

## Economic Impact of Productivity from Digital Technologies: A CGE Approach

Somya Mathur

*The main purpose of this study is to present an applied computable general equilibrium (CGE) model to the OECD economies and India. A CGE model is a neoclassical version of the Walrasian equilibrium, which models production sectors on perfect competition, full use of production factors, and the clearing of all markets of goods. The model thus enables the second objective of the study: To estimate the impact of digital technologies on the economies of the OECD countries and India. The macroeconomic effects resulting from the induction of the new technologies are quantified by simulations performed using the developed model. This analysis of the quantification of effects is extremely important, as the OECD economies were the first ones to adopt the new Information and Communication Technologies (ICT).*

### I Introduction

The wave of digital transformation has swept at an unprecedented speed and the main driver for the adoption of digital technologies is enhanced productivity and costs reduction. However, though there have been cost reductions of capital inputs and there is a potential gain in firm productivity, it has been witnessed that in many economies there has been an overall productivity slowdown (OECD, 2019c).

The concept of productivity paradox coined by Robert Solow in the 1970s and 1980s with the advancement of the computer age in the U.S. is very much relevant in today's context of the new digital technologies under industry 4.0. (Bart VanArk, 2016). Hence Solow's Paradox as the concept is likely to prevail in the "installation" phase of any digital innovation and will continue till its "deployment phase" (Bart Van Ark 2016). There is also an increasing gap between firms that lead in digital adoption and firms that lag. The gap is because of adoption barriers related to leadership, skillsets, and incentives (For e.g., a competitive business environment), and transition costs.

Figure 1 shows the decline in capital productivity in OECD nations from 1995 to 2017, except for Germany, Japan, and Finland which have positive growth.