public policies on broadband penetration.

Chapter three discusses the effects and limitations of supply- and demand-side policies. We need to seriously consider the information asymmetry between the government and market players, given a

decision to subsidize operators by lowering the price of broadband. The asymmetric information relates to the status of applicants' operations and the uncertain demand of potential users. In contrast, if the policymakers intend to implement demand-side policies, such as a digital training program to raise people's willingness to pay for broadband, the limitation is that consumers may still not subscribe to the broadband service because of budget constraints. However, the advantage of demand-side policies is that the government can reduce market distortion by allowing market mechanisms to function.

Chapter four provides an in-depth analysis of public policies at the national level in four countries: the UK, Sweden, South Korea, and Australia. These countries adopted various strategies to boost broadband penetration and deployment. Sweden and South Korea were actively involved in promoting broadband penetration through both demand- and supply-side policies, and were shown to be top performers in broadband among OECD countries. Although the Australian government apparently attempted to stimulate broadband penetration by focusing only on supply-side policies, with little effort to expand demand, the country was well behind the OECD average of broadband penetration.

From these findings, broadband penetration is more likely to be demand-constrained rather than supply-constrained, public interventions on the demand side are thus much more effective than those on the supply side. Chapter five proposes three hypotheses: (1) Broadband is primarily demand-constrained and market users are the key driving forces. (2) The impact of supply-side policies on broadband penetration might be overstated. (3) Using both supply- and demand-side policies is the most effective strategy to promote broadband penetration. These hypotheses are then tested by a regression analysis based on data for 30 OECD countries from 2006 through 2008. The estimation results suggest that demand-side policies, but not supply-side policies, have a significant positive impact on broadband penetration. Demand-side policies are found to have a greater impact on broadband penetration than supply-side policies. Besides, the combination strategy has no statistically significant influence, nor is it more effective than demand-side policies. The results stress the importance of demand-side policies to encourage broadband penetration for effective penetration of broadband technology.

Chapter six summarizes the conclusions and presents policy recommendations. The study suggests that government intervention, historically aimed at the supply side, should be directed to the demand side. Governments in technologically advanced countries or regions should place less reliance on supply-side policies.