Chapter 1
Does Technology Adoption Matter for Economic Development?
Empirical Evidence for Latin American Countries

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ABSTRACT
The spread of new Information and Communication Technologies (ICTs) has been recognized worldwide. ICTs are broadly perceived as tools facilitating economic growth and development, especially in backward countries. They are easy and cheap to adopt, require minimum skills for effective use, and bring opportunities for disadvantaged societies. They enable education, knowledge dissemination and sharing, and processing and storing of all kinds of information. The existence of causal relationships between technology diffusion and general economy performance is highly probable. This chapter seeks empirical evidence in existing quantitative links between the process of Information and Communication Technologies (ICTs) adoption and dynamics of economic growth and development in Latin American countries. The authors consider ICTs diffusion patterns in Latin American countries, approximating the diffusion process by S-shaped curves. Afterwards, they aim to detect if there is any quantitative relationship between ICTs adoption dynamics and economic growth and development, and they estimate to what extend ICTs contribute to economic growth and development. The authors hypothesize on existing statistically significant and strong links between the two. They use panel data for Latin American economies from the years 1990-2011. All necessary data are derived from World Telecommunication/ICT Indicators Database 2012 (16th edition) and World Development Indicators 2012.

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New Technologies, in fact standing for New Information and Communication Technologies (ICTs), are widely recognized as one of the most important engines of economic growth and development, social and structural changes. According to broadly accepted definition developed by OECD (see OECD Guide to Measuring Information Society 2011), ICTs are products that “must primarily be intended to fulfill or enable the function of information processing and communication by electronic means, including transmission and display” (see ibidem, p.22). It is widely agreed that ICTs are continuously having strong impact both on economic and social dimensions of life, and their adoption and use has broad and pervasive implications. Use of new technologies causes changes in enterprise sector, transforming way of doing business, creating new markets and demand, changing consumer preferences. It provides a perfect tool for making the business more effective; use of Internet as global trading platform, allows finding new partners, at marginal cost close to zero. Some say, that ICTs diminish geographic “distances” among markets. This is especially crucial for countries which are treated as peripheral due to its geographic location, lack of access to sea or navigable rivers. The “distance” among countries is also defined in terms of economic development. Counties economically backward are generally on the margin on global markets. ICTs create real possibilities for introducing these economies into these markets. On the other hand, use of new technologies enabled reduction in transactions costs and market friction. As result the positive impact shall be visible in growth of productivity which would be directly transmitted into growth of per capita output. The contribution of ICTs to national economies can be then pervasive, however, it is necessary to stress that technologies are causing dramatic changes in social life. They change societal interactions, by contributing to new means of communication, access to information and knowledge. The ICTs impact on society can be particularly seen through lens of education. Broad development of tools for knowledge and information access at any place and at any time, at minimal cost, is substantial for being better educated. This in effect creates shifts in country’s human capital.

In broad conceptual perspective, economic growth is highly based on technological progress, and knowledge (see i.e. Faberger, 1994; Castellaci, 2002; Comin & Hobijn, 2003). As Information and Communication Technologies enable diffusion on innovation they can be treated as tool of promoting economic growth and socio-economic development. In 2003, during the World Summit on Information Society, New Information and Communication Technologies have been declared as a key driver for economic development. At a time their unique influence on education, government, institution, poverty eradication has been strongly highlighted (World Summit 2003 in Geneva).

New technologies can be a powerful tool for economic growth, but despite this fact, we need to underline that their impact on economy and society is far from automatic and linear, and is supposed to be revealed in the long-run perspective. Reshaping social life, economic structures and productivity shifts are time-intensive processes, which are impacted by ICTs, but often not directly. What is even more, adoption of ICTs influences countries differently. Their effective use, so that real gains could be obtained, is additionally deeply depended on social and economic pre-conditions, country’s policies, market regulations and competition. It is widely thought that to benefit fully from the potential of new technologies, societies should “posses” certain stock of knowledge and skill, generally perceived as kind of prerequisites to adopt and use ICTs.

Along with previous there arise other aspects of new technologies adoption. Paradoxically, fast diffusion of technologies, can determine inter-country disparities, causing higher social