Chapter 1

Economic Freedom and the Impact of Technology on Productivity

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ABSTRACT

A well-developed body of literature has detected positive effects of technology investments on economic growth. We contribute to this literature by studying the joint effects of technology and economic freedom on economic growth. Using two different time points, 1990 and 2000, and a sample of over 100 countries, we find that economic freedom enhances the effect of technology on economic growth. In fact, we find that the standalone effect of freedom is not as large as its interactive effect with technology.

INTRODUCTION

Economic growth is considered a key indicator of national success. A country’s performance and status is often determined by its level and growth in economic income. Alternative measures such as Gross National Product (GNP) or Gross Domestic Product (GDP) (levels or percent changes) are used as proxies to measure economic growth. Because of its importance, considerable research has been directed toward determining factors influencing economic growth. This literature, inspired by Solow (1956), spans half a century and hundreds of publications. A recent offshoot, appearing in the Information Systems (IS) literature, seeks to assess the effect of technology on growth. No doubt, this research has been spurred by the advent of the Internet and the digital economy. Therefore, it is no surprise that a fairly narrow definition of technology is used in most studies. The independent variable (technology) typically reflects the following three elements: computer hardware, computer software, and communications equipment. The conclusion from these studies is that technology has a positive impact on growth.

We study the impact of economic freedom on the relationship between technology and economic growth. We use a sample of more than 100 countries and use two cross-sectional snapshots during 1990 and 2000. We argue that a climate
of economic freedom allows various entities (individuals, teams, corporations, societies) the flexibility to harness the positive effects of technology. Not only would greater investments be made in technology but these investments would also have a greater possibility of bearing fruit. Thus, we expect technology to have a greater effect on economic growth when coupled with an environment of economic freedom. We test this proposition and find results consistent with our hypothesis. We report robust results indicating a significantly positive interaction between freedom and technology. We note that it is not economic freedom per-se that affects growth but technology accompanied by economic freedom.

In the next section of the paper, we describe the two streams of literature we draw on. We present our research models along with a description of our sample in the Data and Methodology section. We report the outcomes of our statistical tests in the Results section. Then we discuss the data and results of our research findings. In the following section, we outline the contributions of our study. Finally, the limitations of the research are highlighted and we conclude in the last section.

BACKGROUND AND LITERATURE REVIEW

Technology and Economic Growth

There is a large stream of literature relating technology and economic growth (for a comprehensive review of this literature, see: Dedrick, Gurbaxani and Kraemer, 2003; Indjikian and Siegel, 2005; and Merville, Kraemer and Gurbaxani, 2004). The vast majority of this literature focuses on a particular aspect of technology, namely IT. This is a logical focus in the last two decades because of the rapid computerization of various business processes and the advent of the Internet. Due to the focus on IT, key independent variables have reflected investments in computer hardware, software, Internet and communication technologies. The empirical relationship between technology and growth is studied using various specifications. Dedrick, Gurbaxani and Kraemer (2003) categorize these studies based on the aggregation level of data: firm-level, industry-level, and country-level.

The main debate in the literature centered on whether or not technology enhanced productivity (or economic growth). The evidence from the 1980s using data from the United States of America (USA) was predominantly negative (e.g. Roach 1987; Strassman 1985). This is in contrast to the evidence from the 1990s indicating a significant and positive relationship between technology and growth (e.g., Brynjolfsson and Hitt, 1996; Jorgenson and Stiroh, 2000; Lichtenberg, 1995). The so-called ‘productivity paradox’ (Solow, 1987) of the earlier time period has been attributed to various reasons. Perhaps technology investments were too small to create a positive effect (Oliner and Sichel, 1994), and these investments needed to go beyond some minimum value before they could affect growth (Osei-Bryson and Ko, 2004). Perhaps there was also a learning curve associated with technology (Dedrick, Gurbaxani and Kraemer, 2003). Additionally, the literature has suggested that other factors contributing to organizational performance may have been omitted in evaluating IT impacts (Devaraj and Kohli, 2000). For example, studies have suggested that organizational factors (e.g. type of IT, management and workplace practices, changes initiatives, the organizational structure and culture, and financial conditions), the competitive environment (e.g. industry competitiveness and regulation), and macro environment (e.g. level of development, public policies, cultural factors, education, IT infrastructure) are important factors influencing the extent of IT business value (Merville, Kraemer and Gurbaxani, 2004). Finally, the benefits of IT may expand beyond the frontiers of the company initiating the IT investments. Thus, part of these benefits may be captured by business partners.