

**TORERO, MAXIMO and JOACHIM VON BRAUN (eds.) (2006):
Information and Communication Technologies for Development and
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We have the good fortune to be part of the third information revolution. The first one occurred when an early form of writing was invented about 11.000 years ago in the Fertile Crescent. The new art was useful for agriculture as it involved making impressions into clay tablets where the impressions represented counts of grain inventories. The second information revolution began around 1450 in Mainz where Gutenberg invented printing with mobile type. The revolution had significant repercussions for agriculture and rural people in Europe: cheap print encouraged the spread of literacy and mechanized printing machines broke the stifling, rigid control which the Catholic Church exercised over the media, their content, and the minds of the people.

The third information revolution is long in coming. It began when the telegraph for the first time in 1837 allowed information to travel more quickly than any man, animal, or machine. Several other electronic information technologies followed in irregular progression: the telephone in 1876, the radio in 1897, television in the 1930s, and the internet in 1984.

Because information is the glue that holds societies together, all newly invented information technologies were greeted with great hopes for their capacity to promote wealth, harmony, and happiness among mankind. McLuhan, for instance, believed that the new electronic media would turn the whole world into a single, tightly connected village. Today, the internet connects the financial centres of the world into a single continuous market but it bypasses most of the world's villages that are stuck on the far side of the digital divide.

The latest information technology to become the carrier of great hopes for the betterment of the condition of mankind is the mobile phone. For example, the "Economist" in December 2006 closed an article on India's stunning mobile phone boom with the insight: "Where telephones lead, development follows." Is that so? And is it also true for agriculture and rural areas?

Maximo Torero and Joachim von Braun have edited and contributed to a volume of empirical studies conducted at the turn of the millennium which support the "Economist's" encouraging claim. The motivating question of the book, as stated by the editors, is "Why is ICT ... assigned such importance in the development context?"

(p. 1) and the aim of the book is "... to shed light on how ICT affects economic development in low-income countries, how it affects poor people in these countries, and what policies and programs facilitate its potential to enhance development and the inclusion of poor constituencies" (p. 2).

ICT comprises a diverse set of technologies that ranges from the plain old (analog) telephone service (POTS) to digital internet services delivered to mobile hand-held devices. As the editors make clear, the book "... largely focuses on telephony as a proxy for ICT more generally" (p. 3). Moreover, because the empirical studies of the book were completed at the turn of the millennium when mobile phone services in developing countries were still in their infancy, the telephony, in the context of this book is mostly POTS.

The book comprises four types of contributions: (i) Conceptual studies concerned with the nature of information, with information and communication technologies (ICT), and the linkages between both and economic and social development in the poor countries of the world; (ii) econometric studies of the linkages between ICT and economic growth, and between ICT and health services delivery; (iii) country case studies of the institutional and regulatory environment of ICT operations as well as case studies of the household impacts of ICT, and (iv) syntheses of the case studies.

Reading (and reviewing) such a diverse array of contributions is no easy task. Fortunately, the editors provided help. The introductory chapter familiarizes the reader with the complex concepts and issues surrounding information, ICT, and their impacts on various aspects of creating wealth and improving the circumstances of poor people. This chapter, like the rest of the book, assumes an economics perspective of ICT. Chapter 2 is an econometric study of the impact of ICT on economic growth, chapters 3 to 5 comprise the country case studies. The first set is concerned with ICT regulations in Peru, Laos, Bangladesh, China, and Ghana. The second set in chapter 4 reports results of surveys on ICT use and impacts on small and medium sized enterprises (SME) in India, East Africa (Kenya and Tanzania), rural Laos, and India. The last set of case studies is probably the one that is of utmost interest to agricultural economists and rural development specialists. Here we find results on the use and impact of ICT by rural households in Peru, Laos, Bangladesh, China and Ghana. The surveys, on which the case studies are based, were mostly conducted in 1999 or 2000 and the number of responding households ranged from 100 in Laos to 2,200 in China. For the convenience of readers each case study chapter contains a synthesis of the key empirical results. All this allows a focused reading concentrating on the introduction, the conclusions, and, depending on personal interests, perhaps on one of the chapters in the body of the book.

Mosaics are more than collections of coloured stones – they should show a picture or pattern. Similarly, edited volumes should be more than collections of independent studies bound together to keep the pages in order – they should share a joint theme or message, a bracket that holds the content together. The joint theme or message of the studies in this volume are five questions, which the authors call “skeptical hypotheses”. The questions are stated in chapter 1: “Introduction and Overview” and the answers are summarized in chapter 7: “Conclusions and Implications for Policy and Research”. The questions and answers provide an excellent summary of the core concerns of and key insights from the studies in this volume.

Question 1: Does a clear link exist between ICT growth and economic growth, and is there a critical mass that has to be reached for the link to show up?

Answers: Yes, there is a link, the relationship is nonlinear, and significant investments have to be made until ICT perceptively affects economic growth.

Question 2: Do weak institutions block the effective use of ICT?

Answer: Yes, they do.

Question 3: Is ICT adapted to low-income countries and does it have an impact on SME?

Answer: Adaptation has been slow but it is happening; ICT has positive impacts on SME performance.

Question 4: Is household access to ICT constrained?

Answer: Not seriously any more; ICT has shown positive impacts on rural households.

Question 5: Can ICT play a role in the provision of pro-poor public goods and services?

Answer: Yes, ICT can be a powerful tool for this purpose.

Taken together, the studies in the volume provide strong empirical evidence that development follows the telephone into rural areas and into agricultural households.

Beyond providing the empirical foundation for answering some of the broader questions concerning the nexus between ICT and development, the case studies also contain many interesting information details and insights on the use and impact of ICT in a developing and poor country context. Of interest is the observation in Laos, that “... to keep in touch with family and friends was the most commonly reported benefit of telephone access” (p. 260). Obviously, friends and family are for most people still more important sources of information than price and market reporters, or government departments.

A critical remark on volume I concerns an inadequate balance between the sophistication of the economic and the technological concepts employed in the conceptual framework.

ICT is a highly diverse bundle of technologies. For example, POTS is a synchronous one-to-one technology characterized by scarce network capacity (people had to wait for years for a connection) and low costs of exclusion. Digital mobile phone technology is also a one-to-one technology and it has also low costs of exclusion. But in contrast to POTS, digital mobile phones provide synchronous or asynchronous services, voice, script and video, and mobile phone network capacities are abundant. Moreover, the internet is not, as the book insinuates at several places, an information technology – few people can make sense of the data packets that internet computers exchange among each other. But the internet enables different communication applications, such as e-mail, the World Wide Web, Voice over Internet, chat, and many more. The economics of the applications are grossly different: the web allows exclusion of information users, and a website may be a public good or a club good, as the provider of the information chooses. Voice over Internet has many of the characteristics of the mobile phone, without the costs. Indiscriminately bundling all the different technologies together as ICT is convenient but certainly has its limits when the intention of the research is to learn lessons for ICT in general from experiences with POTS.

In places, the contents of this book have an outdated feel. This is not the fault of the authors, it is the fault of the informal institutions that govern how economics research is conducted and disseminated. Digital ICT, and most new ICT is digital, is “exponential” technology – its performance per dollar or Euro grows exponentially. Yet, in economics we are still using research approaches that were developed when there was no internet, when software supporting social collaboration networks was unheard of and when print was the most cost-effective dissemination technology. It is time that we consider our ways of conducting and disseminating research. Perhaps authors of books should consider using wikis for publishing their works. Wikis – the type of software that wikipedia uses for its encyclopedia on the Web – would allow readers, and reviewers for that matter, to actively contribute to the creation of a publication. For instance, the Stanford law professor and co-founder of the Creative Commons Movement, Lawrence Lessig, produced the second edition of his book “Code” in this way. If we don’t speed up our own information production and dissemination technologies, economics research on ICT will soon lose its relevance for ICT entrepreneurs and policy makers.

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