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EVALUATING AND IMPROVING MICROFINANCE IN BOLIVIA: TECHNICAL NOTE

1. 3 in 4 rural Bolivians live below the poverty line[1]

Bolivia is among the poorest Latin American countries. One in three citizens – or over 3.3M people – lives in rural areas, and over 75 percent of them live below the poverty line[2]. Formal employment is scarce – roughly 20 percent of all employment, versus over 40 percent in Latin America overall. Informal firms have little access to credit. This is despite the fact that evidence suggests returns to capital are highest for small firms, which most informal firms are[3]. As a result, these rural small businesses represent an underdeveloped but potentially significant contribution to poverty alleviation and development in Bolivia.

One of the government's most important tools to address this challenge is the Productive Development Bank (BDP in Spanish), which finances efforts that promote development and address historically excluded regions and sectors. Its target populations are rural and agricultural businesses, and small and micro-enterprises. Of particular note is the Productive Individual Credit (PIC) program, which provides loans to small producers with terms of up to twelve years and a six percent interest rate. Its objectives are to promote social, economic, and financial impact through increased employment and revenue, and to increase access to financing for individual producers. PIC granted more than 20,000 individual loans from July 2007 – July 2012 totaling over $135 million. Around 75 percent went to rural areas[4].

However, five years into PIC's operation, BDP did not know whether its loans were having an effect, or whether the program's scarce resources could be deployed to have more impact.

2. ARU's contribution: Re-allocate BDP's loans to *those who benefit most*

ARU is one of the only Bolivian organizations with evaluation expertise. As a result, when BDP decided to conduct an impact evaluation of PIC – a first for the bank – ARU was, according to BDP leadership, the only qualified candidate. The evaluation, which is in the process of being completed, investigated the program's effectiveness and efficiency in reaching the above objectives, and whether there are ways to improve its resource allocation.

ARU not only showed itself to be the best local actor to conduct the requested evaluation, but recommended improvements to the design that a member of BDP's Board of Directors called "very positive." Moreover, despite concern that ARU's methodological suggestions would be difficult to implement in practice, BDP "remains very satisfied".

As a result of ARU's research findings, BDP is likely to re-allocate its future PIC loans particularly to the specific types of beneficiaries that ARU identified as benefiting most, based on factors such as the industry in which they work (e.g., agriculture or manufacturing) and the size of the loans they received. Initial findings from the evaluation suggest that certain combinations of these circumstances result in loans being more likely to impact household income positively. Understanding these dynamics at a more granular level will provide the tools BDP needs to improve the social return on its loans.

The benefits beyond those resulting directly from evaluation itself are particularly important in this case. This evaluation is a key step in ARU's campaign to build what it calls a "culture of evaluation" in Bolivia – i.e., both capacity and demand for rigorous evaluation. For example,

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other microfinance programs are considering evaluations and are closely watching ARU's work in this case. Additionally, the scope of the project was important on a national scale: ARU's survey was as large as the largest governmental household survey (four thousand households) and spanned the industries covered by the three most important governmental surveys (manufacturing, agriculture, and households) – a first in Bolivia.

3. The projected result: Increased income for poor households

To understand the potential impact of improvements to PIC loan allocation, rough estimates were developed using existing data and assumptions about how the policy might affect Bolivian society. The appendix details these estimates. To summarize, data and assumptions covering the distribution of the loans' effects, the number of beneficiaries, and how much the loans will improve as a result of ARU's assistance were combined to estimate the number of improved loans and their effect on recipients' income. This led to the following results:

- **15,000** loans re-allocated to more productive recipients over the remainder of PIC
- **$65 million** more income expected for loan recipients (net present value)

4. The return on investment (ROI)

ARU's contributions were influential throughout the policy change process and required an investment of only three person-years and roughly $100,000. To estimate its return on investment (ROI), the $65 million in additional income was divided by the $100,000 ARU investment. The result is an ROI of about **$650 in additional income for loan recipients per dollar spent by ARU.**

Of course, ARU is not solely responsible for these benefits. Understanding the portion ARU contributed toward the projected results helps illustrate its true ROI. Experts suggest a relatively constant set of conditions for policy change that an organization like ARU might influence. Tracking these conditions before and after ARU became involved provides a rough picture of the think tank's contribution.

ARU and BDP staff were asked to rate these conditions on a 1-5, "very low" to "very high" scale for each condition's status before ARU began its evaluation and afterwards – that is, where BDP is ending up as a result of the evaluation. Their responses are shown in Table 1.

Table 1: Ratings of ARU's contribution to improvements in PIC loan allocation

Condition	Before (1=very low, 5=very high)	After
Functioning institutions: The relevant legislative, legal, and regulatory institutions are functioning sufficiently for research and advocacy to be effective	2.5	3.5
Responsive, accessible supporting research: The solution is supported by compelling, data-driven evidence that can counter opposing arguments and sway decision-makers	1.5	4.3
Feasible, specific, and flexible solution: A feasible solution has been developed and shown to produce the intended benefits, with acceptable alternatives if the exact proposal is untenable	2.5	4.5

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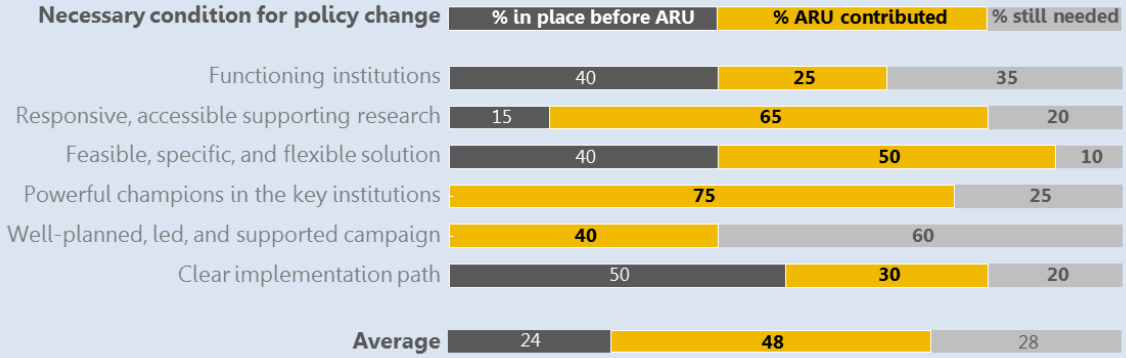
Powerful champions in the key institutions: Decision-makers who can overcome the opposition support the solution and its underlying principles	1	4
Well-planned, led, and supported campaign: Advocates assemble resources, a pragmatic and flexible strategy, and a supportive public or other allies	1	2.5
Clear implementation path: The implementing institutions have the commitment and the capacity to execute the solution	3	4.3
Average	**1.9**	**3.8**

Translating these results into percentages (1 = 0%, 5 = 100%) generates the qualitative results shown in Figure 1.

Figure 1
ARU's contribution to improvements in PIC loans



Averaging all the conditions together suggests that ARU's contribution would be roughly 50 percent (48 percent in Figure 1). That produces **an ROI of roughly $310 in additional income for loan recipients per dollar spent by ARU**, assuming success is achieved.

Note that this includes adjustments that reduce the ROI to account for the remaining uncertainty. For example, uncertainty still exists in the sense that the details of the evaluation's conclusions are still being finalized and BDP has not made decisions about how to use the results of the evaluation. This uncertainty is illustrated by the bars in Figure 1 labeled "% still needed". The crude average of those bars is 28 percent, reducing the current likelihood of success (LOS) to 72 percent. To be precise, then, ARU's estimated contribution to "success so far" is 48 percent divided by 72 percent. As a result, the ROI cited above is actually the cost-benefit multiplied by ARU's contribution to success thus far, then multiplied by the LOS, as illustrated in Figure 2. This methodology is conservative if full success is achieved, as it assumes ARU makes no contribution to any of the work that is still needed.

Figure 2
ARU's return on investment

$$\text{ROI} = \frac{\$65\text{M benefit}}{\$100\text{K cost}} \times \frac{48\%\ \text{contribution}}{72\%\ \text{LOS}} \times 72\%\ \text{LOS} \approx \$310$$

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Appendix: Details on the projected results estimates

The estimates of potential results were calculated using the following baseline assumptions and data:

- When a microenterprise receives a loan, one of three things can happen: the loan can increase productivity, and as a result, household income; the loan can have no effect; or the loan can cause a decrease in income (i.e., from poor use of the funds).
- For simplicity, the effect of the loans in the PIC program until now is assumed to be evenly distributed and symmetrical:
  - *Evenly distributed*: One-third of the loans have caused an increase in income, one-third caused no change, and one-third caused a decrease in income.
  - *Symmetrical*: The average increase in income from loans in the first category above is equal to the average decrease in income from loans in the third category.
- ARU estimates that as a result of the evaluation, BDP will re-allocate half of the loans that would have gone to the latter two category to recipients one category higher (i.e., one-third of the total number of loans).
- Using the median value from eighteen studies on the impact of microfinance programs surveyed by ARU, the effect of moving one bucket higher is a 22-percent increase in income[5]. The base average household income without the loan is roughly $3,350 per year, using the 2007-2012 average[6].
- Assume that the base income will stay constant in real terms and that any changes in income resulting from the loans are in perpetuity. However, a discount rate of ten percent – the standard for studies of social programs in Bolivia, according to ARU – is applied to future income to account for the uncertainty of the program's future and the loan recipient's future income. This discount rate is applied starting in the year the loans are given, as it is assumed that loans are given early in the year, but the effect of the loans is not felt until the end of the year.
- The loan program is in its fifth year of operation out of 15 (i.e., ten years remaining). It has served just over 22,000 beneficiaries in those five years, or roughly 4,400 per year[7].

These numbers were combined as follows to create the projected results estimates (discrepancies between the left- and right-hand sides of the equations are due to rounding):

- Determine the annual increase in income from a re-allocation of one year of loans: *(0.33*4,400) * (0.22*$3,350) ≈ $1.06 million*
- Divide that by the discount rate to establish the present value of that annual increase in income applied in perpetuity: *$1.06 million / 10% ≈ $10.6 million present value*
- That estimate represents the present value of improving the allocation of one year of loans. As noted above, there are ten years remaining in PIC. However, the benefits of loans made in later years need to be discounted. As a result, to estimate the total net

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present value of changes resulting from the evaluation, one can simply add ten-years' worth of the above value, discounted appropriately:

Year	1	2	3	4	5	6	7	8	9	10
Non-discounted value ($M)	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
Discounted value ($M)	9.7	8.8	8.0	7.3	6.6	6.0	5.5	5.0	4.5	4.1

Totaling the discounted line above results in an estimate of roughly ***$65 million in additional income*** for poor, rural Bolivians as a result of improved loan allocation.

- Finally, estimate the number of loans re-allocated to more productive recipients: *0.33*4,400*10* ***≈ 15,000 loans allocated to more productive recipients.***

Note that any estimate of this nature leaves out opportunity costs for which it is more difficult to account. In this case, the estimate assumes that without ARU's contribution, BDP would grant more loans for unproductive or even counter-productive uses, so there are no direct opportunity costs from the reallocation of loans. Of course, there are numerous other opportunity costs that could be considered as possible alternate uses of the reallocated loan money. Overall, then, these estimates should be considered attempts to paint a rough picture of the magnitude of ARU's impact on important social policy in Bolivia – and on the resulting social outcomes.

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[1] The World Bank Group (2012). *World Development Indicators*.
[2] World Bank 2012.
[3] The World Bank (2009). *Increasing formality and productivity of Bolivian firms*. Washington, DC.
[4] Fundación ARU (2012). *Evaluación de impacto: Crédito Productivo Individual – mapa de influencia*. La Paz, Bolivia. Additional data provided directly by ARU.
[5] Using data on changes in expenditure when estimates of the effect on income were unavailable. Note that there is large variation between programs and effect size depends heavily on the specifics of the context and the program itself. However, this estimate is conservative in at least one sense: it includes studies with findings of no effect in calculating the median, despite the fact that the median value is used to estimate the effect of loans that are re-allocated to circumstances in which they have been shown to have a positive effect.
[6] From Fundación ARU.
[7] From Fundación ARU.

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