

“The Impact of Rural Business Services on the Economic Well-being of
Small Farmers in Nicaragua”, by Michael R. Carter, Patricia Toledo and Emilia Tjernström

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Summary

This evaluation of Nicaragua’s Rural Business Development (RBD) project has several distinctive features beyond the calculation of average treatment effects: it uses the program’s gradual rollout to estimate the time path of impact on participating households, uses a midline evaluation to identify complier households among whom to compare impacts due to early as opposed to late treatment, uses quantile regression to estimate heterogeneity of impact among participants, and uses changes in revenue, investment and consumption as different outcome measures to obtain a nuanced understanding of whether and how the project influenced participants’ economic lives. These features make this an extremely high-quality evaluation, shedding more than the usual amount of light on how the RBD program affected its potential beneficiaries.

Results indicate that the program successfully raised participating households’ investment and revenue in targeted activities, but that doing so did not change the overall welfare of participants as measured by their average consumption levels. The evaluation found considerable variance in consumption changes, with significant gains experienced by some households in the program, and some fluctuations over time. We can conclude that the program succeeded in terms of intermediate outcomes (inducing farmers to invest and grow the targeted rural businesses) but not in terms of ultimate objectives (significantly raising beneficiaries’ living standards), at least within the four years of potential effect that is measured here. The difference arises because participants reallocated their households’ non-program resources to the targeted activities from consumption and other enterprises, with no significant difference on average in the profitability of targeted and non-targeted activities and therefore no significant difference in average household welfare over the observed period.

The principal lesson learned from the design, implementation and evaluation of this project is the need to take account of households’ opportunity costs and the likelihood of diminishing returns in any one activity, and the need to take account of losses as well as gains when evaluating enterprises with stochastic payoffs. Future MCC and MCA projects are more likely to raise average welfare of beneficiary communities when they focus on non-excludable public goods and innovations that raise the productivity of agriculture as a whole, rather than targeted services that allocate resources towards existing activities.

Motivation

The questions driving this review concern both program evaluation about the impacts of this particular project, and more generalizable hypothesis testing about the impacts of other projects in the future. Fortunately, the evaluation design and the results presented in this report are of remarkably high quality, and offer very useful lessons for the future. The design exploits specific features of this program and its implementation to evaluate results in ways that achieve not only a high level of internal validity for these particular program participants at this particular time, but also informs external validity and inference about how similar programs might work by careful attention to heterogeneity within the surveyed population and the time path of program impacts they experienced. It is conceivable that this sample and time period is not representative of others, but the findings reported in this evaluation are consistent with the predictions of economic models that fit behavior observed elsewhere at other times. Empirical testing of external validity could be provided in the future through systematic reviews of similar program evaluations. In the meantime, the results reported here for Nicaragua's RBD program shed considerable light on how agricultural business development training affects farm households.

Impacts over time and across households

This evaluation is notable for its attention to the variance of program impacts over time and across participants. As illustrated in Figures 13 and 14 (page 38 and 39), participation led to a small (and statistically not significant) dip in consumption in the first year to finance expansion of investment in the activities that were encouraged and partly subsidized by the RBS. The flow of capital into those enterprises peaked after one year, then fell back somewhat as consumption recovered. Over the full period, the program cost about \$2500 per farm household, and generated an average increase in consumption of \$164 per capita for an IRR in household consumption terms of -18% (Table 15, page 47). Table 15 shows how this average treatment effect occurred despite an average \$2,940 increase in targeted activities. If the evaluation had not measured consumption, and had simply assumed that the targeted enterprises were the households' only activities, the program would have been mistakenly thought to have yielded an IRR of +39%. This finding illustrates the importance of taking into account the opportunity cost of household resources used in program activities.

The analysis of impacts across households is equally instructive. Figure 15 shows how program income rose over two years of participation for the 25th as well as the 75th percentile groups in terms of consumption, but only the 75th percentile group saw a statistically significant rise in its average consumption. That result is consistent with a program that attracts resources into a risky endeavor which sometimes pays off and sometimes doesn't, with an average payoff that is not much different from other activities. An ex-post evaluation that focuses on success stories would have been profoundly misleading in this case, revealing the importance of including the full variance of results.

In summary, it appears that the program was executed successfully in the sense that it attracted farmers into the targeted activities, but that doing so helped only those farmers for whom that investment happened to pay off. On average, farmers experienced an improvement in living standards too small to be statistically significant.

Implications for program design

The program description provided in this evaluation is generally sufficient to understand how the project was implemented. A telling omission is why the project targeted these particular activities in the first place. The description states that "MCA identified areas particularly conducive to the types of business targeted by the program" (page 4, paragraph 1), but it is not clear why those businesses were targeted, why the selected areas were thought to be conducive to them, or why the participants were thought to be especially well-suited for those enterprises.

The evaluation suggests that participating farmers did not share the program's focus on the chosen crops, and asked for more flexibility and diversification. The report explains that "At the beginning, the RBD Program focused on the formation of livestock, bean, sesame and cassava nuclei, but given the interest shown by farmers in planting other crops, the program was extended to products like plantain, rice, honey, and fruits" (page 5, last paragraph).

Farmers' desire for help with crops other than those chosen by program designers is consistent with farm household experience around the world. The degree to which particular crops are grown in any particular place depends on constraints that diminish marginal rewards to each activity, and lead to the farm sizes and patterns of diversification that we observe. If an RBD program successfully lifts productivity in the target enterprises, then the intervention could raise total household income. But if the program simply subsidizes or persuades farmers to expand the targeted activities, then doing so must occur at constant or diminishing rewards with no gain in welfare. This appears to be what actually happened in the Nicaragua RBD.

Future RBD-type projects that target productivity rather than products are more likely to succeed. One such impact pathway highlighted in this evaluation runs through crop genetics. The report explains that "Improved seed was a dimension stressed by the program" (page 22, footnote 20), but shows that program beneficiaries did not generally increase uptake of improved seeds despite its relatively low initial level (page 30, table 10). This finding suggests that access to improved seeds is rationed on the supply side, due to policy failures that limit investment in public goods for crop breeding and seed multiplication. Other opportunities for productive public investment include general-purpose education, market infrastructure and institutions.

In conclusion, successful program designs that target productive public investment will – like this excellent impact evaluation – be aimed at beneficiaries' full income from multiple activities, taking account of heterogeneity and risk. To raise full income for a whole population, program targets should be defined in terms of the market and policy failures that they remedy and the productive inputs to be supplied, with success measured in terms of final consumption from both farm and nonfarm enterprises. The Nicaragua RBD evaluation shows clearly how programs that promote specific businesses can meet their targets, and yet fall short of their larger objective.