

# Chapter I

## The Evolution of ICT, Economic Development, and the Digitally–Divided Society

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### ABSTRACT

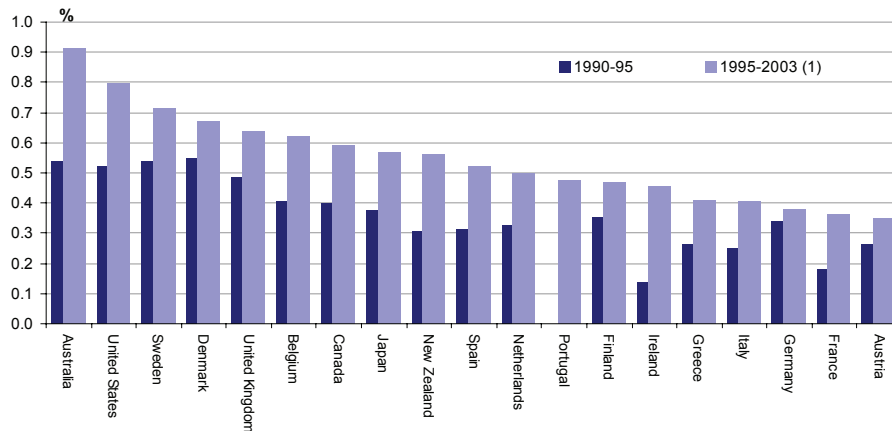
*In this chapter, we mention that a digital divide could bring about an income divide both within a country and between countries. The more the uses of the Internet diffuse, the more the divide may introduce serious concerns. From a macroeconomic point of view, the increase in the digital divide diminishes ICT investments and delays the innovation of ICT. As a result, we propose that the public policies of each government provide the devices of ICT as social capital and infrastructure. On the global stage, the digital divide exists between developed and developing countries. Therefore, international provision of the digital devices should be achieved through a cooperative effort between developed countries and international organizations.*

### INTRODUCTION

Currently, the global information society achieves progress by the development of information and communication technology. ICT offers the global society several conveniences, such as communication measures among countries and/or local areas, Web systems for businesses, online trading of securities, and distance learning.

ICT has the characteristics of a general-purpose technology (GPT); that is, it has the two qualities of compatibility and applicable innovation as identified by Helpman and Trajtenberg (1994). A GPT has broad compatibility across many industrial fields, for example, the steam engines of the 18<sup>th</sup> century. Furthermore, a GPT encourages the creation of new technologies based on its own core technology. Through such move-

*Figure 1. Contribution of ICT investment to GDP growth 1990-1995 and 1995-2003. Source: OECD Productivity Database, September 2005 ([www.oecd.org/statistics/productivity](http://www.oecd.org/statistics/productivity))*



*Note: (1) 1995-2002 for Australia, France, Japan, New Zealand, and Spain.*

ments, the core technology diffuses across many industries. Presently, in what is known as the IT revolution, ICTs are widely used by citizens, firms, and governments across the world. At the same time, ICTs create applied technologies in many fields. Looking back at this age from the future, one might well regard the ICT as being a GPT.

Figure 1 presents the contributions of ICT investment to gross domestic product (GDP) growth in Organization for Economic Cooperation and Development (OECD) countries during 1990 to 1995 and 1995 to 2003. From this figure, we can observe that ICT could contribute to increasing the growth rate in developed countries. Because ICT investment includes two aspects—increase in demand and technological change in the supply side—this contribution may not stem solely from innovations by ICT. Nevertheless, ICT may be one of the factors in growth engines.

We would like to suggest that there are two perspectives on ICT. One is the perspective of ICT as development infrastructure; the other is that of ICTs as communication measures. From the first perspective, networks provide the production factor and nurture human capital. This perspective

is based on the view that ICT is an infrastructure of economic development that is related to the supply side of economies, not the demand side. Developments of ICT provide new information, knowledge, and education to nurture highly qualified human capital. This argument is based on the endogenous growth theory,<sup>1</sup> which suggests that economic growth is driven by the accumulation of knowledge. Since this theory regards knowledge as capital, economic development progresses if the development of ICT contributes to the diffusion and deepening of knowledge.

On the other hand, the perspective of ICTs as communication measures is related to the demand side of the economy. Horrigan (2002) suggests that the notion of social capital is linked to the concept of measures as reducing transactions costs by access to ICT. ICT is, then, proposed to be social capital. The Internet provides facilities of the network of information exchange that can promote businesses and consumptions.

When, however, people use tools innovated by ICT, a burden is imposed on them. Their ability to use the devices, therefore, depends on whether or not they can bear the burden. Furthermore,

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