ICT and Economic Growth: Evidence from Twelve MENA Economies

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ABSTRACT

Technological progress is a significant factor that drives economic growth. One of the most visible evidence of modern technological progress is Information and Communication Technology (ICT). In this paper we examine the importance of ICT in the context of economic growth. Based on the availability of data a group of 12 MENA economies (including GCC countries) are included in the study for the time period 1995-2007. A first look on the data clearly indicates huge increase in the use of internet, personal computers, land lines and cell phones for most of the countries in the sample. Using the error component model with Autoregressive disturbance of order 1 [AR(1)] results indicate significant evidence for 3 measures of ICT in enhancing economic growth. To avoid biased estimates in all results we always control for the other relevant variables that can potentially affect economic growth. Results are robust to inclusion of the other variables.

Keywords: Economic Growth, ICT, MENA, Technology Diffusion, Technological Progress

INTRODUCTION

Latest developments in information, communication and technology (ICT) have spurred a debate about the role of ICT on economic growth. There is a belief that ICT is just a different way to communicate (alternative to fax or telex) and are not likely to play any significant role on the functioning of the economy (Gordon, 2000). The other doctrine mentions all these recent developments enhance the ability to communicate, specifically internationally, or/and find tacit knowledge which may increase spillovers and technology transfer. As a consequence ICT has the potential to be a significant factor in economic growth of a country (Federal Reserve Bank of Dallas, 1999). However, spillovers cannot be directly measured, thus a testable hypothesis is that countries with better ICT infrastructure are expected to experience higher spillovers and economic growth.

This paper investigates how ICT affects economic growth in Middle East region. The issue is important and received considerable attention in popular press as well as in academia for two reasons. First, there has been a sharp increase in the contribution of non-oil sector for these economies' GDP. Secondly, with growing importance of non-oil sector for these economies, the role of ICT is coming under the scanner. We explain how ICT can affect economic growth in a while. Based on the availability of data for a group of 12 Middle East economies (including GCC countries) we provide our evidence for the time period

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1995-2007. A bird’s eye view on the data clearly indicates huge increase in the use of internet, personal computers, land lines and cell phones for most of the countries in the sample. Using the error component model with Autoregressive disturbance of order 1 [AR(1)] we find significant evidence for two measures of ICT in enhancing economic growth. To avoid biased estimates in all results we always control for the other relevant variables that can potentially affect economic growth. Results are robust to inclusion of the other variables.

In crux, ICT has the ability to increase growth in a variety of ways which can be categorized under three main categories (Litan & Rivlin, 2001). Transactions are basis of any economy. Thus any method that reduces transaction costs is going to be beneficial for the economy as a whole. ICT has significant and promising avenues to reduce the cost of many transactions cardinal to produce and distribute goods and services. Next, it has immense potential to increase management efficiency by facilitating firms to manage their supply chains and logistics more effectively. Moreover firms can more easily disseminate information both within the firm as well as with customers and partners. Finally, ICT can encourage competition by requiring more price transparency and expanding markets for both buyers and sellers. Also in turn it places urgency on suppliers to adopt methods that can reap some cost savings. So, in other words the hypothesis is that better ICT implies greater efficiency, more transparency and spillovers which translates to higher economic growth. Knowledge spill over materialize when activities of one firm have an influence on another firm’s stock of knowledge. Thus, the theoretical underpinning is the fact that individual firms face diminishing returns while social returns remain constant. Hence, it implies that the economy as a whole does not run into diminishing returns and long run growth remains positive.

Previous macro level research during 1980s and 1990s indicated a small role of ICT on economic growth (Roach 1987; Jorgenson and Strih, 1995). But as time passed, benefits of ICT on economic growth were slowly identified empirically. Later studies show a considerable impact of ICT on labor productivity as well as on economic growth (Jorgenson, 2001; Oliner & Sichel, 2004). However, results differed based on the geographical configuration considered for the study. For example, Dewan and Kraemar (2001) and Pahjola (2001) using data from 36 countries found that ICT contributed more to economic growth for industrial economies. Their results did not find any evidence of such a positive relationship in developing countries. Paul Schreyer (2000) in his study for G7 countries reports that “ICT has been important contributors to economic growth, although the role of ICT has been most accentuated in United States”. Sotiris and Papaioannou (2004) using a production function framework examine effects of ICT on productivity and economic growth for both developing and developed economies. Their results indicate that ICT plays greater role in developing economies compared to developed ones.

The influence of ICT on economic structure and growth has also been recorded in a number of country level studies. For example, in United States (Council of Economic Advisors, 2001), ICT scores for more than a fifth of GDP growth during period 1990-2000. According to Outlom (2001) there is significant contribution of ICT on economic growth for United Kingdom. Similar studies for countries like Australia (Praham et al., 2001), Netherlands (Van der Wiel, 2002), Finland (Jalava & Pohjola, 2002), Korea (Kim, 2002) also register important role of ICT on economic growth. Hanna et al (1996) investigate how ICT plays a major role in growth of East Asian economies, while Kapur (2002) explains the causes and effects of the strong expansion in Indian software sector. Thus in a nutshell there is enough evidence for these economies to reap benefit from ICT. There are plethora of papers on the developed or/and OECD countries but at the same time there is dearth in literature regarding related studies based on Middle East economies.

As mentioned above there have been voluminous studies in US and other developed economies on impact of ICT on economic growth, we have not yet focused properly in
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