

What Holds Back the Growth?

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As they are fast becoming an essential tool for economic activity, Information and Communication Technologies (ICTs) became a vital engine of economic performance. The substitution of ICT equipment for other forms of inputs is known to affect positively the economic outcomes by improving productivity and decreasing transaction costs. The adoption of Internet, for example, supposedly expands profitable markets for firms. ICTs also seem to yield benefits that cannot be easily measured (e.g., economizing the use of labor effort, the added convenience, and the social benefits of interaction).

But then, what about those who are not accessible to new ICTs? The majority of studies have found a positive relationship between ICTs and economic performance in developed countries, while this would be a long-term effect for developing countries. Thus, we may conjecture the consequences of ICT adoption on economic growth would be varying according to the level of economic development of countries.

While the use of ICTs is expected to transmit information easily and less costly, rapid diffusion especially due to price decreases has raised the issue of so-called the "digital divide," which often refers to as a gap in access and ability to use ICTs. Although it is controversial about how it is measured and what the relevant indices are, the typical study in this regard investigates the determinants and characteristics of the digital divide. Income along with age and education is known as primary predictor of individual ICT usage and hence the digital divide.

Despite the increasing attention of digital divide issues, however, there are relatively few studies about its likely economic

impact. The digital divide can be often understood in the context of the relationships between ICT adoption and income inequality. As we see from the following interesting figure, other things being equal, countries with higher income inequality lagged behind those with lower income inequality in Internet diffusion. Thus, when we want to see about the impacts of Internet adoption, which is a readiness indicator among various ICTs, on economic growth, we may need to understand the interaction effect between income inequality and the ICT adoption. As growth is affected by income inequality, there is no assurance that the diffusion of Internet use increases economic growth. The inequality and Internet adoption, actually, have a stimulating effect on growth: that is, the change in economic growth corresponding to a unit change in Internet users depends on the level of income inequality; likewise, the opposite is also true. Thus, this tells us the reason why we have to be concern whether the existence of the digital divide due to income inequality hinders the economic growth associated with Internet adoption.

Does the digital divide hinder economic growth? The answer appears to be yes.

The rapid spread of Internet may or may not affect positive impact on the economic growth. The implied effect of Internet adoption on growth is actually negative for countries with high income inequality because the digital divide hinders economic growth incurred by the Internet. From a policy standpoint, this implies that the positive impact of Internet on growth will be reinforced by the income redistribution policy, which reduces inequality in a country.

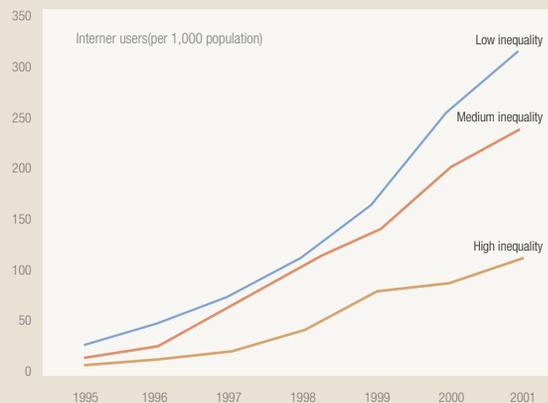
We may not doubt about the argument that the spread of new ICTs can be an influential tool in support of development. However, we have to care about the resulting digital divide because the ICT is inclined to reward those who know how to utilize it with increased income and socio-economic advantages. Inequality obviously hinders wider access of technologies. It is therefore important to provide universal access to ICTs, in order to maximize the value of the network. To engage more people in the society of new technologies, the appropriate policies should be focused on the elimination of the major barriers for people to use ICTs, such as the lack of accessibility and the low levels of knowledge and skills in using new technologies. In particular, the policy makers should be aware of policies that reduce income inequality, in order to stimulate higher economic returns via an ICT-driven economy.

About the Article

This article is written by Yong-Hwan Noh based on his article, *Digital Divide and Economic Growth* (Jun. 2006) in Bank of Korea Working Paper published by the Institute for Monetary and Economic Research. Yong-Hwan Noh is an assistant professor from the Department of Economics at Seoul Women's University in Korea. He has actively published his researches on professional journals in the area of applied game theory and micro econometrics, while maintains his interest in socioeconomic issues of ICTs. He received his Ph.D. in Economics from Iowa State University.

The implied effect of Internet adoption on economic growth is negative for countries with high income inequality, because the digital divide hinders the economic growth incurred by the Internet.

The Average Diffusion of Internet use by Income Inequalities



Note: Each line measures, respectively, average Internet users (per 1,000 people) of low income inequality countries with $Gini \leq 0.29$, medium income inequality countries with $0.30 \leq Gini \leq 0.39$, and high income inequality countries with $Gini \geq 0.40$.