**Are Private Farm Management Centers Feasible in El Salvador?**

Daniel Solís[a] and Boris Bravo-Ureta[b]

a   Graduate Student, Department of Agricultural and Resource Economics and Research Assistant, Office of International Affairs (*OIA*), University of Connecticut. Email: daniel.solis@uconn.edu.

b   Executive Director *OIA*, and Professor of Agricultural and Resource Economics, University of Connecticut. Email: boris.bravoureta@uconn.edu.

### Abstract

This paper evaluates the economic and the financial viability of implementing private farm management centers (FMC) in El Salvador. To pursue this objective, an *ex ante* cost-benefit analysis based on multiperiod linear programming approach is performed. The results of this analysis suggest that a combination of better farm prices (paid and received), reallocation of resources, and crop diversification that would be promoted by a FMC can lead to an increase in farm level profits that is sufficient to cover the operation of the center and to still generate net gains in household income.

**Keywords:** Private Agricultural Extension; Farm Management Centers; Multiperiod Linear Programming; Cost-Benefit Analysis; Developing Country; El Salvador.

*Introduction*

The privatization of agricultural services began as a response to a decline in public expenditures worldwide. Dinar (1996) shows that this decline started in the mid-1980s. The small Central American country of El Salvador has not escaped this process. In fact, public expenditures on agricultural research and extension in this country have been dramatically reduced since 1980 (Solís, 2002). Beynon (1995) explains the reduction in public funding using two parallel approaches. The first involves fiscal budget restrictions that have been imposed in order to reduce state activity in those areas where the private sector may be willing to invest. The second is the need to raise the cost-effectiveness of a deteriorating system of public research and extension in many developing countries.

Although systematic extension programs have been going on for at least 50 years, studies on rates of returns to private agricultural extension are rare (Alston, 2000). In addition, the available studies have been carried out at the national level, and the effects of extension programs are frequently mixed in with research efforts. Rivera (1996) cautions that the promotion of different privatized extension models without a formal analysis is likely to lead to the repetition of the mistakes made by many extension systems in the past.

This paper intends to contribute to the existing literature by providing an empirical analysis of the economic and financial benefits of a specific private agricultural extension strategy in El Salvador. The results obtained in the analysis are used to develop several recommendations for private agricultural extension programs in this country.

*Data and Methodology*

This study analyzes the feasibility of two private farm management centers (FMCs) established recently in El Salvador. To estimate the impact of the project, an *ex ante - in media res* cost-benefit analysis is applied to calculate the net present value (NPV) and the internal rate of return (IRR) of the FMCs. The data used in this analysis comes from a survey administered to farmers working with the project, and from financial and marketing records collected by the FMCs. Secondary sources are also used.

A cluster analysis is performed to create a set of representative farms from each FMC. This methodology is used to classify all the farms in the sample by measuring statistically their similarities and differences. In order to select the optimal number of clusters the hierarchical agglomerative graphical approach is used. This analysis recognizes four different clusters for each FMC. The representative farms are then defined as the average farm in each cluster. Therefore, each representative farm displays the average farm size, cropping pattern and input allocation of its cluster fellow members.

To describe the production system of each representative farm and to establish their profitability enterprise and whole-farm budgeting techniques are used. Seventeen enterprise budgets and eight whole-farm budgets are constructed considering prevalent practices and conditions of the farms included in the study.

The benefits of the project are projected using the representative farms as the unit of analysis. In doing so, four farm models are developed to simulate the effect of different services

provided by the FMCs to its members. Model 1 incorporates the observed gross margin of the farmers and it is considered the Baseline. Model 2 represents the establishment of a marketing service. In this model additional farm profits are projected from expected changes in product prices and input costs due to pecuniary economies of size. Model 3 relies on a multiperiod linear programming (MLP) model to incorporate a farm-planning service. Finally, Model 4 introduced a technology transfer service by including new crops into the MLP model.

The viability of the FMCs is examined using the incremental net benefits reached by the farmers as a result of the different services described above and the cost of each FMC. The aggregate net benefits of all the beneficiaries of the FMC are computed by extrapolating the benefit of each representative farm to the population that they represent. The specific expansion factors are estimated in the cluster analysis. Finally, to assess the inherent risk that all agricultural projects have, a sensitivity analysis is conducted over the variables that most influence the project's net benefits. For more detail on the methodology please see Solís (2002).


### Results and Policy Implications

The Baseline presented a dualistic agricultural structure among the farmers under analysis. On the one hand, farms with high gross margins presented the highest labor cost and input allocation. Conversely, farms displaying poor returns were the less diversified ones and also the farms with the lowest use of fertilizer and pesticide.

The analysis of the marketing service reveals that there is a significant gap between the prices actually paid (inputs) and received (outputs) by individual farmers and what they might be able to realize by working together. The survey shows that individual producers buy their inputs in local supply stores at high prices and sell their production to intermediaries at low prices. In general, the marketing service did not generate enough benefits to cover all the cost of the FMC. However, farmers' gross margins increased drastically. Consequently, a way to improve farm profits is to facilitate and encourage cooperation among peasants with the aim of selling their products and purchasing their inputs in bulk. The differences in prices also suggest the presence of a market failure in rural El Salvador; namely, farmers lack market information. Extension programs could address this situation by generating and distributing pricing and marketing reports that can be readily used by farmers and their organizations.

Model 3 suggests that there is a substantial gap between observed and profit maximizing cropping patterns. Although a divergence between observed and optimal plans is expected, such differences can be reduced. These differences could be a consequence of several factors. For example, farmers might simply prefer to cultivate traditional crops primarily for home consumption. However, the survey suggested that peasants do not keep records of their farm's costs and returns. Moreover, the lack of information on the economics of alternative crops makes it very difficult for these producers to evaluate the expected profitability of different cropping plans. Therefore, the implementation of a service which collects and analyzes the costs and returns of alternative enterprises would not only help farmers to develop more profitable farm-plans but it would also help them to have a better understanding of the potential and the limitations of their business.

Model 4 showed that farm profits could increase significantly by incorporating new enterprises. This model revealed that in some cases the introduction of new crops increases farm's gross margins by more than 100%. Therefore, extension programs must take advantage of the favorable effect of nontraditional crops by providing and supporting technology transfer programs that promote crop diversification.

In sum, the analysis suggest that a combination of better farm prices (paid and received), reallocation of resources, and crop diversification that would be promoted by a farm management center can lead to an increase in farm level profits that is sufficient to cover the operation of the farm management center and to still generate net gains in household income.

*Relevant References*

**Alston, J. and Pardey, P.** "Attribution and other problems in assessing the returns to agricultural R&D". *Agr. Econ*. 25(2001):141-152.

**Alston, J., C. Chan-Kang, M. Marra, P. Pardey; T. Wyatt**. *A Meta-Analysis of Rates of Return to Agricultural R&D: Ex Pede Herculem?* IFPRI. 2000.

**Beynon, Jonathan**. "The State's Role in Financing Agricultural Research". *Food Policy*. 20 (1995): 545-550.

**Beynon, J.** *Financing the Future: Options for Agricultural Research and Extension in Sub-Saharan Africa*. Oxford Policy Management. 1998.

**Dinar, Ariel**. "Extension Commercialization: How much to Change for Extension Service". A*mer. J. Agr. Economics*. 78 (1996): 1-12.

**Kidd, A., Lamers, J., Ficarelli, P. and Hoffmann, V**. "Privatizing agricultural extension: caveat emptor". *J. Rural Stud*. 16:(2000)95-102.

**Rivera, William**. "Agricultural Extension in Transition Worldwide: Structural, Financial and Managerial Strategies for Improving Agricultural Extension." *Public Administration and Development*. 16(1996):151-161.

**Solís, Daniel**. *Rates of Return to Private Agricultural Extension: Evidence from two Farm Management Centers in El Salvador*. M.S. Thesis. University of Connecticut. 2002. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=8230&ftype=.pdf.