

Human capital, entrepreneurship, and farm household earnings

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Abstract

The allocation of resources between agriculture and non-agriculture is a central decision of the farm household. In this paper, we formulate a profit-maximization model in which human capital enhances efficiency through both within-sector effects and across-sector allocation of quasi-fixed inputs. The model is estimated using Chinese household data that contain detailed information on production activities. We find that schooling and experience improve the sectoral uses of household-supplied inputs, accounting for 27% of their total contribution to earnings. The evidence suggests that conventional estimates of human capital returns obtained within sectors would undervalue the role of human capital in development. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

Farm households in modern environments engage in multiple productive activities. In addition to farming, rural workers also participate in wage-earning or self-employed activities, such as processing, manufacturing, construction, transportation, and services. Farmers are entrepreneurs in the sense that, in addition to performing tasks of given activities, they respond to changing conditions by reallocating their labor and physical

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resources across activities (see, for example, Hymer and Resnick, 1969; Rosenzweig, 1980). Schultz (1975) hypothesizes that the entrepreneurial ability to deal with economic disequilibria is a part of the stock of human capital. From his notion of entrepreneurship, human capital can enhance farmers' abilities both in selecting activities and in performing individual operations.

A large body of literature assesses the effects of human capital on rural household earnings (see surveys by Jamison and Lau, 1982; Schultz, 1988; Phillips, 1994).¹ However, this literature has largely neglected the role of schooling and work experience in sectoral factor allocation, despite ample evidence that human capital raises efficiency either in agricultural or non-agricultural activities. In agriculture, for instance, Welch (1970) and Huffman (1977) find that human capital enhanced farmers' technical skills and managerial ability of using inputs, and during the green revolution, better educated farmers achieved higher profitability with high-yielding seed varieties (e.g., Pitt and Sumodiningrat, 1991; Foster and Rosenzweig, 1995). In rural non-agriculture, there is also evidence of significant returns to schooling in wages and self-employment (e.g., Vijverberg, 1993). While these studies provide sector-specific estimates, an important component of human capital returns has not been assessed. As farm households engage in increasingly diverse activities, it is no longer admissible to omit the returns to human capital in determining sectoral participation.

A number of studies (e.g., Huffman, 1980; Yang, 1997a; Fafchamps and Quisumbing, 1999; Taylor and Yunez-Naude, 2000) find that farmers respond to higher returns to education in the non-farm sector by reallocating labor away from agriculture.² However, these studies omit the effect of education on capital investments. Furthermore, human capital has been treated as an investment good similar to physical capital that simply receives returns, as opposed to a causal variable whose function, in part, is to optimally allocate household resources. Consequently, these studies provide estimates of returns to human capital in the two sectors, but not its contribution to sectoral factor allocation.³

In this paper, we formulate a two-sector framework of household profit maximization in which human capital may enhance within-sector profits through the purchase of variable inputs and worker productivity effects and, more importantly, to determine the allocation of quasi-fixed factors across sectors. We propose a strategy to decompose these sources of

¹ These surveys cover studies on returns to schooling, experience, and extension services. Behrman and Deolalikar (1988) and Strauss and Thomas (1995) have summarized research results on the productivity value of health and nutrition. While human capital has multiple dimensions, this paper focuses on formal education and work experience.

² These studies focus on farm households who engage in part-time farming, the primary concern of the current paper. See Schultz (1988) for references on the effects of schooling on permanent out-migration from rural areas.

³ One exception is Welch (1970) who treats education as a productive factor that affects the allocation of inputs among alternative lines of production. However, previous studies have only estimated schooling's allocative effects within agriculture (e.g., Pudasaini, 1983). Here we extend the analysis to cover non-agricultural activities and to develop new empirical strategies to assess the role of human capital in inter-sectoral input allocation.

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