

## RETURNS FROM SCHOOLING IN FARM-HOUSEHOLDS WITH REFERENCE TO MEXICO <sup>1</sup>

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*The existence of positive economic returns from schooling is a basic tenet of development economics and a justification for rural education programs. However, estimates of the returns from schooling in rural economies range widely, from high to negative, and findings of low or negative returns from schooling raise questions about the appropriate role for educational policy in rural development.*

*We argue here that researchers may be looking for the returns from schooling in the wrong places by not taking account of the technological changes and sectoral diversification of household-farms that characterize agricultural transformations in less developed countries (LDCs). Schultz argues that changes in the technological environment raise the value of farmers' entrepreneurial ability--their "ability to perceive, interpret, and respond to new events in the context of risk" associated with the arrival of new technologies. Welch hypothesized that the value of education increases with technological change. That is why development economists typically identify returns from schooling in rural LDCs with schooling's effects on the adoption of new technologies (e.g., see Feder et al.).*

*The choice of activities is formally equivalent to the choice of technologies. Farm households may reap rewards from schooling by abandoning one activity--e.g. traditional agriculture, in which returns from schooling may be limited--in favor of a new activity--e.g., modern agriculture or noncrop production, in which the returns from schooling are high. Alternatively, they may continue producing traditional crops while diversifying into new activities in which the returns from schooling are high, provided that incentives for diversification (risk, scale effects, etc.) exist (e.g., see Rosenzweig and Binswanger).*

*Selectivity and occupational choice play a central role in the economics literature on the returns from schooling (e.g., see Strauss and Thomas, Willis). It is thus surprising that selectivity and activity choice have not been a focus of agricultural economics research on the returns from schooling in crop production.*

*Research focusing on single commodities or activities ignores the self-selection of households into and out of activities. In addition, most of the existing studies consider only the household head's schooling, ruling out the influences of other family members' schooling on farm production or incomes implied by household-farm theory.*

*From an econometric point of view, the cost of ignoring the endogeneity of activity choice (selectivity) and omitting relevant family schooling variables (under specification) is that parameter estimates, including estimated returns from schooling, are biased and inefficient.*

*Part 1 of this paper presents a simple, two-activity theoretical model to illustrate the effect of schooling on household resource allocations and incomes. An econometric model to estimate economic returns from schooling, grounded in this theoretical model, appears in Part 2. In Part 3, we report econometric estimates of the returns from schooling in staple production, cash-crop production, nonagricultural production, wage work, rural-to-urban labor migration, and international (Mexico-to-U.S.) migration for a sample of rural Mexican households in a traditional staple-producing areas, controlling for self-selection into and out of these activities. Part 4 summarizes our conclusions.*

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