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Interfaces with Other Disciplines

Shadow prices of social capital in rural India, a nonparametric approach

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ABSTRACT

This article studies the role of social capital on cotton production efficiency and productivity for a sample of small farms in Maharashtra, India using data envelopment analysis. Input shadow prices are computed as an indicator of the importance of social capital relative to other inputs. Results suggest social capital to be the input with the highest contribution to production efficiency after land. The Luenberger indicator is used to assess the productivity improvement associated to an investment in social capital, which is found to be on the order of 12%. Undertaking collective production activities is found to play an important role in improving productivity. This is especially relevant to agricultural households facing important economic and institutional restrictions that make it difficult to increase conventional (expensive) inputs.

1. Introduction

Formal institutions and interpersonal relationships can promote trust, improve search activities and encourage trade, which are usually hindered by asymmetries in human society (Hayek, 1945). The concept of social capital was coined to embrace "the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which they are embedded" (Grootaert, 1998a). While initially, social capital was mainly drawing the attention of sociology and political science disciplines, later on it found its path into economic analysis (Fukuyama, 1995). Coleman (1988) popularized the social capital term and defined it as the embodiment of relations among individuals for the purpose of productive activity. The Social Capital Initiative, launched in 1996 by the World Bank, contributed to further spread this concept. In spite of this, social capital is still a relatively awkward concept in mainstream economic thinking.

A growing literature has documented the significant connections that exist between social capital and economic outcomes (Knack & Keefer, 1997; Whiteley, 2000). At an aggregate level, Whiteley (2000) finds social capital to be as relevant as human capital when it comes to understanding national economic growth. Casey and Christ (2005) do not provide evidence that social capital brings economic prosperity, but argue that it promotes economic equality and employment stability. At a subnational level, research results have been mixed. Helliwell and Putnam (1995) or Rupasingha, Goetz, and Freshwater (2002) research findings support that social capital explains economic differences across different Italian and US regions, respectively. In contrast, Schneider, Plumper, and Bauman (2000) find economic, rather than social forces, to be the drivers of economic prosperity in European regions. At the microeconomic level, several articles have found a positive correlation between social capital and household incomes (Narayan & Pritchett, 1999; Robison et al., 2000). There is increasing evidence that social capital plays a especially relevant role in the rural sector in developing economies, where it can help overcoming the scarcity of other more expensive inputs (Fafchamps & Minten, 2002; Ha, Kant, & Maclaren, 2006; Narayan & Pritchett, 1999). A number of studies have even suggested that the contribution of social capital to production may be greater than the contribution of other conventional inputs.

Economic theory has provided foundation for the economic impacts attributed to social capital. For example, Greif (1993), among others, have discussed the role that social interaction has in solving free rider issues and opportunism (Glaeser, Laibson, & Sacerdote, 2002). Alternatively, game theory has shown that cooperation between individuals is more likely to occur when individuals expect to continue interacting in the future (Abreu, 1988; Kreps, Milgrom, Roberts, & Wilson, 1982). Membership in social organizations may create generalized bands of trust in the community that can replace missing or expensive legal structures, reduce risk and transactions costs. This will enhance economic efficiency and community welfare and reduce community poverty and

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vulnerability (Casey & Christ, 2005; Narayan & Pritchett, 1999; Whiteley, 2000; Woolcock, 2001). From an economic theory perspective, while some types of social capital may enhance productivity, others may reduce it (Dasgupta, 2002). Game theory has warned that long-term links can also imply allocations in which some of the parties are worse off than they would be if they were not involved in these relationships (Dasgupta, 2002). In the terminology of Putnam (2000), some forms of social capital may stifle economic progress.

Social networks play a relevant role in linking farmers with knowledge, technology, skills, etc. Although extension services can also contribute to increased knowledge, in many developing economies they can be under-resourced, suffer from gender and cultural biases, or be highly dependent on political agendas. Social capital has very limited economic value if not combined with other forms of capital and can make the latter much more efficient (Grootaert, 1998a). It is conceived as "capital" because of its ability to increase the productive output by producing goods and services (Robison, Schmid, & Siles, 1999). Social capital may be important to small, resource-poor agricultural households. These farms have usually very restricted access to economic resources, conventional agricultural inputs and marketing channels. The impact of social capital on rural household economies has been widely debated. Contributing to this debate, many recent economic development analyses at the micro level have included social capital in household production functions (Grootaert, 1999; Ha, Kant, & Maclaren, 2004; Ha et al., 2006; Innes, 2010; Maluccio, Haddad, & May, 1999; Narayan & Pritchett, 1999; Ruben & Strien, 2001). A growing empirical evidence is supporting the idea that social capital can indeed help rural households overcome the deficiency of other capitals and inputs, thus increasing their welfare (Annen, 2001; Fafchamps & Minten, 2002). We add to this literature by assessing the contribution of social capital to the productive efficiency and productivity of a sample of smallholder farms in Maharashtra, India. Social capital shadow prices are derived and compared with other input shadow prices to assess their relative importance. Since the different dimensions of social capital have been shown to reduce transaction costs, improve market information, facilitate information flows, etc., this capital is likely to have an impact on production activities of agricultural holdings (Grootaert, 1998a).

Agriculture in the developing world is considered as a key instrument for poverty reduction and rural development (World Bank, 2008). This role is undisputable in many Indian economies where the agricultural sector is a major contributor to the gross domestic product (GDP) and a relevant employer. This is especially true for the area of Vidardbha (specifically Wardha District) in the state of Maharashtra in central India, where a state of profound agrarian distress has been characterizing farmers' situation, to the extent that this area became internationally known for the tragedy of farmer suicides (Das, 2011; Mishra, 2008; Mitra & Shroff, 2007). The poor performance of agriculture in the area studied is evidenced by its low standard of living. Development economics generally agrees that a sustainable economic development should be based on promoting productivity and output growth (Bravo-Ureta & Pinheiro, 1993, 1997). Efficiency improvement allows increasing production without requiring increased input use or investments in new technology. Noteworthy is the fact that efficiency gains in subsistence agricultural economies go ahead of economic considerations and can be crucial for the survival of the household.

The paper is organized as follows. In the next section, we present a literature review. The third section focuses on methodological issues. Results and policy implications are derived in the fourth section. The paper ends with the concluding remarks section.

2. Literature review

The literature on the impacts of social capital on the efficiency with which agricultural holdings operate is very scarce. Jaime, Salazar, and Novoa (2011) apply Battese and Coelli (1995) efficiency model to study the effects of social capital, measured as the participation in organizations, on the technical efficiency of wheat smallholder farms in Chile. Their findings suggest that social capital improves farms' performance. In a similar study, Jaime and Salazar (2011) reach the same conclusion. Nyemeck, Tonyè, and Wandji (2005) examine technical efficiency of groundnut monocrop, maize monocrop and maize-groundnut intercrop Cameroonian farms. Once the technical efficiency scores are derived, a two-limit tobit regression is run in order to identify the determinants of technical efficiency. Membership in a farmers' club or other associations is found to improve efficiency (this is compatible with results in Nyemeck, Tonyè, Wandji, Nyambi, & Akoa, 2004). Further, public sector involvement in providing information or technical assistance is also found to enhance technical efficiency. Gómez-Limón, Picazo-Tadeo, and Reig-Martínez (2012) study managerial eco-efficiency of a sample of olive-farms in Andalusía, Spain, using Data Envelopment Analysis (DEA). A censored tobit regression is estimated to identify the factors affecting eco-efficiency. Social capital, measured as agricultural associations membership, is not found to be statistically significant.

Solís, Bravo-Ureta, and Quiroga (2007) use Battese and Coelli (1995) model to assess technical efficiencies of a sample of El Salvador farms with different levels of adoption of soil conservation programs. A switching regression model is used to address selectivity biases and derive efficient parameter estimates in the stochastic production frontier analysis. The specification of inefficiency effects equation includes social capital variables (the participation in social networks). However, social capital is not found to be statistically relevant. Waheed and Ayodele (2010) evaluate efficiency of a sample of maize smallholder farms in Nigeria. The causes of inefficiency are studied using Battese and Coelli's (1995) model. In the inefficiency effects model, a dummy variable for membership in a farmer association is introduced, which is found to enhance farm performance.

Ha et al. (2006) adopt a slightly different perspective in that they consider social capital as an input a la par with conventional inputs such as labor and physical capital. To show the extent to which social capital contributes to production efficiency, the authors estimate a distance function from which to elicit social capital shadow values. They find a positive impact of social capital on efficiency levels, with an increase in social capital of 1% having a higher contribution than adding one million Vietnamese dong of physical capital to the production process. The objective of our work is to identify the impacts of social capital on the technical efficiency and productivity of small agricultural cotton holdings in Maharashtra, India, thus contributing to the scant literature on the topic.

Social capital is a multidimensional concept. Grootaert and Bastelaer (2002) distinguish at least four key dimensions: its scope, its manifestations, its channels and the kind of relationships through which social capital has an economic impact. Given the multidimensionality of social capital, some definitions proposed in the literature are highly complex and almost impossible to operationalize in an empirical setting. This has led many scientists to move toward a narrower and focused micro definition of social capital. A majority of the analyses on the economic impacts of social capital have considered this form of capital along the lines of Putnam (1993), i.e., mainly as an associational activity that facilitates cooperation and coordination among individuals (Grootaert, 1999; Grootaert & Narayan, 1999; Grootaert, Oh, & Swamy, 2002; Narayan & Pritchett, 1999). While this approach makes it easy to determine what is and what