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Analysis

Foreign direct investments, environmental externalities and capital segmentation in a rural economy

Angelo Antoci [a,*], Simone Borghesi [b], Paolo Russu [a], Elisa Ticci [c]

[a] Department of Economics and Business, University of Sassari, Italy
[b] Department of Political and International Sciences, University of Siena, Italy
[c] Department of Economics and Statistics, University of Siena, Italy

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ABSTRACT

This paper examines the possible effects of external investment inflows on the development of local rural economies, taking into account two recurrent features of many developing countries: capital market segmentation and environmental externalities. To investigate this issue, we examine a model with two sectors: the "local sector" and the "external sector". Physical capital accumulation in the latter sector is driven by foreign direct investments, while in the former sector it follows a Solow-type accumulation mechanism. We assume that the production activity of the external sector damages the environment while the local sector relies on natural resources. In this context, we give the conditions under which capital inflows can promote diversification of host economy while improving welfare of local populations. If these conditions are not satisfied, external investments fuel a welfare reducing process (for the local community) and a self-enforcing growth of the external sector at the expense of the local one.

1. Introduction

In the last decades local rural economies have become increasingly exposed to external investments, such as foreign direct investments (FDI) or capital inflows from urban or richer areas.[1] FDI as percentage of GDP increased by more than seven times between the 1980s and the 2000s in low income countries, where most of the population lives in rural areas, and by more than five times in middle income countries.[2] This trend comes along with the on-going globalization process and the increasing demand for raw materials and commodities. The importance of the search for raw materials as a key FDI driver is the object of a large debate in the literature.[3] Recent estimates (Wiedmann et al., 2013) show that OECD countries tend to externalize their resource-intensive production processes by extracting raw materials that are available elsewhere. While the domestic material footprint of OECD countries has declined since the 1990s, their overall footprint turns out to have increased, both in absolute term and per unit of GDP, when accounting

* Corresponding author at: Dipartimento di Scienze economiche e aziendali, University of Sassari, Via Muroni, 25, 07100 Sassari, Italy.
E-mail addresses: angelo.antoci@virgilio.it (A. Antoci), simone.borghesi@unisi.it (S. Borghesi), russu@uniss.it (P. Russu), ticci4@uniss.it (E. Ticci).

[1] For the sake of simplicity, in what follows we will generally refer to FDI as the main form of external investments. The same considerations and results from the model apply also if the external investments accruing to the local community come from domestic capitals from richer areas.

[2] Authors' calculations based on World Development Indicators accessed on February 2015.

[3] Following the taxonomy proposed by Dunning (1993), resource seeking FDI aim at acquiring resources (e.g. raw materials and natural resources) that are unavailable at home or that are available only at a lower cost in the host country (such as unskilled labor). See, among others, Helpman (1984), Markusen and Maskus (2002), Slaughter (2003), Gerlach and Liu (2010) for in-depth analyses of this issue.

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for raw material extraction. These developments have generated a heated debate on the consequences that the growing exposure to external investments can have on the development of rural economies.

On the one hand, supporters of FDI in developing countries claim that external investments favor the economic growth of these economies, which can lead to a reduction of both poverty and environmental degradation within these communities (Gorgen et al., 2009; Chaudhuri and Banerjee, 2010). This expected effect on local economies can contribute to explain why governments often implement policy measures aimed at attracting FDI. UNCTAD (2006), for instance, calculates that 2078 out of 2267 national policy changes, introduced between 1992 and 2005 around the world, were favorable to FDI.

On the other hand, opponents of external investments in rural economies argue that these interventions often tend to deteriorate the local environment. Recent contributions (FAO, 2009, 2012; Heumesser and Schmid, 2012), in fact, document a number of cases in which FDI have had perverse environmental impacts impoverishing the main resource on which local dwellers rely for their subsistence. Several studies find that the health and economic conditions of some local rural populations have been severely damaged by the polluting activities of external investments (Jorgenson, 2009; Herzer and Nunnenkamp, 2012).[4] As a consequence, FDI may not necessarily bring about a higher welfare level in the local communities and in some cases may actually increase their poverty levels, compelling indigenous populations to leave their activities and look for alternative occupations.

Despite the increasing number of studies that focus on the debate discussed above, in the last few years the empirical literature has not managed to provide a clear-cut evidence in favor of one position or the other. In addition, most empirical and theoretical research has focused on the link between FDI and the economic growth of the receiving country (see for instance Alfaro et al., 2010; Azman-Saini et al., 2010; Herzer, 2012; Forte and Moura, 2013). The impact that FDI can have on the local environmental quality and on the welfare of indigenous populations, instead, is much less investigated and, at the same time, more controversial.[5]

The present paper aims to get a deeper understanding on the potential effect that external investments can have on the development of local rural economies. For this purpose, we propose a simple two-sector model that investigates the dynamics characterizing a small open economy in which the local sector relies on natural resources for its production. The proposed formalization takes into account both the environmental externalities possibly generated by external investments and the capital market segmentation that is often typical of developing countries. On the one hand, in fact, external investments may enhance local development as external investors enjoy better access to capital markets than local dwellers. On the other hand, they can generate environmental externalities that tend to damage the local production which, unlike the new incoming activities, is highly dependent on natural resources.

The structure of the paper is the following. Section 2 discusses the related literature, Section 3 introduces the model, while Sections 4–6 investigate the properties of the dynamic regimes that emerge from the model. Section 7 examines the welfare implications deriving from the model. Section 8 illustrates the economic interpretations of the results of the model presenting some real-world examples. Section 9 provides a few concluding remarks.

2. Related Literature

The present paper is strictly related to two main strands of the literature that have never been taken jointly into account so far: on the one hand, the vast literature on the effects of FDI, on the other hand, the research line on environmental defensive behaviors.

As to the former, many studies have investigated the effects of FDI, especially on the growth performance of the receiving country, both from the theoretical and empirical viewpoints. In this regard, it is possible to identify at least three main channels through which FDI can have a positive impact on the growth of the host country. In the first place, FDI increases capital accumulation in the receiving country by introducing new inputs and technologies (Dunning, 1993; Blomstrom et al., 1996; Borensztein et al., 1998; Saggi, 2002; Kemeni, 2010). In the second place, it tends to raise the level of knowledge and skills in the host country through labor and manager training (de Mello, 1996, 1999; Liu et al., 2001; Hansen and Rand, 2006). In the third place, FDI can increase competition in the host country industry by overcoming entry barriers and reducing the market power of existing firms (Chung, 2001; Bitzer and Görg, 2009; Nicolini ad Resmini, 2010; Damijan et al., 2013). The three channels mentioned above can influence growth by raising the productivity level of the host country. This seems to be confirmed by several studies (e.g. Globerman, 1979; Blomstrom and Persson, 1983; Ericsson and Irandoust, 2001) which observed a positive relationship between FDI and labor productivity. Other studies, however, pointed out that several conditions are required for FDI to produce the potential beneficial effects on economic growth described above. In particular, a key role is played by the sectoral composition of FDI: FDI in the primary sector tend to have a limited or even negative impact on the growth of the host country, while FDI in the manufacturing sector often give rise to positive spillover effects on the local economy (UNCTAD, 2001; Aykut and Sayek, 2007; Chakraborty and Nunnenkamp, 2008). Other studies, moreover, find that the impact of FDI crucially depends on the income of the receiving country and that only above a given income threshold level FDI generates positive productivity spillovers (Barrios et al., 2003; Girma, 2005; Mayer-Foulkes and Nunnenkamp, 2009).[6]

Finally, some scholars (Aitken and Harrison, 1999; Djankov and Hoekman, 2000; Konings, 2001; Agosin and Machado, 2005; Herzer et al., 2008; Waldkirch and Ofosu, 2010) express an even more critical viewpoint on the role played by FDI in the development of the host economies. Their findings suggest that in some countries FDI can crowd-out local firms and can have negative effects on the economic growth, at least in the short term. Again, the characteristics of host countries may play a crucial role in this regard: Mayer-Foulkes and Nunnenkamp (2009), for instance, find that US FDI tend to promote income convergence to per capita income US levels for rich countries, while they tend to widen the income gap from the US for many low- or middle-income countries which have a lower bargaining power.

Beyond the literature on FDI, the second (and so far separate) research line upon which the present paper is built is the one on environmental defensive behaviors. By this term, we refer to the individual choices that agents do to self-protect from environmental degradation. The progressive deterioration of the environmental quality that often comes along with economic growth may induce changes in the individuals'

[4] One of the most notable examples in this sense is provided by the heavy ecological damages suffered by the Nigerian local community provoked by the oil and gas exploitation activities along the Niger Delta (UNDP, 2006; Salami et al., 2012).

[5] See, for instance, the long-standing and voluminous literature on the so-called Environmental Kuznets Curve, which reaches conflicting results on the relationship between FDI-related economic growth and environmental degradation (Omri et al., 2014 as well as Dinda, 2004; Kijima et al., 2010; Pasten and Figueroa, 2012, for surveys of the literature) or the empirical literature on the so-called "pollution haven hypothesis", which could not provide conclusive evidence on whether more lenient environmental regulations actually attract FDI (Cole, 2004; Cole and Fredriksson, 2009; He, 2006; Ghertner and Fripp, 2007; Levinson and Taylor, 2008; Millimet and List, 2004; Mulatu et al., 2010). While these two research areas can provide useful insights into the relationship between FDI and natural resources, they mainly focus on nation-wide effects of FDI rather than on local rural economies. In what follows we will not examine their lively debate as this goes beyond the scope of the present paper.

[6] As pointed out in the literature (Alguacil et al., 2011; Alfaro et al., 2004; Blomstrom et al., 1994; Balasubramanyam et al., 1996; Borensztein et al., 1998; Kemeni, 2010; Lim, 2001; Reiter and Steensma, 2010), moreover, the impact of FDI on the receiving country depends also on a large set of additional factors, such as institutional and legal contexts, corruption and social capability, the degree of the competition or complementarity with local activities, the technological gap, the level of human capital in the host economies, the development of financial markets and receptiveness to trade, as well as investment regulation and labor intensity in investment sectors.