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Foreign direct investment (FDI), productivity and the technology gap in African economies

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Abstract

This paper investigates the impact of foreign direct investment on total factor productivity conditional on relative backwardness in a panel of 45 African countries over the period 1980–2012. We use two measures of relative backwardness, namely: the distance from technological frontier and the income gap. We apply the fixed-effects and two-step system GMM methods. We find a generally positive but weak effect of FDI on productivity growth. Meanwhile, the results do not support the convergence theory of Findlay (1978) and Wang and Blomstrom (1992), that relative backwardness would result in higher productivity growth via the adoption of foreign technologies.

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1. Introduction

This paper examines the impact of foreign direct investment on productivity growth and the role of relative backwardness (the technology gap), based on a panel of 45 African countries over the period 1980–2012. FDI is often viewed as an important channel for the diffusion of technology in

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many developing countries. Endogenous growth theory postulates that FDI raises economic growth by generating technological diffusion from the developed world to the host country (Borensztein et al., 1998). This is particularly important for Africa, which has a huge technology gap. Productivity spillovers from FDI take place when the entry or presence of multinational corporations increases the productivity of domestic firms in a host country, and the multinational companies do not fully internalise the value of these benefits (Javorcik, 2004). Consequently, many policymakers in African countries have placed the attraction of FDI high on their agenda in the hope of benefitting from these technology spillovers (Woo, 2009).

A number of scholars find that differences in total factor productivity account for the huge cross-country variations in growth (Acemoglu, 2009; Caselli, 2005; Easterly and Levine, 2001). Since FDI is regarded as an important channel for technology transfer, a study of the impact of FDI on productivity growth and the role of the technology gap is of great significance to policy makers in Africa, as it provides better clarity on one of the key factors that can potentially help African countries to develop. The objectives of this study therefore include: to analyse the productivity effects of FDI in Africa and to determine the role of the technology gap on the FDI-productivity nexus. We test the ‘relative backwardness’ hypothesis of Findlay (1978) and Wang and Blomstrom (1992), which states that the rate of technology diffusion in a relatively backward country is higher the further the country is from the technological frontier. Thus, technology diffusion may be faster when the host country is relatively backward. Growth therefore becomes a function of the country’s technological gap. Economies far from the technological frontier are expected to adopt technologies from the advanced economies to drive growth (Aghion and Howitt, 2009).

Although it has been shown that a large part of cross-country differences in income per capita can be explained by productivity growth, most of the existing literature, however, only focuses on the role of FDI on economic growth. There is a paucity of literature that examines the role of FDI on productivity growth at the cross-country level (Roy, 2008). Importantly, the role of the technology gap is often neglected. Some of the studies that attempt to address this issue include: Baltabaev (2014), Danquah and Ouattara (2014), Roy (2008) and Senbeta (2008). Baltabaev (2014) uses data for 49 countries (including both developed and developing countries) over the period 1974–2008 with a few developing countries in the sample. Danquah and Ouattara (2014) examine the contribution of human capital to productivity, innovation and adoption of technology for a sample of a panel of 83 countries, including 19 sub-Saharan African (SSA) countries over the period 1960–2003. Roy (2008) uses data for a sample of 89 countries in both Latin America and Africa. Senbeta (2008) examines the FDI-productivity growth nexus for 22 SSA countries for the period 1970–2000. However, the author does not consider the role of the technology gap. This paper uses a bigger sample consisting of 45 African countries and we incorporate two measures of relative backwardness over the period 1980–2012.

This paper contributes to the literature in many ways. Firstly, we narrow our focus to only African countries (45) to help reduce any bias that may be due to sample selection. This is important because scholars such as Kumar and Pradhan (2002) and Sylwester (2005) find that FDI has differential effects in different regions. We use two measures of relative backwardness, namely: the distance to the technology leader and the income gap. We analyse both the individual and simultaneous interactions of FDI with these ‘relative backwardness’ measures and their impact on productivity growth. We control for endogeneity, using the system GMM estimation. We also use the fixed effects estimation to check for the robustness of the results.

The rest of the paper is organised as follows: Section 2 reviews and discusses the related literature. Section 3 details the model specification and data description. Section 4 presents the estimation and analysis of the results, Section 5 provides robustness checks, and Section 6 is the conclusion and policy recommendations.

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